Assessment of Brent's Residential Parking Policies

An Interactive Qualifying Project Report
submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfilment of the requirements for the
Degree of Bachelor of Science

Jennifer M. Golenia

Nicholas J. Jamroz

Aaron P. Judell

Tara M. Kelly

Date: 30 April 2004

Prof. Wesley T. Mott

Prof. James S. Demetry

Abstract

The Brent Council Planning Service (London) sponsored this project to gain empirical evidence in support of an evaluation of the Borough's residential parking policies. The scheme presently in use allocates parking spaces based on the type of housing and number of bedrooms per dwelling. We researched parking, performed field studies, surveyed residents, analyzed the data we collected, and presented recommendations for the Council. All evidence suggests that the Council's residential parking policies are adequate. The completed project includes: a spreadsheet containing housing specifics, field study data, survey results, GIS analysis, and proposed recommendations for future parking allocation cases.

Executive Summary

The London Borough of Brent Planning Service is in charge of allocating parking throughout the Borough and currently limits residential parking to a maximum number of spaces, depending on the type of housing and number of bedrooms per dwelling. The Planning Service currently does not have empirical data to fully evaluate its parking policy. The Brent Council needs this data to effectively allocate parking in the extensive Wembley Regeneration Project, which will include over 4000 residential units.

The Planning Service, a department of the Brent Council, needed data collected from field studies for assessing the adequacy of parking throughout the Borough. The Brent Council sponsored our Interactive Qualifying Project (IQP) in hopes of providing it with the figures needed to support or modify its current housing development parking policy. The data we collected informed the Council about the parking adequacy for recently-built residential developments. Survey results presented the residents' viewpoints in comparison to our observed data. All data, analysis, and recommendations we made factored into the parking allotment of the residential section of the Wembley Regeneration Area as well as future residential developments.

We focused our efforts on assessing the parking policies for social and market housing developments in Brent. We tried to understand what factors may influence parking and whether or not these factors must be addressed in parking provisions and policies. Socioeconomics and proximity to public transportation were thought to influence car ownership and parking in developments. Census data from the 2001 Brent census was used to obtain car ownership, driving age, median yearly income, unemployment, and education to look for any correlations that might exist.

We aimed to determine the appropriateness of the current parking policies by meeting three main goals. The first goal was to research the selected housing development histories and obtain specifics of each scheme, these being the number of units broken down by the number of bedrooms, the type of unit (social, market, mixed), the number of proposed parking spaces, and the date the scheme was completed. We utilised a range of office software, records, and archives to investigate all of the developments that our liaison suggested. Additionally, we contacted several

housing trusts to obtain more comprehensive information when our office records were insufficient. Another goal we established was to estimate the influence of proximity to public transportation on parking usage in developments. Tools in GIS software made it possible to analyse the impact of route distances on occupancy rates and other parking figures. Finally, we studied how census data such as socioeconomic status influenced car ownership and parking figures. By merging software programme files and conducting comparative analysis, we looked for correlations which factored into our recommendations for the Council. The completion of these goals enabled us to give suggestions for future parking scheme endeavours and inform the Planning Service of other factors to consider when allocating parking in the Wembley Regeneration Area.

Our project covered over twenty recently developed housing schemes in Brent. A list provided by our liaison, Ken Hullock, contained a record of the most recently developed and redeveloped residential schemes that fell under the current parking policies. All of the developments were completed within the last seven years and recent census data was cross-referenced with the developments completed before 2001.

The completed project contains a comprehensive database of all the observational and survey figures documented in Excel so that the Planning Service can utilise the data now and in the future. It also includes GIS maps and data which present the information we collected in graphical form. Anyone completing future parking studies can quickly access these diagrams to conduct comparative studies over time. We have also recorded comments gathered in surveys to give further input on each development. Since it is the Planning Service's goal to increase the quality of life within the Borough, they will use these comments for use in future development planning and addressing concerns of the residents in the schemes that we researched.

Data collection and correlation analysis of our figures gave us the empirical evidence that the Brent Council Planning Service was looking for. The evidence suggests that the Council's residential parking policies are adequate. There were no correlations found between parking occupancy levels and socioeconomic factors or proximity to public transportation.

This project contains both technical aspects and social application. It is WPI's goal to combine these two dynamics in the IQP. This project required technical research, data collection, and several types of analysis during the execution of our

project. We created a database and interpreted the figures we collected with correlation analysis to make conclusions about residential parking policies for the Council. Parking policies in the Borough will be re-examined following the completion of this project and guidelines for the new Wembley Regeneration Area will be revised accordingly. This project involved research, analysis, and interpretive evaluation in order to arrive at our goal.

Authorship Statement

This project involved evaluating car parking policies in the London Borough of Brent as well as the production of this report. This report is our original work. All four group members contributed equally to the creation of this report.

Jennifer Golenia

Nicholas Jamroz

Aaron Judell

Tara Kelly

Table of Contents

Table of Figures

1 Introduction

Lack of available land, in conjunction with increases in population and private car use, has created challenges in the determination of parking policies for cities. The growth in migration to urban areas has caused an exceedingly high population density in cities worldwide. As a result, many urban areas experience problems with parking. Kim, Mizuno, and Kobayashi (2003) suggest that 'For the location of residential areas, more people are attracted to central cities than to peripheral suburbs simply because of better accessibility'(p. 45). In European countries, the urbanised population density averages about 13,000 people per square mile (Cox, 2000).

Similar trends exist in the London Borough of Brent. As people crowd the city, planners are forced to prioritise land usage, creating high land values for undeveloped areas. From 1991 to 2001, 20,466 people migrated into Brent, accounting for a net increase in the population of 2,205 in the Borough (Brent Council Borough Census Data, 2001). City planners aim to focus their energy and resources to make the lives of the residents within the Borough as convenient as they can possibly be. Thus, parking management is high on the agenda for many Council departments.

Urban planning and development strategies have evolved over the years to accommodate trends in population growth and private car usage. In densely developed urban areas, land is at a premium and limitations to parking free up land for more sustainable use. An increase in the demand for affordable housing and private transportation in Brent has created conflicts over parking policies. The mission of Brent's planning service is to provide a sustainable environment for residents; this includes utilising land and resources in the most appropriate manner.

In an attempt to manage the parking in these new developments, Brent Council Planning Services allows for 50% fewer parking spaces for social housing compared to market housing (Unitary Development Plan [UDP], 2004). These regulations limit the parking based solely on housing type, with no regard to location of the development. Yet, the socioeconomics of an area, its car ownership level, and its proximity to public transportation may affect the amount of private car parking necessary for housing. These regulations do not only influence the housing developments, but also the surrounding neighbourhoods. If parking need is not

adequately accommodated for, overcrowding or unsuitable use of valuable land can result. Brent's Unitary Development Plan (UDP) outlines the Borough's policies on urban development, including parking rules and regulations. The plan suggests methods to decrease the need for parking in developments (UDP, 2004). It does not, however, indicate a system to suitably utilise land in developments to provide parking for the residents.

The Department of Planning Services in the Brent Council does not have firm and conclusive evidence to support their current 50% rule regarding social housing. These policies are established upon generally accepted assumptions about market and social housing parking structures and are based upon previous examples of parking needs. Although this strategy has not created logistical difficulty, Borough officials wish to monitor the effectiveness of standards and improve them if appropriate. The current formula in place only accounts for the distinction between social and market housing. There are several other factors that can be evaluated on a case by case basis which may call for an improvement of the current policy. Fifty percent less parking allotted to social housing reflects a judgement that occupants of social housing own and operate fewer cars than occupants of market housing

To gather the empirical evidence necessary to evaluate current parking policies, we used field studies to observe the parking usage within selected housing developments of the Borough. We conducted these field studies during evening hours in hopes that the majority of residents would be home from work, although it was accepted that it was unlikely all inhabitants would be home at this time. These studies consisted of a tally of filled parking spaces for each development. Once compiled, these results gave a substantial amount of evidence to satisfy Brent Council's needs for observed statistics.

This project provides data regarding parking patterns in new residential developments. Previously, there was no evidence to support assigning 50% less parking to social housing. Policies in place did not take into account the location of the new developments in regard to public transportation, markets, town centres, businesses, educational buildings, or government offices. Field studies, interviews of residents, and GIS observational correlations were conducted to understand and evaluate the reasons for parking usage. Suggestions from residents for improvements in parking offered important outlooks that were not represented by observations and

statistics alone. This collected data may provide an insight to Brent's Current parking policies, and determine if any modifications are necessary.

2 Background

2.1 London Borough of Brent

The London Borough of Brent is one of 32 boroughs that surround central London. With a population currently at 263,464 (2001 Census release), a density of 6,090 people per square kilometre, and a growth rate of 3.2% since 1991, the Borough must utilise all of its resources to accommodate residents. The Borough was established in 1965 by a reorganisation of London's Government. Brent is home to the well-known Wembley Stadium and is also considered to be the one of the most diverse boroughs that surrounds Central London. Blacks and Asians account for 54.7% of the population. *Table 1* contains census information for the Borough of Ealing, a borough similar to Brent in terms of population. The average household size in Brent is 2.61 persons in an average unit that contains 4.63 rooms. Ealing has a population of 300,948, with 2.5 persons living in an average unit that contains 4.7 rooms. 42.6% of all households in Brent own at least one car while only 33.4% of these residents actually drive the vehicle they own; the remaining 66.6% use alternative means of public transportation such as trams, trains, underground, buses, or bike routes (Brent Council Borough Census Data, 2001). Considering these statistics, we determined how they factor into parking policies within Brent.

Borough	Population	Average household size	Percent of population that is non-white	Percent that own or have access to a car or van	Percent that go to work by Public Transportation but have access to a car or van	Percent that travels to work by Public Transportation that have no access to a car or van
Brent	263,464	2.61	54.7	37.3	63.1	36.7
Ealing	300,948	2.5	41.3	46.0	70.4	29.4

(Census Information: Borough of Ealing, 2001.)

Figure 1: Census Data Comparison: Brent and Ealing

2.2 Parking Policies

Parking management is vital to the development of cities, towns, and boroughs around the world. In the past few decades, parking management and its framework

has evolved from a supply and demand scheme to sustainable development and transportation strategies (Button & Hensher, 2001). Residential parking can dictate how sustainable a city or town can potentially become. By focusing attention on proper land use in a limited land area and supplying residents with the means to get around and support local commerce, areas can aid in the growth and sustainability of a city or borough. Placement and regulation of parking in certain areas of a city or town is important in the guidelines of supply and demand (Hopkins, 2001).

Proximity to local facilities, jobs, and schools, and zoning regulations in and around residential developments are variables that affect a sustainable development and dictate how transportation strategies change. Kim, Mizuno, and Kobayashi state that 'more people are attracted to cities than to peripheral suburbs simply because of better accessibility' (Kim, Mizuno, Kobayashi, 2003). The need to accommodate residents and supply them with appropriate means of travel to sustain everyday life plays a key role in local transportation. Since many residents place a high priority on proximity, city planners must keep this in mind, along with efficient public transportation and zoning, when developing urban areas.

2.2.1 Role of Brent Planning Service

The Planning Service of Brent is responsible for planning matters within the Borough and complies with all planning regulations set forth by the Greater London Authority. The Planning Service strives to create a high quality, sustainable environment and protect the conditions in which people live and work. [They] also seek to pro-actively secure regeneration, combat social exclusion and improve the prosperity of the Borough' (http://www.brent.gov.uk/). In hopes of protecting the conditions for residents and maintaining a sustainable environment, the London Borough of Brent has policies and standards for housing, zoning, parking, transportation, and street-care.

2.2.2 Current Parking Policies in Brent

Parking policies and limitations are set in place to promote the use of public transportation and protect the environment against misuse of land. Currently the Borough allocates 50% less parking for social housing developments than for market

housing developments. The policy of allowing for 50% less parking in social housing schemes was introduced in July of 1998. At the same time, a lower parking standard was introduced which equates with the standard currently operated. This became a maximum rather than a minimum standard in June of 2003. The policies are based on the type of dwelling and the number of bedrooms in each unit. For example, 1 bedroom is allowed 1 space and 2 bedrooms are allowed 2.2 spaces for market housing, while for social housing these numbers are cut in half. There is no evidence that social housing uses 50% less parking and the policies set in place do not take into account the surroundings of the residential developments (UDP, 2004). In Brent, the Planning Service allocates parking based only on two variables, type of housing and number of bedrooms in each unit, without examining how other variables may aid in higher quality parking policies.

2.3 Proximity

Proximity to daily conveniences is important to social growth. Living in an area where food stores, shopping plazas, hospitals, schools, and professional buildings are within a reasonable distance not only adds to the growth of the economy but also takes into account the needs of residents and their quality of life. Hong Kong and Portland, Oregon treat parking as an alternative to transportation. These cities look into the proximity of the housing to daily conveniences and regulate parking accordingly in residential areas based on formulas that use proximity as a variable. In any city with a large population, it is the goal of the city to develop residential developments with proximity in mind. 'Planning should seek to reduce the environmental impact of transport, both at source and on the road. Equally important is the necessity to provide access to jobs, services, and facilities, a strong social network, and the means to communicate with others, as well as the means to get there and the necessary resources (Button & Hensher, 2001).

Parking policies in Brent do not currently take into account the proximity of residential developments to daily conveniences. Policies are based on dwelling size and social economics by allowing 50% less parking for social developments. It is important to look into where the development is in terms of services, jobs, schools, and hospitals when implementing a parking policy. By assessing how proximity to

public transportation may influence parking use in developments, the planning office may better allocate the number of parking spaces needed in the development.

2.4 Parking Management in Other Cities

Large cities such as Hong Kong and Portland, Oregon must deal with a growing population, limited land supply and parking demands. With a population of 6,787,000 in 1,101 square kilometres, the demand for land in Hong Kong is high and cannot be used to supply parking spaces for a growing number of cars (Megacities: Hong Kong, 2002). In Hong Kong parking issues were dealt with before they became uncontrollable. A long term policy on parking supply was considered. Supplying the city with too much parking would stimulate car ownership and acute shortage could potentially cause congestion. The answer was in monitoring the present parking and forecasting future parking in different areas to formulate appropriate policies (Wong, Tong, Lam, and Fung, 2000). Looking into such variables as efficient public transport, proximity and zoning, a city can make the necessary changes to parking policies and strategies to fit the sustainable needs of the city. In the model used by Hong Kong, 'it was assumed that there is a linear and additive demand function relating to land-use variables in a zone (such as jobs, schools, or households) with parking demand' (Wong et Al., 2000). The research team defined parking accumulation in the form of profiles of parking activity for a given land-use variable to assess current parking demands and make a formula to regulate future demands.

Portland, Oregon is a modern American city with a population of 529,121 in 134.4 square miles. The city implements policies in parking and transportation that do not take away from the character of the city but also maintain a sustainable environment for the residents. Parking policies are only a small part of the whole picture when it comes to sustainability in Portland. The mission of the Portland Office of Transportation states, 'Portland stands as a national leader in innovative transportation solutions. Planning and constructing solutions to meet the challenges of growth the region faces, while maintaining our economic viability and neighbourhood character, requires transportation to leverage its limited resources to meet the demands of a growing and evolving city. Stewardship of Portland's mobility and

liveability is our primary responsibility', (http://www.portlandonline.com/). The demands of a growing city include residential developments to accommodate the population size and appropriate parking policies for each development. In Portland the residential buildings are placed into categories based on number of dwellings in the development and population of inhabitants. The density in the area is regulated as well. The purpose of regulating density, which is defined as the number of dwellings per unit, is so that, 'housing can match the availability of public services and support commercial areas.' (Portland Planning and Zoning, 2003). Parking in residential developments is based on floor area, parking layout, proximity to transportation infrastructure, the cosmetics of the neighbourhood and a maximum number of allocated spaces. By limiting the number of spaces, the city hopes to 'promote efficient land use, enhance urban form, encourage alternative modes of transportation, provide better pedestrian movement, and protect air and water quality', (Portland Parking and Zoning, 2003). Limiting the density of residential developments and the number of parking spaces based on several variables give the city of Portland a means of accessing their parking policies for each development.

2.5 Public Transportation in Brent

The Borough of Brent has several transportation alternatives available to the public. The city provides a network of busses, underground metro systems, and surface trams. This infrastructure may affect the demand for parking in nearby housing developments. Efficiency of alternative transportation includes how accessible, reliable, and practical the transportation is in the area of the developments we studied.

In some cases public transportation can provide a cheaper, faster and easier means of travelling. However, if the infrastructure is lacking in efficiency, the residents may be less likely to utilise it. Bus, tram and metro routes may be present near the housing developments, but they may not be practical to use as everyday transportation. If the local infrastructure is not efficient, this may have an affect on the amount of parking recommended for a particular development.

2.5.1 Public Transportation Accessibility Level and Efficiency

In order to rate the efficiency of public transportation in areas of the city, London employs a system called the Public Transport Accessibly Level (PTAL). This proved to be important when assessing public transport because Brent will have already given the area a designated number on the scale of 1-6 (Interview with Ken Hullock). However, this information can only be useful if there have not been any significant changes to the transportation system from the time it was last assessed. Alternative transportation is only beneficial to the residents if they can get where they want to go in an appropriate fashion. It should be a practical means of getting around if the public is going to want to use it.

2.6 Zoning Regulations

Another important aspect of parking in Brent that will need to be examined includes local zoning laws. Zones are established to restrict the types of residents that can inhabit a particular dwelling. For example a young man is not allowed to move into housing for the elderly. These laws are important to consider because the Borough of Brent dictates the amount of parking necessary for different residential schemes based on their zoning designation.

Worcester, Massachusetts is the state's second largest city after Boston. Currently, its residential off-street parking zoning regulations are as follows:

Type of housing	**Number of parking spaces per unit**
1, 2 or 3 family dwelling	2.00
Dwelling unit	0.66
Multi-family dwelling	2.00
Group residence	0.25/ bed
Lodging house	0.50/ bed
Housing for Elderly	Subsidised 1.00/ dwelling unit
Dormitory	0.33/ bed

(Zoning Ordinances: City of Worcester, 1991.)

Figure 2: Parking Spaces per Unit of Housing Type in Worcester, MA

This is an example of how different housing schemes are required to have various amounts of parking per unit or dwelling. Because regulations such as these have been shown to dictate parking allocation based on the type of structure, zoning was considered as a variable for our parking suggestions.

The figures given above put a cap on the supply of parking allocated for each type of development. Various types of developments are given different parking provisions because certain types of people are shown to use private automobiles more than others. Local governments also consider circumstances regarding the residents' lifestyles. For instance, elderly residents may not be able to access public transportation as easily due to physical health or other medical concerns. Students in a dormitory often cannot afford their own car and are less likely to need a parking space. If carried out properly, planners may be able to accurately match the supply of parking with the amount of spaces needed.

2.7 Socioeconomic Status and Car Ownership

A survey completed in the United States as well as in Sweden by Leiwen, Prskawetz and O'Neill (2003) has shown that different household make-ups require different transportation needs. Households with lower income have a lower travel demand than households with average to higher income. In the United States, the private car continues to be the transportation of choice, with only 3% of Americans using public transportation. However, different socioeconomic groups utilise transportation in different manners. The lower the household income, the more likely persons are to make use of public transport and carpools. Additionally, this study supports the notion that income, age, sex, race, ethnicity and socioeconomic status have an impact on vehicle ownership, mobility, type of transportation used, distance travelled and purpose of the trip. These factors affect parking in a way that the population makeup of a certain area may determine the amount of parking required (Pucher & Renne, 2002). Based on the aforementioned studies, it is plausible that a lower income development, such as social housing, may require fewer parking spaces.

2.8 Need for Observation and Analysis of Parking

Based on the fact that there is no evidence to support the allocation of parking spaces in Brent, it is necessary to obtain empirical evidence by observing the parking in housing developments throughout the Borough. It is also beneficial to analyse these observations by determining how other variables such as the proximity of housing to public transportation and the socioeconomics within developments affect parking demand in residential schemes. Additionally, the level of car ownership in an area may influence parking use. The Planning Service cannot establish detailed policies by only taking into account the type of dwelling and number of bedrooms in each dwelling. Once the parking observations and proximity of housing to nearby public transportation are taken into account, recommendations can be made to the Brent Planning Service.

3 Methodology

The goal of this project was to assess the parking requirement policy in the London Borough of Brent by evaluating variables that may influence parking supply and demand. Due to the nature of our project goal, most of our data collection procedures were quantitative. Two main objectives were formulated to accomplish our task:

1) Research and study the number of occupied parking spaces in recent social and market housing developments for the London Borough of Brent.
2) Evaluate how some socioeconomic factors and proximity to public transportation affects the demand for parking.

Prior to data collection these objectives were researched in full. Brent Council's Unitary Development Plan and parking policies were also referenced, and it became apparent that several variables may influence car ownership in an area and the amount of parking needed. Socioeconomic status, proximity to local public transport, and type of housing were variables that were believed to affect car ownership and parking. Several questions were raised about how these variables may influence the number of cars in an area:

- Is the parking occupancy level of a development dependent on the type of housing in the development (social, market, or mixed)?
- How do level of education, annual income, and employment status of a development's residents affect the parking occupancy level?
- Are the Public Transportation Accessibility Level (PTAL) and proximity to local tube and train stops factors in car ownership and parking occupancy levels?

This project focused on parking regulations and parking usage in social and market housing developments located within Brent. We used ArcView, a Geographic Information System (GIS) software programme, to identify relationships between layers we created using our project data and census data. Field studies and data

collection were conducted during evening hours, 18:00 – 20:00, in hopes that most residents of a development would be home and their parking space would be occupied. (Hullock, interview).

Data analysis and interpretation were performed concurrently with the conclusion of the field studies. A temporal listing of our tasks that were completed is summarised in the Gantt chart located in Appendix A.

3.1 Study Parking in Housing Developments

This section of our study is organised into three parts that most effectively describe our approach to obtaining data. It is subdivided into sections that include our preliminary research and the core observations that enabled us to accomplish the objectives we decided on at the beginning of our project.

3.1.1 Study Area

Observation sites were selected from the Borough using a list from Brent's database. This list contained both market and social housing developments that had been completed since the year 1998, many of which were built and occupied after the Census taken in 2001. Some of these developments were mixed, containing both social and market units, while others were solely social or market. The developments were located throughout Brent as shown in Figure 3.

3.1.2 Field Studies for Parking Usage

Developments were observed during evening hours. At the time of data collection, the total number of parking spaces was recorded, along with the number of spaces occupied by cars. Other parking, which we referred to as 'on-street' parking, was noted as well. This type included double parking, parking in unallocated areas, and parking on nearby streets. Any other factors that might influence the parking in the area were also documented.

We organised the field study data in an Excel worksheet. Development name, time of observation, available spaces, occupied spaces, percent filled, and cars parked on-street were recorded along with general comments about the development. An example of the worksheet is shown in Figure 4.

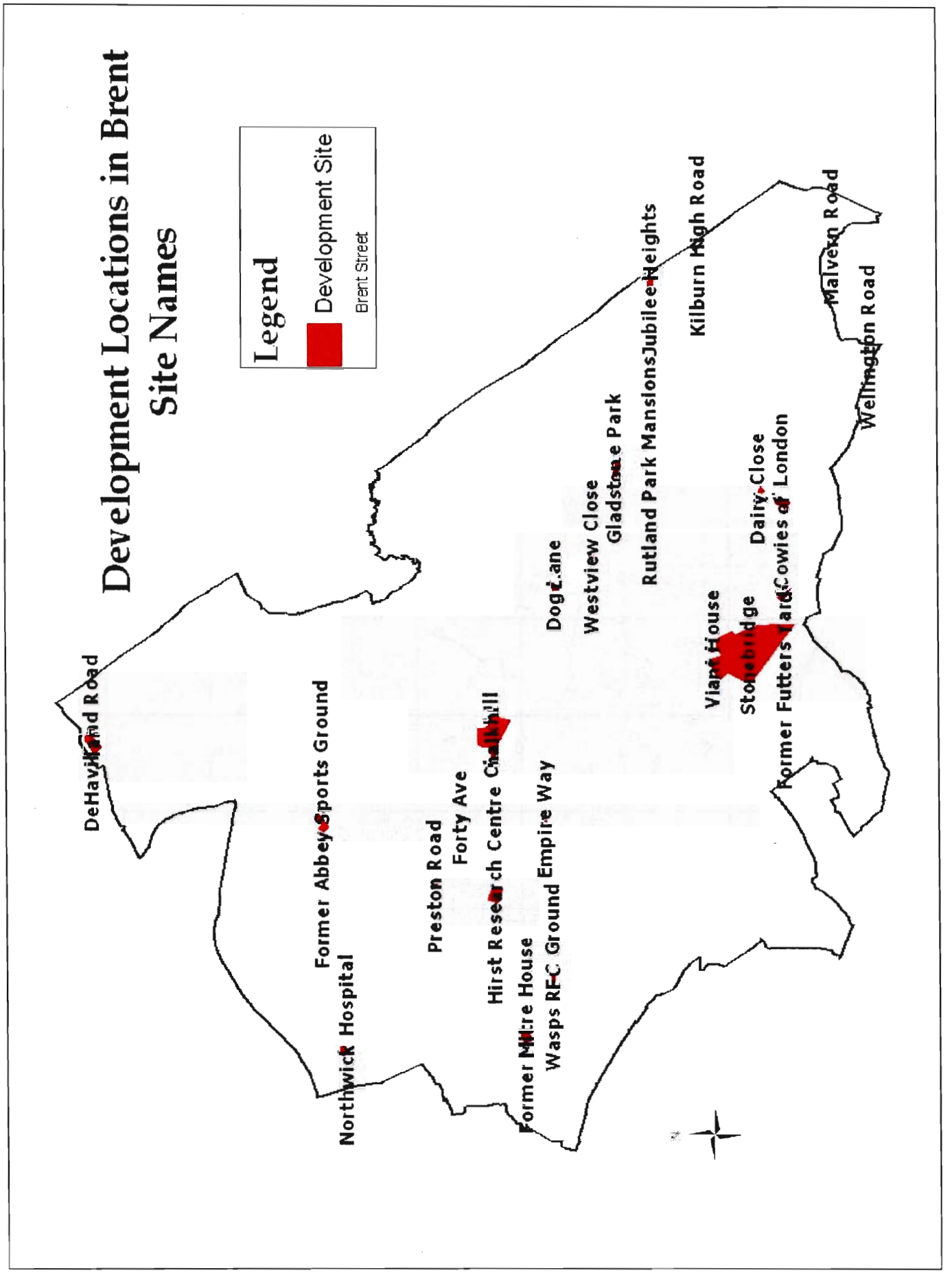


Figure 3: Development Names and Locations in Brent

Number	Development	Weekday	Date	Time	Total Spaces	Spaces Filled	% Filled	On-street
982471	Cowies of London (Cardinal Hinsley Close)	Thurs	25/3/04	19:05	43	28	65.1	4
961854	Land at North-Eastern end of De Havilland Road,	Wed	24/3/04	18:15	73	31	42.5	24
991347	Gladstone School	Thurs	25/3/04	18:45	28	15	53.6	2

Figure 4: Field Study Data Records Example

3.1.3 Survey Housing Development Residents

Mr. Hullock suggested that it would be valuable to obtain the opinions of various residents of the housing developments where we conducted field studies. It is a requirement for local planning authorities such as Brent to consider the views of the residents when deciding on a policy change. We chose to obtain this information through oral surveys given by our group to residents on a door-by-door basis. In order to maintain a fair representation of residents surveyed, at least 5% of residents from each development were interviewed.

We designed our questions as open-ended as possible and avoided leading or biased questions. The issues covered in our surveys include; parking accessibility, parking supply, car ownership, car usage and public transportation usage. Our survey contained questions that could be answered by all residents, whether they owned a car or not. This assured that our survey could be universally applied to all residents in the developments studied.

The information we obtained from the surveys provided a different type data than what was collected in field studies. We used survey findings as a supplement to our field study figures, but not as a hard statistical component of our project. Mr. Hullock expressed that survey information was necessary in order to get a general idea of the parking conditions in recently created housing developments.

3.2 Geographic Information Systems

Geographic Information Systems, or GIS, combines layers of information about a location to provide a better understanding of that location. These layers are created from data that is relevant to the purpose of the GIS project and then overlaid on a relevant map. Several GIS programmes are available. We used a programme called ArcView because it is the standard software at the Brent Council. We also used SASPAC, which is designed to organize and easily integrate census data with GIS to create layers. A layer containing development site locations and occupancy figures was created using a polygon drawing tool in ArcView.

With the assistance of Brent Council's GIS team, we were able to create and combine GIS layers and use programme features to assess and analyse them. Census data from 2001 was integrated into ArcView using SASPAC to create the socioeconomic layers. We created the public transport layers using data previously integrated by Brent's GIS team. The development site and occupancy level layers were produced using our own data.

3.2.1 Development Sites and Occupancy Levels

Development site locations were mapped on a GIS layer. After all the locations were identified, occupancy figures, site names, and ID numbers were associated with each development. This provided options for labelling the development sites on the map layer. This layer was used later as an overlay to other created layers when spotting observational correlations.

3.2.2 Public Transport Layers

Two GIS layers were created to study public transport in Brent. A Public Transportation Accessibility Level (PTAL) layer and a layer containing the location of rail lines along with tube and train stations were generated. These layers were then used to examine the level of public transport in the area, observe any visual associations between public transport and parking occupancy levels, as well as compute the distance from development sites to local public transport.

A GIS distance tool was used to measure the distance from each development to the nearest tube or rail station. These distances were determined by totalling the shortest route by way of streets and roads, indicating how far a person would have to walk to the station. This data was entered into an Excel spreadsheet and a scatter plot graph was created to identify any possible correlations between occupancy figures and distance to the station. The distances recorded into Excel were made available to the Brent Council for future use or study.

3.2.3 Socioeconomic and Census Data Layers

Three socioeconomic layers were created: Median Yearly Income, Unemployment, and Education Level. These data in these layers is divided by output areas, or areas of approximately 144 households. The different levels of each factor were displayed using a colour gradient, so that lighter colours signify less income, unemployment, and education. These layers were then examined and overlaid with the occupancy level layer for developments. This was done to check for any possible correlations between socioeconomic factors and occupancy levels.

The two census data layers included layers of car ownership and the percentage of residents in each output area at or above driving age. As before, these layers were created with a colour gradient, and occupancy levels were overlaid to identify any association with the layer.

4 Data Results

Our data was collected over the course of five weeks and included development site research, development site visits, and census data compilation. Our data collection was designed to examine the research questions and project objectives with a goal of providing a detailed analysis of current parking policies in Brent.

4.1 Residential Schemes

Figure 5: Wasps RFC Ground

A list of residential schemes containing market, social and mixed developments was obtained for initial data collection. An example of a housing development is shown above in Figure 5. The list contained developments that have been completed within the last six years. Details such as the date the report was submitted, the former address of the development (the site), the number of social (affordable) and market housing to be built, existing units, proposed units, and the completion date were shown for each development. The information contained in the list was then used to cross reference the committee reports filed by the developers and approved by the Brent Council. Additionally, this list was used to create a schedule based on development location for visiting the sites for field studies. An example of this

schedule is shown in Figure 6 and the complete schedule can be found in Appendix C, while housing report details can be found in Appendix B.

qry	dckey	asatdate	Afford. housing proposed	Total units Proposed	locaddress
1	001077	08/01/2002		44	Mitre Public House, 152 Watford Road, Wembley, HA0 3HF
	001242	02/10/2002	40	113	Wasps R F C Ground, Repton Avenue, Wembley, HA0 3DW
2a	961854	18/03/2000	73	74	Land at North-Eastern end of De Havilland Road, Edgware, Middlesex
2b	970584	24/08/1998		(4) 21	128-134 Preston Road, Wembley HA9
	011473	29/01/2003	155	344	SITE OF HIRST RESEARCH CENTRE, 50 East Lane, Wembley, HA9

Figure 6: Field Study Schedule Example

4.1.1 Schemes Prior to 1998 and Post 1998

Brent residential parking policies were modified in July 1998. The modification reduced number of parking spaces that developers had to provide and allowed a 50% reduction in parking for social housing. The table below shows the percent occupancy for housing prior to 1998 and after 1998, when the parking policy was modified. The housing is broken down into market, social and mixed housing. The information in Figure 7 was obtained from the residential schemes list. The housing was grouped according to the type of housing and the decision date, the date the proposal was approved. Percent occupancy for car parks was then calculated for the break down.

Type of Housing with Decision Date	Percent Occupancy Decision Date Before 1998	Percent Occupancy Decision Date 1998 and After
Market	50	44.7
Social	59.1	57.6
Mixed	57.7	0

Figure 7: Occupancy Percentages for Housing Type and Decision Date

4.2 Committee Reports

Brent Council Planning Service produces a report for each major development which is considered and determined by the Planning Committee. The report outlines the planning issues that arise from the proposal and includes details of the type of housing, the number of bedroom units, the number of parking spaces, and the

placement of units, parking, and landscaping. These reports were gathered for most of the developments studied, read through, and summarised into data pages containing the type of housing, number of units broken down into number of bedrooms per unit, and car park information. An example of a committee report can be found in Appendix K, and a site summary can be found in Appendix L.

4.3 Parking Occupancy Levels

Car park occupancy levels for each development are the most significant data collected. Cars parked in unallocated areas, such as by sidewalks and double parked cars, were recorded. Occupancy figures, or the percentage of filled spaces, are later used to compare parking use for a given development with socioeconomic census data, PTAL, and proximity to tube and train stops. Figure 8 contains data obtained from committee reports and occupancy figures. Development names and the type of housing in the development were obtained from the committee reports. Occupancy data was collected from field studies.

Development	Market	Social	Mixed	Sheltered	Total Spaces	Filled Spaces	Percent Occupancy
Former Mitre House				☑	14	5	35.7
Empire Way (Lonsdale House	☑				24	12	50.0
Telephone House, Shoot Up Hill (Now known as Jubilee Heights)	☑				89	41	46.1
128-134 Preston Road	☑				25	10	40.0
Forty Ave (Century Hotel)			☑		51	28	54.9
Wasps RFC Ground			☑		134	77	57.5
Malvern Road			☑		11	8	72.7
Dairy Close		☑			39	34	87.2
Cowies of London (Cardinal Hinsley Close)		☑			43	28	65.1
Land at North-Eastern end of De Havilland Road,		☑			73	31	42.5
Gladstone School		☑			28	15	53.6
Rutland Park Mansions		☑			37	29	78.4
Dog Lane		☑			40	20	50.0
Land Between 20-23 Westview Close		☑			28	15	53.6
Chalkhill Redevelopment		☑			100	43	43
Northwick Hospital		☑			83	51	61.4
Former Abbey National Sports Ground		☑			92	43	46.7
Stonebridge Estate		☑			454	284	63

Figure 8: Developments and Corresponding Occupancy Figures

4.4 Resident Surveys

Information gathered from resident surveys was organised by development site. A total of 84 surveys were conducted at sixteen different developments. A blank survey form that was filled out during resident surveys is shown in Figure 9. Although fewer than 10% of residents in developments studied were surveyed, the questions provide an insight to residents' opinions and concerns regarding parking that cannot be obtained through occupancy figures alone. The questions asked explored the adequacy of parking, the ease of parking, car-ownership, and a rating of local public transportation on a scale of 1 to 10, where 1 is poor and 10 is excellent. Additional questions identified individual residents' situations so that survey data could be analysed for all developments as a whole, as well as on a development by development basis. Figure 10 shows the integration of development site occupancy levels and resident survey data. The total numbers of spaces for all housing of a specific type were summed, and then the percentage total filled spaces for that housing type was calculated. By calculating the average using this manner, a development containing over 100 spaces had more influence on the mean than a development containing less than 20 spaces. Additionally, the last two columns in Figure 10 indicates the total number of residents surveyed who consider there to be adequate, or not adequate, parking in their residence.

Development: _____ Date: ___ / ___ / ___ Time: ___ : ____

Address:		
Does your household own a car?		
If YES	How many cars?	
	How often do you use it/them?	
	What do you use it/them for?	
	How easy is it for you to find parking at home?	
If NO	Do you want to own a car?	
	Why or why not?	
	How do you get around?	
How would you rate public transportation in this area on a scale from 1 to 10?		
Do you think there is adequate parking available for your housing?		

Figure 9: Blank Resident Survey Form

Colour Legend	
Development Type	**Corresponding Colour**
Sheltered	
Market	
Mixed	
Social	

Development	Total Spaces	Filled Spaces	% Occupancy	% Occupancy for Type of Housing	Adequate parking for type of housing?	
Former Mitre House	14	5	35.7	35.7	*yes*	*no*
Empire Way (Lonsdale House	24	12	50.0	48.0	100	0
Telephone House, Shoot Up Hill (Now known as Jubilee Heights)	89	41	46.1			
128-134 Preston Road	25	10	40.0			
Forty Ave (Century Hotel)	51	28	54.9	57.0	73	27
Wasps RFC Ground	134	77	57.5			
Malvern Road	11	8	72.7			
Dairy Close	39	34	87.2	47.0	65	35
Cowies of London (Cardinal Hinsley Close)	43	28	65.1			
Land at North-Eastern end of De Havilland Road,	73	31	42.5			
Gladstone School	28	15	53.6			
Rutland Park Mansions	37	29	78.4			
Dog Lane	40	20	50.0			
Land Between 20-23 Westview Close	28	15	53.6			
Chalkhill Redevelopment	100	43	43			
Northwick Hospital	83	51	61.4			
Former Abbey National Sports Ground	92	43	46.7			
Stonebridge Estate	454	284	63			

Figure 10: Occupancy Figures and Survey Data

4.4.1 Survey Data: Adequacy of Parking

Occupancy figures for parking in a development only paint part of the picture when it comes to parking. The survey was designed to gain an understanding of resident parking situations. Residents were questioned about their household car-ownership and the ease of finding a parking space in their development. All participants in the survey were questioned about the adequacy of parking for the development as a whole. Each survey was placed in a spreadsheet and a table was produced containing the information from each survey with regard to the questions of ease and adequacy of parking. The information gathered from the surveys was placed in the table to examine opinions about parking for market, social, and mixed developments, for all developments together, for those who did and did not own a car, and for each development separately to identify possible correlations. This table is shown as Figure 11.

Development	Yes, own a car (# of owners)	# of cars	Adequate Parking for development		No, don't own a car	Adequate parking % for each develop-ment		Adequate parking for type of housing?	
			yes	*no*		*yes*	*no*	*yes*	*no*
128-134 Preston Road	2	2	2	0	0	100	0	100	0
Forty Ave (Century Hotel)	3	4	3	0	0	100	0	73	27
Wasps RFC Ground	7	14	7	1	1	87.5	12.5		
Malvern Road	1	1	1	3	3	25	75		
Dairy Close	2	3	3	0	1	100	0	65	35
Cowies of London (Cardinal Hinsley Close)	3	5	3	0	0	100	0		
Land at North-Eastern end of De Havilland Road,	2	3	3	2	3	60	40		
Gladstone School	4	4	3	1	0	75	25		
Dog Lane	2	2	2	1	1	67	33		
Land Between 20-23 Westview Close	2	2	3	0	1	100	0		
Chalkhill Redevelopment	11	14	12	2	3	86	14		
Northwick Hospital	3	6	3	1	1	75	25		
Former Abbey National Sports Ground	2	4	2	2	2	50	50		
Stonebridge Estate	15	22	8	14	8	36	64		

Figure 11: Adequacy of Parking Based on Questionnaire Surveys

4.5 Geographic Information Systems

GIS has proven to be a key tool in presenting development occupancy figures relative to the other variables in our study. Layers were created on a map of Brent indicating the location and size of the developments studied. The 2001 census data was presented in colours to specify characteristics of output areas in the Borough. The layers were made to assist in answering the questions posed in the beginning of our research. Occupancy rates were also labelled with the development location on the map so these rates could be examined on a large-scale level. These layers, along with

tube stops and rail lines, were overlapped to identify any possible correlations with development location and occupancy rates.

4.5.1 Development Site Location Layer

The locations of all the development sites studied was displayed on a GIS layer as shown previously in Figure 3. The development sites are shown as red polygons, and the streets of Brent are outlined in grey. The developments are distributed throughout the Borough.

4.5.2 Tube Station and Rail Layer

Rails that run through Brent, along with locations of tube stops were arranged on a layer. Tube stations are yellow and rail lines are indicated by green. The Jubilee, Bakerloo, Metropolitan, and Piccadilly underground lines along with Chiltern Railways and the Silverlink run through Brent, providing the Borough with nearly 30 stops. The rail lines are mostly located in the middle to lower sections of Brent, with few lines and stops in the northern section. See Figure 12 for this layer.

4.5.3 Median Yearly Income

The average household income for each output area was associated into a GIS layer. The lightest pink corresponds to a lowest median income of £10,000-14,000 per year, with the darkest pink indicating an average income of £30,000-40,000 per year. See Figure 13 for this layer. All layers are similar in that the data is divided by output areas, and all maps display the data with a colour scale.

4.5.4 Education Layer

Education is a type of socioeconomic data that was compared to our occupancy rate findings for possible correlations. Our research suggested that education may have a bearing on the rate of car-ownership and, therefore, the demand for parking in a given development. The existing 2001 census data was used to create this layer. A layer containing the developments was placed over the education layer to look for possible correlations in level of education and the occupancy rates for any

given development. The lighter green corresponds to output areas with more educated residents, while the darker green indicates output areas with fewer educated residents. These levels of education were based on 2001 census data. See Figure 14 for this layer.

4.5.5 Unemployment Layer

Prior research found that unemployment in an area may be a factor in car-ownership, and therefore parking. A layer for unemployment was created using 2001 census output data. The lighter blue indicates an output area with lower levels of unemployment. Likewise, the darker blue corresponds to more unemployment in that area. These levels are then compared to location of developments to identify any possible correlations. See Figure 15 for this layer.

4.5.6 Driving Age Layer

The percentage of residents in each output area at or over the driving age of 17 was created using census data. The lighter green areas represent a population of 53-68% over 17. Similarly, the darker shades of green correspond to increasing population over the age of 17 as indicated in the map legend. The darkest green corresponds to a population that is 85-96% over the age of 17. See Figure 16 for this layer.

4.5.7 Car Ownership Layer

When the development site layer is overlaid on the car ownership layer, no observational correlations are detected. As with previous layers, the percentage of residents owning at least one car does not appear to impact the occupancy levels of nearby car parks. See Figure 17 for this layer.

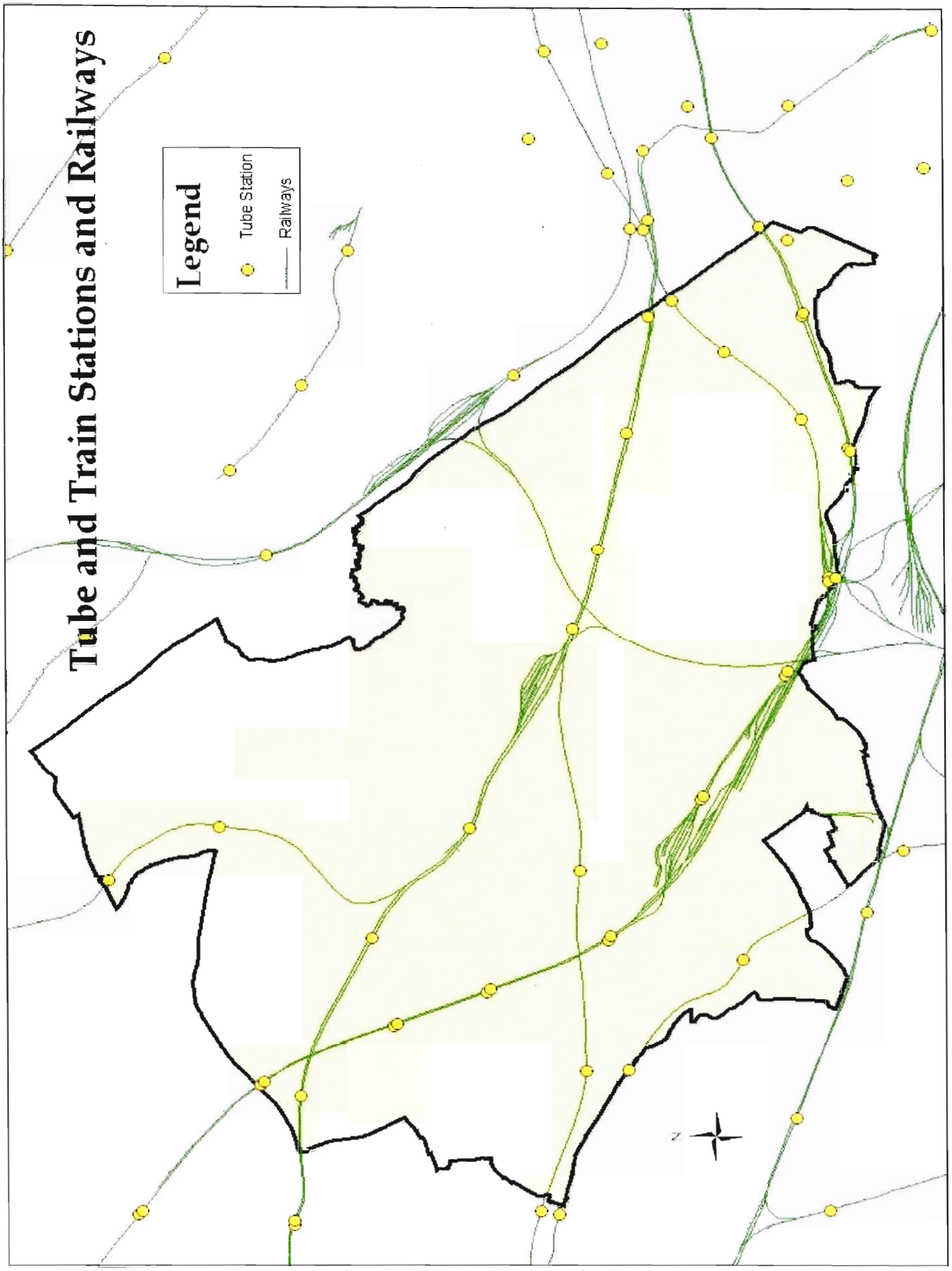


Figure 12: Tube and Train Stations and Railways

Figure 13: Median Yearly Income

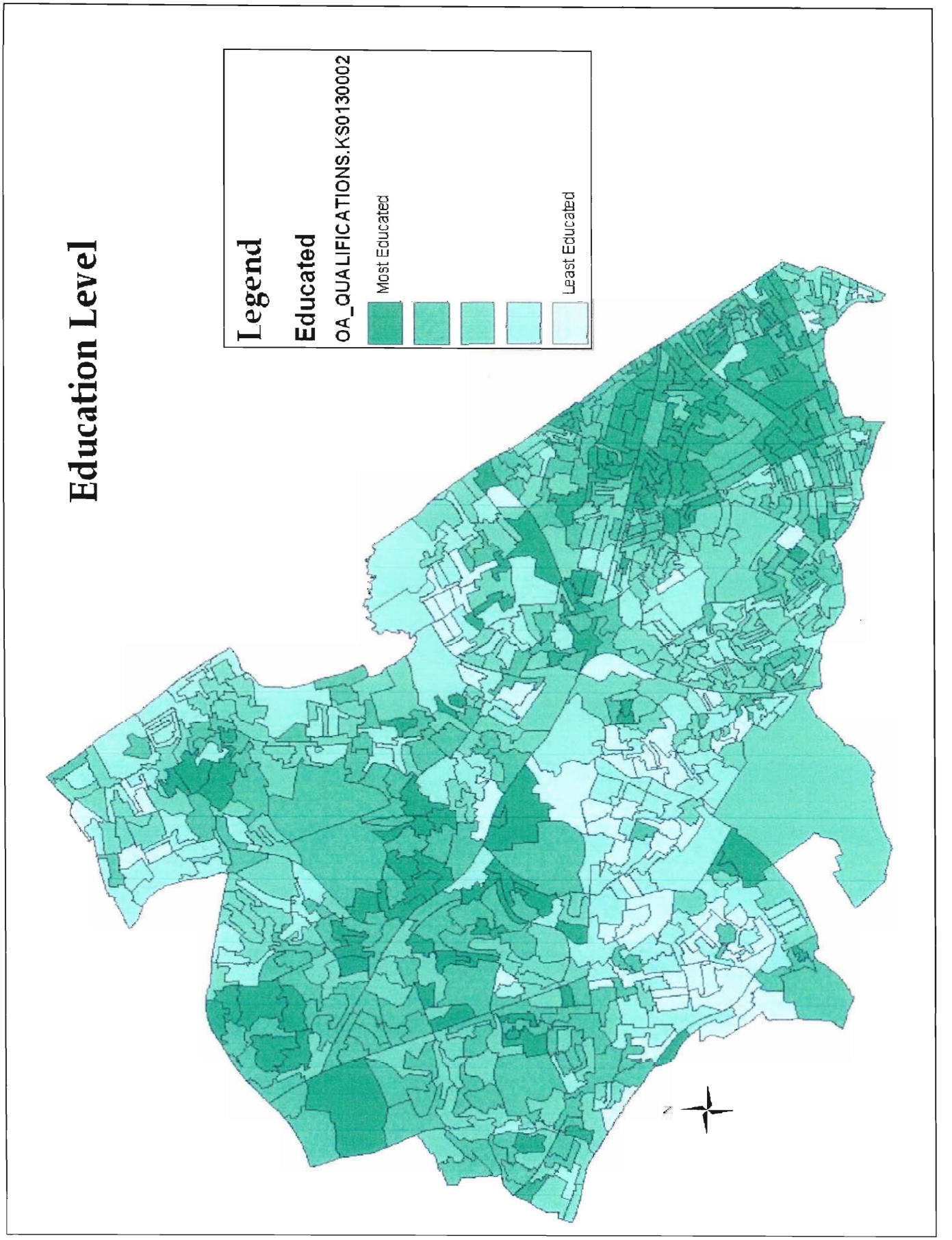


Figure 14: Education Level

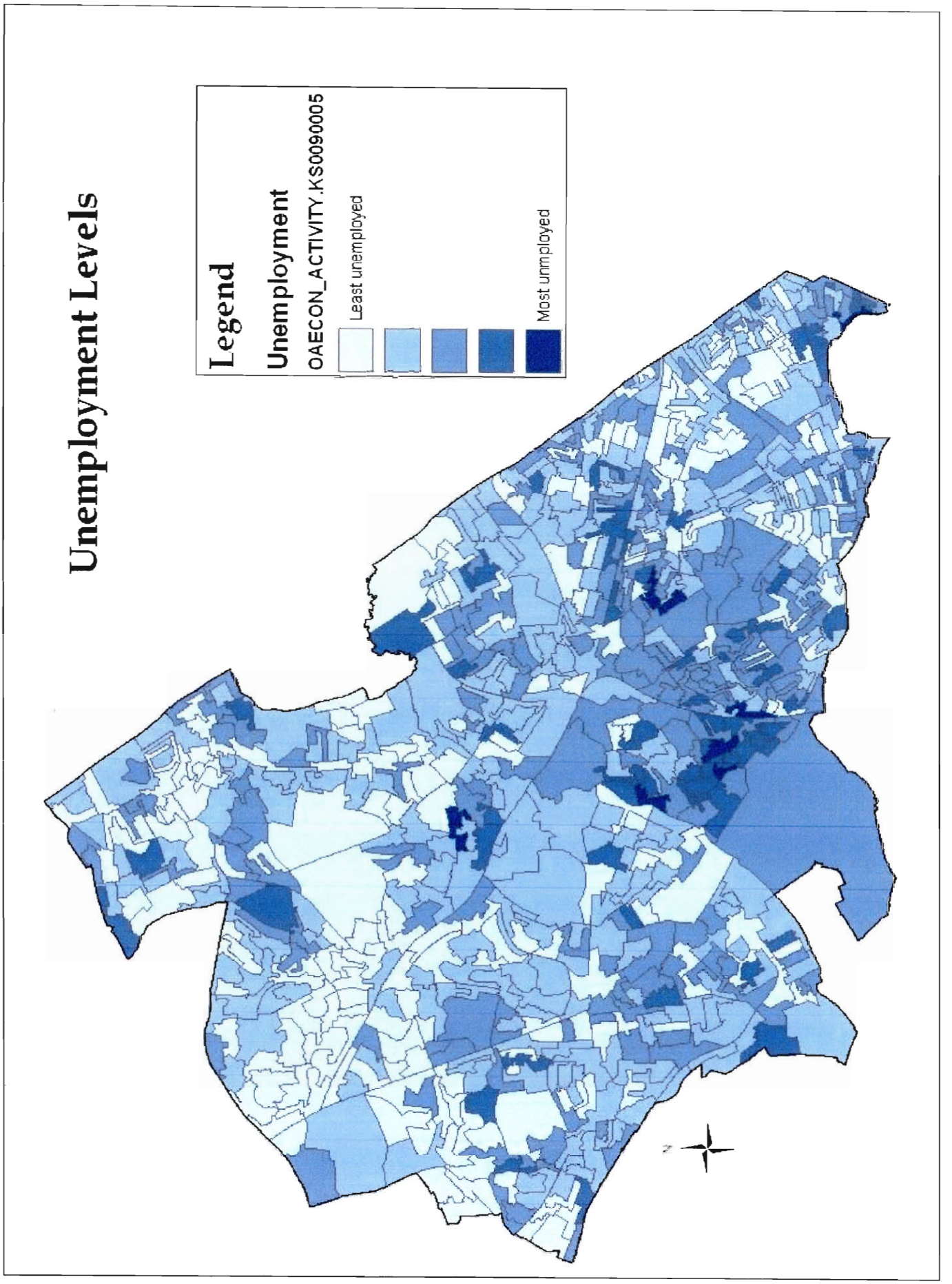


Figure 15: Unemployment Levels

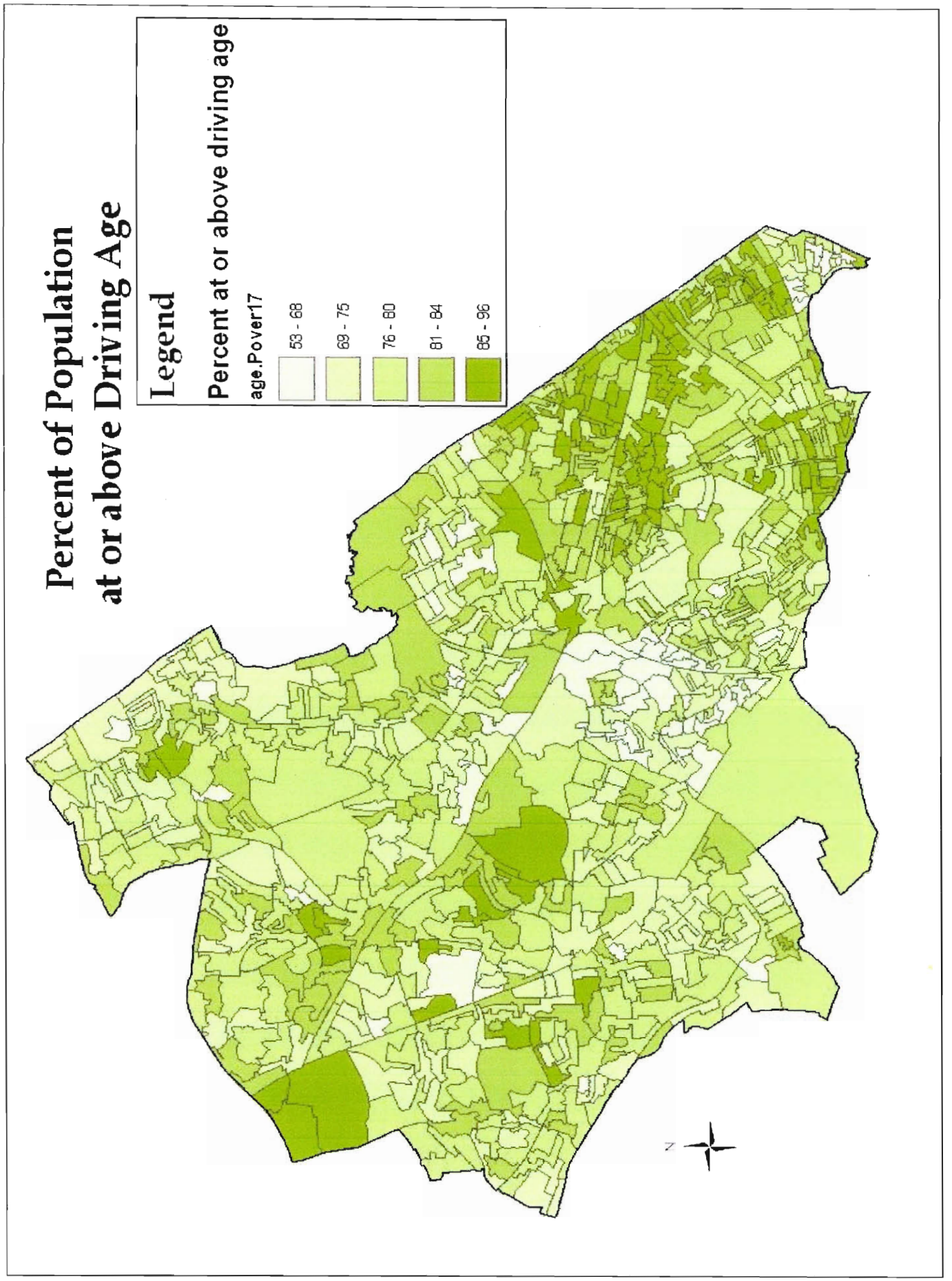


Figure 16: Percent of Population at or above Driving Age

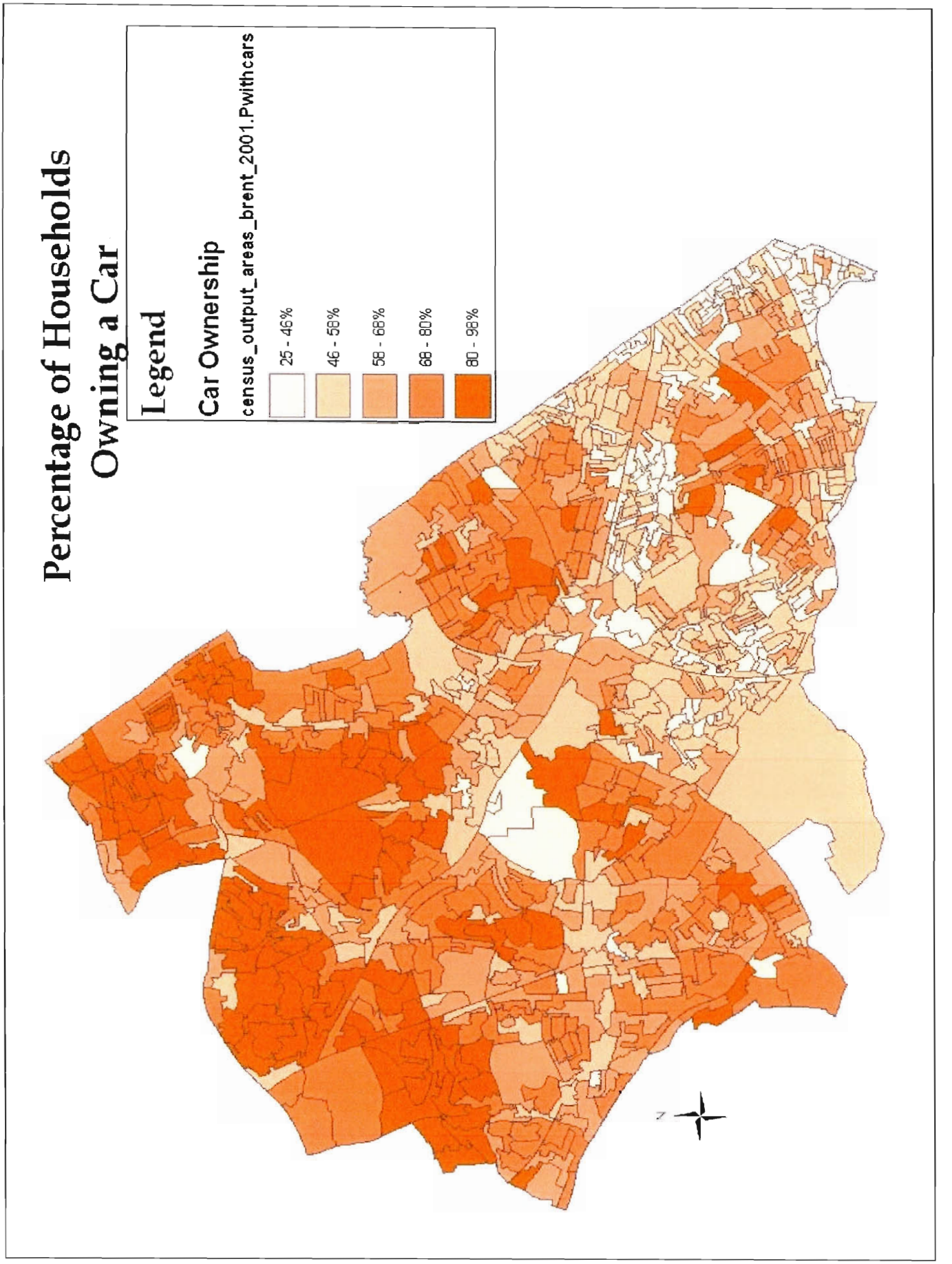


Figure 17: Percentage of Households Owning a Car

5 Analysis of Results

5.1 Unallocated Parking Breakdown

The figures in our observational studies showed a strong tendency of unallocated on-street parking. This was considered to be when a car was parked in or near a development, but it was not contained within an actual parking space. We did not find any cars parked in unallocated areas in exclusively market developments. Wasps RFC Ground was the only development in the mixed housing category where residents parked outside of allocated areas. Ten out of the twelve social developments had cars that were parked on-street.

By analysing these figures (shown in Appendix E) it is easy to see why this tendency exists. In market housing, parking is allocated on a more personal basis. Most residents have their space located in a gated driveway in front of their house. In most cases, residents in social developments park in car parks intended for use by the entire development. They do not generally have a space reserved solely for their own use, so they are pressed to fend for themselves. Many times the car park is not located in the immediate vicinity of their dwelling, and they instead park in front of their residence. It is more common for this to occur in developments where there is no enforcement which would discourage people from parking in unallocated areas.

Parking policies in the UDP limit the amount of parking allowed in different types of developments. Residents do not usually take this into consideration when moving into a new housing unit. This creates a situation where people move into a development with more cars than the development can accommodate. For social dwellings with two or three bedrooms, the UDP permits less than one space per dwelling. This problem is offset in almost all cases by those residents who do not own a car.

5.2 Survey Results

The survey question that addressed car owners' ease of parking yielded results that agreed with our occupancy percentages. Over 75% of all car owners surveyed said that it was easy to find parking at their development. All of the market housing residents said that it was easy to find parking at their development and said that they were allocated a space directly in front of their house. 100% of those surveyed in

mixed housing also said that it was not difficult to park their car where they live. Thirty-two out of forty-six people in social housing said that finding a space was not a problem at their development. We can draw from these results that parking is adequate from the car owners' perspective, and that the current standards are not too low.

5.3 Influence of Distance to Tube and Train Stops

The distance tool in GIS allowed us to determine how far a resident in a particular development would have to walk to get to nearby tube and train stops. The layers used to compare location of the development and tube stops and railways are shown as Figure 19. The tool did this by tracing the most popular and convenient road and calculating the distance along that road.

Eight developments were within 500 meters of a tube station, but no developments had two stops within 500 meters. There were a total of five cars parked in unallocated on-street areas amongst those developments. An average of 57% of the parking spaces in these developments were filled. Six developments were 500-1000 meters away from the closest tube stop. 125 cars were parked on-street in these developments and an average of 53% of the spaces were occupied at the time of our observations. Two developments are outside of a kilometre from any tube or train stop. Cars occupied 67% of the spaces in the car parks in these developments, and 38 cars were parked in unallocated areas. Although there appears to be an increase of parking occupancy when looking at the average for developments over a kilometre away from public transport, the individual developments in this category have largely varying occupancy levels. This suggests that there is no relationship between proximity to public transport and occupancy levels. Additionally, viewing a map of the PTAL levels for the Borough proves that the PTAL level for a particular area does not influence parking occupancy rates. See Figure 20 for this map and Appendix S for actual PTAL levels compared to the residents' perception of public transportation

When distance to public transport is plotted with percent occupancy for each development, it is clear that no relationship exists between the two. The scattered points in Figure 19 further indicate that there is no correlation between these two factors.

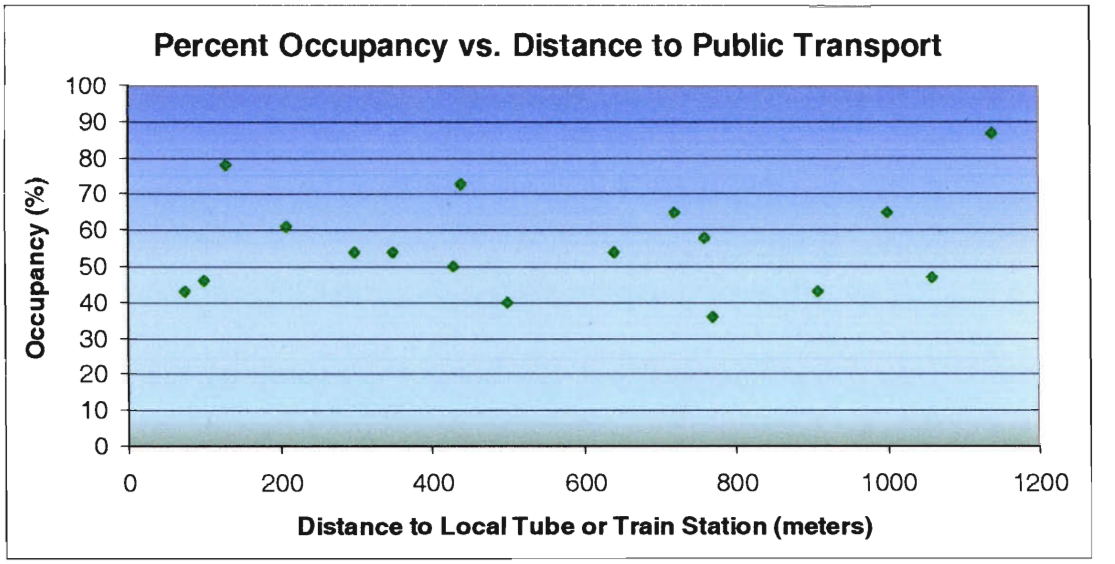


Figure 18: Percent Occupancy vs. Distance to Public Transport

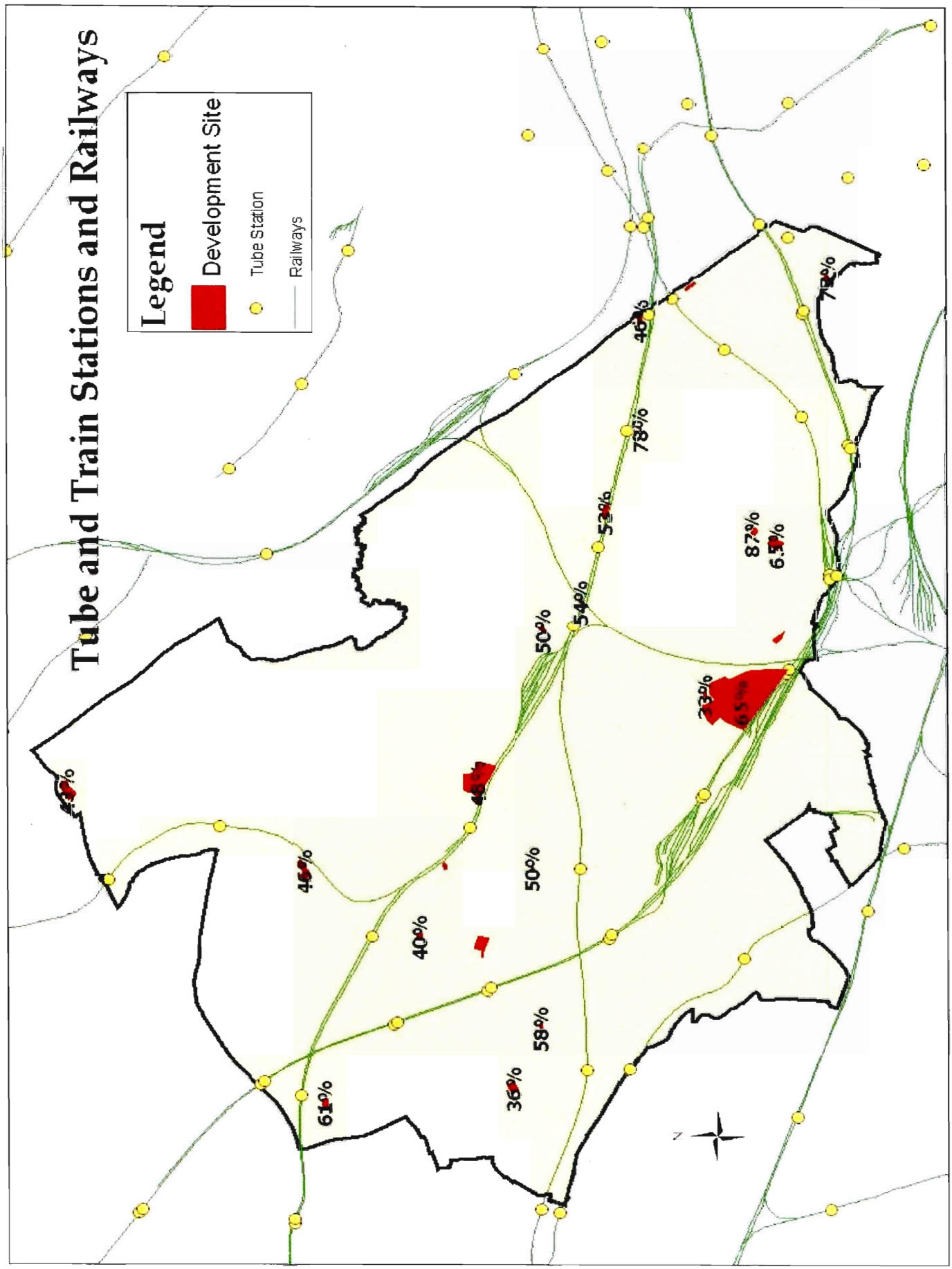


Figure 19: Tube and Train Stations and Railways and Development Sites with Occupancy Figures

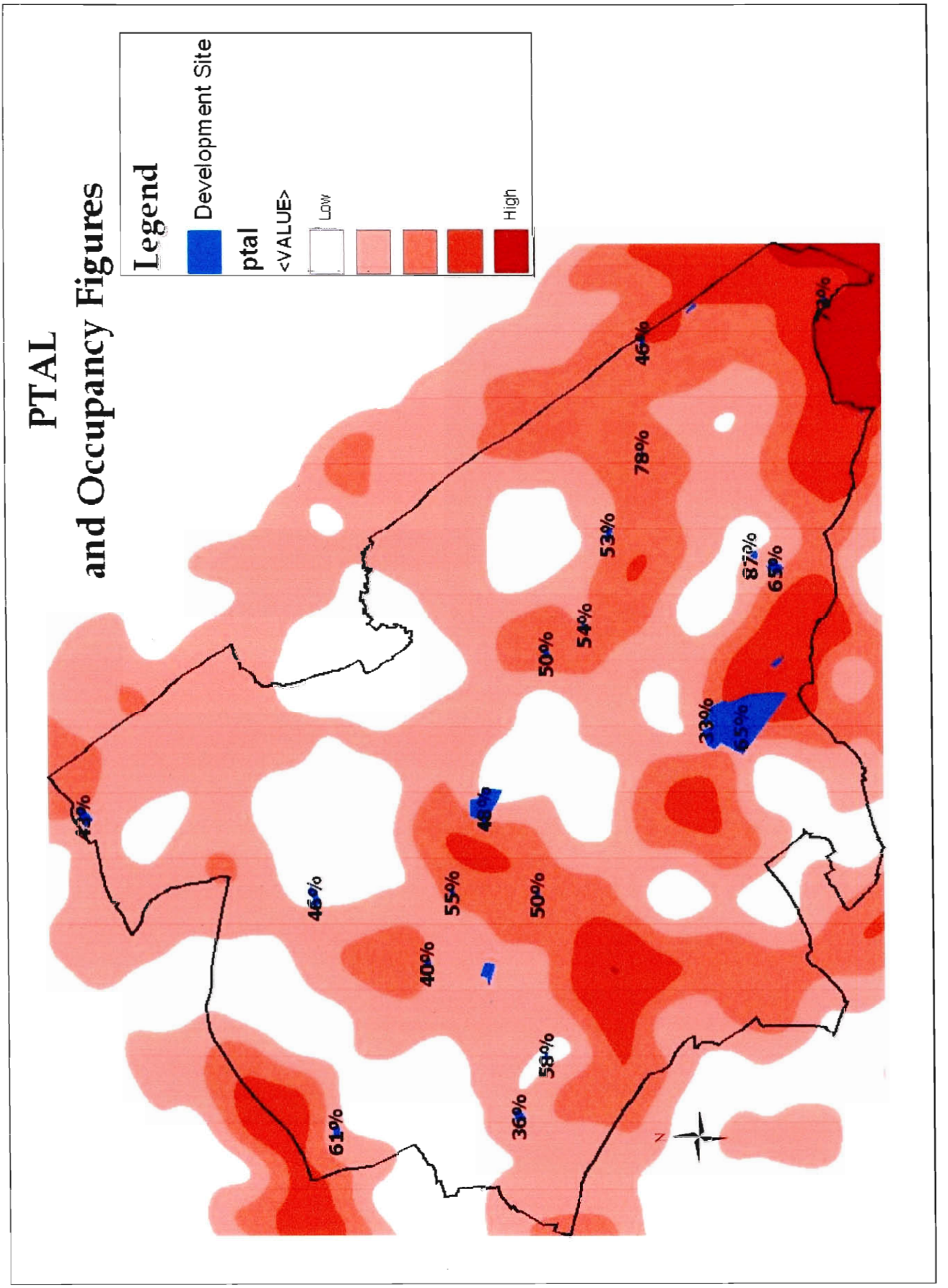


Figure 20: PTAL and Occupancy Figures

5.4 Socioeconomic Factors

GIS map layers did not suggest any correlation between occupancy rates and socioeconomic factors. In all cases, the development sites with occupancy figures were overlaid on the layer containing the GIS data and then examined for possible associations. All GIS maps in this section contain the layer created with socioeconomic and census data overlaid with the development sites and occupancy figures layer.

5.4.1 Yearly Median Income Map

As with unemployment and education, the median yearly income is higher in the north-western and south-eastern regions of Brent. This is fitting because the more educated a person is, the easier it is to find employment and the higher his or her income will be for the year. However, like unemployment and education, there is no correlation between income of a region of the Borough and the occupancy figures for developments located in that region. See Figure 22 for this map.

When the relative level of median yearly income is plotted on a scale of 1-5 against the occupancy rate for the same development, it is clear that there is no correlation between the two. See Figure 21 for this graph.

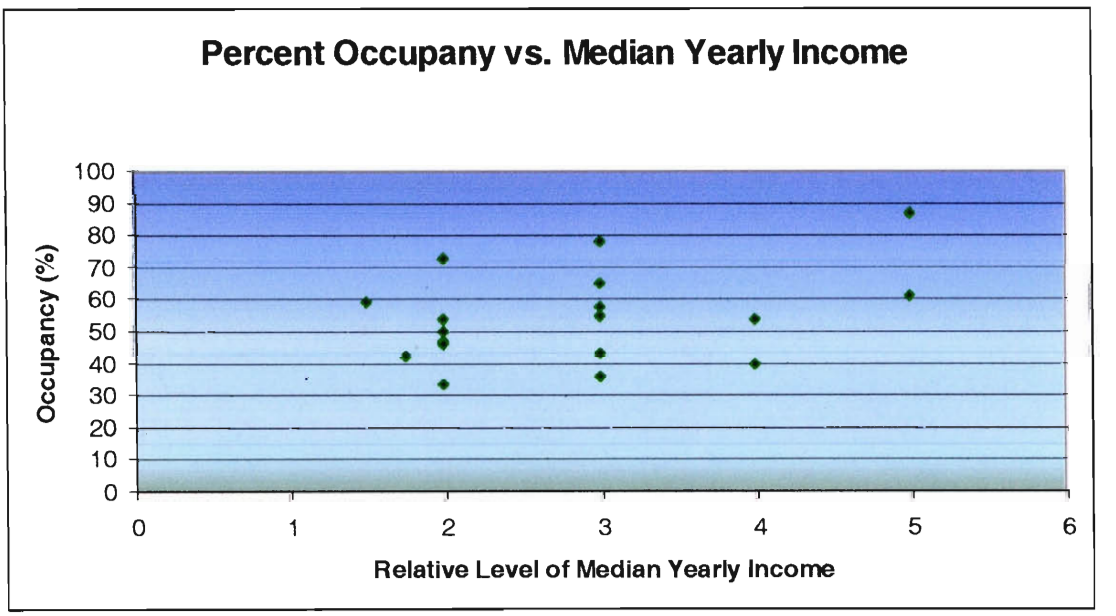


Figure 21: Percent Occupancy vs. Median Yearly Income Graph

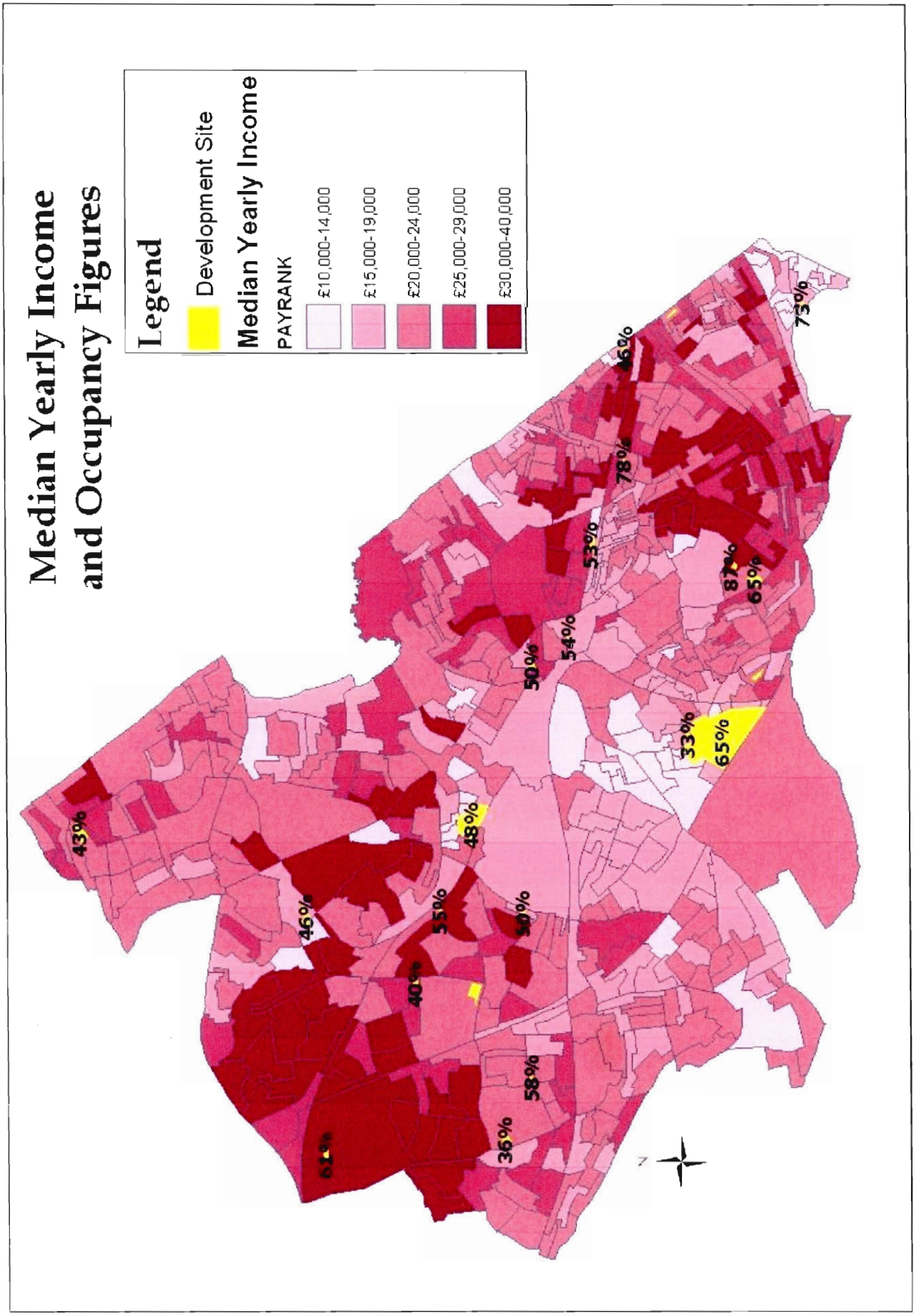


Figure 22: Median Yearly Income and Development Sites with Occupancy Figures

5.4.2 Education Map

When comparing the unemployment and education layers, the correlation between unemployment and education is clear; the less educated an output area is, the higher the unemployment level in that output area. However, similar to unemployment levels, there appears to be no relationship between education level and occupancy level of the car parks. Both Stonebridge and Northwick Park have occupancy levels of 65% and 61%, respectively; however, Stonebridge is in an area of the Borough where residents are generally educated, while the residents in the area surrounding Northwick Park are mostly uneducated. See Figure 24 for this map.

When the relative level of education is plotted on a scale of 1-5 against the occupancy rate for the same development, it is clear that there is no correlation between the two. See Figure 23 for this graph.

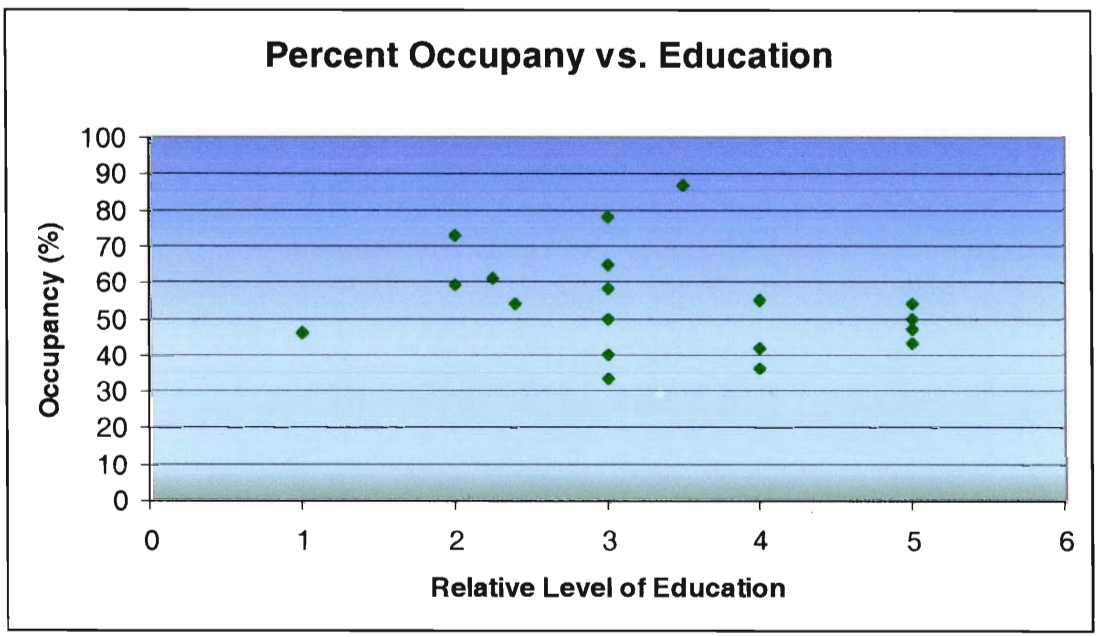


Figure 23: Percent Occupancy vs. Education Level Graph

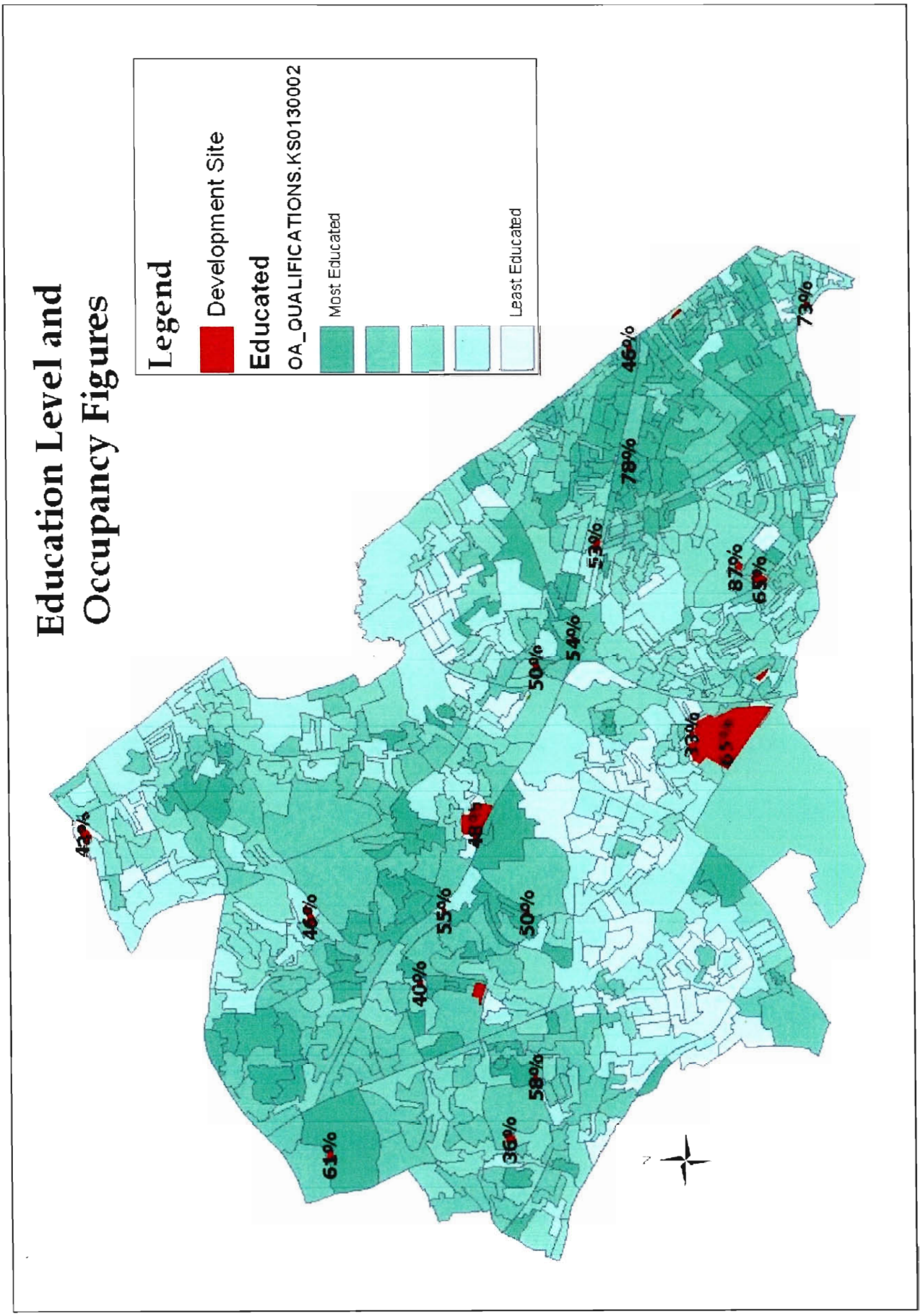


Figure 24: Education Level and Development Sites with Occupancy Figures

5.4.3 Unemployment Map

In viewing the GIS map of unemployment levels, there are few output areas with very high unemployment. The lower levels of unemployment are concentrated in the northwest and southeast regions of the Borough, with higher levels of unemployment in the centre of the Borough. Stonebridge, the largest of the developments is located in the area containing the highest level of unemployment. The lots in Stonebridge were 65% filled, but this does not indicate a relationship between unemployment and occupancy figures because similar occupancy figures are calculated in other areas of the Borough with lower unemployment rates. For example, Northwick Park, located in the western section of Brent, was 61% filled and had a low unemployment rate. Likewise, similar cases can be found in other areas of Brent when examining the map layer. See Figure 26 for this map.

When the relative level of unemployment is plotted on a scale of 1-5 against the occupancy rate for the same development, it is clear that there is no correlation between the two. See Figure 25 for this graph.

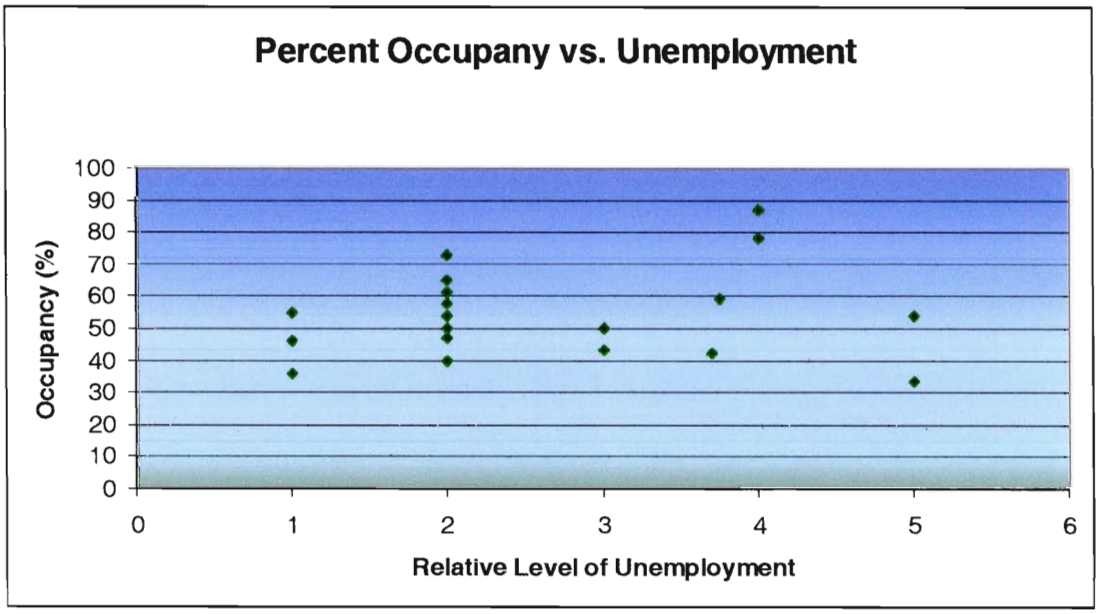


Figure 25: Percent Occupancy vs. Unemployment Graph

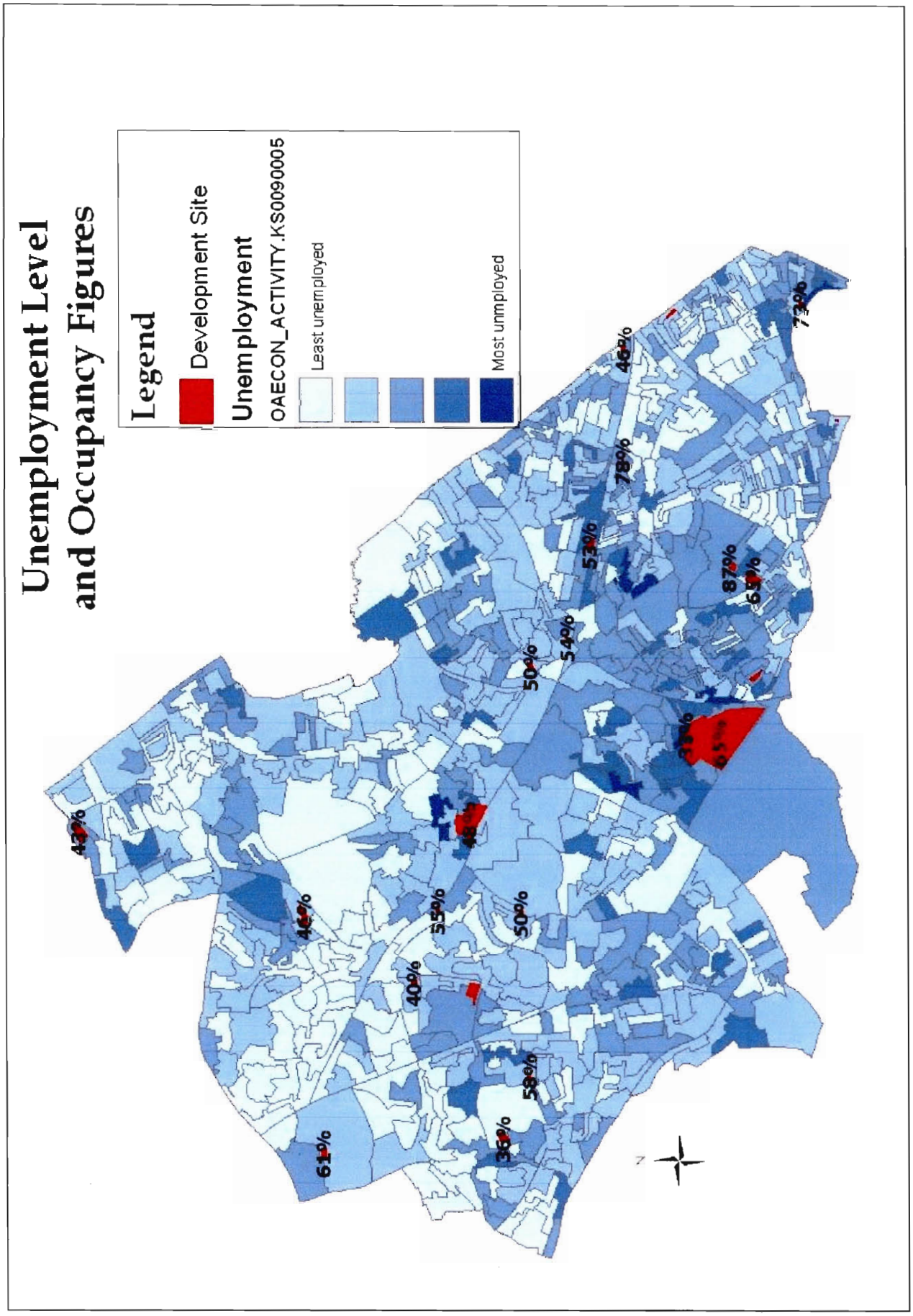


Figure 26: Unemployment Level and Development Sites with Occupancy Figures

5.4.4 Population at or Above Driving Age Map

The percent of an output area's population that is at or above the driving age of 17 appears to be widely varied throughout the Borough. In some areas, this population is noticeably higher, wherein others it is noticeably lower. There is no identifiable correlation of the percent of the population at or above 17 throughout the Borough with parking occupancy levels. Ideally, there would be a relationship with the number of persons who are able to drive, and the occupancy level of car parks in that area, but examining the map layers indicates that no such relationship exists. See Figure 28 for this map.

When the relative level of percent of the population at or above driving age is plotted on a scale of 1-5 against the occupancy rate for the same development, it is clear that there is no correlation between the two. See Figure 27 for this graph.

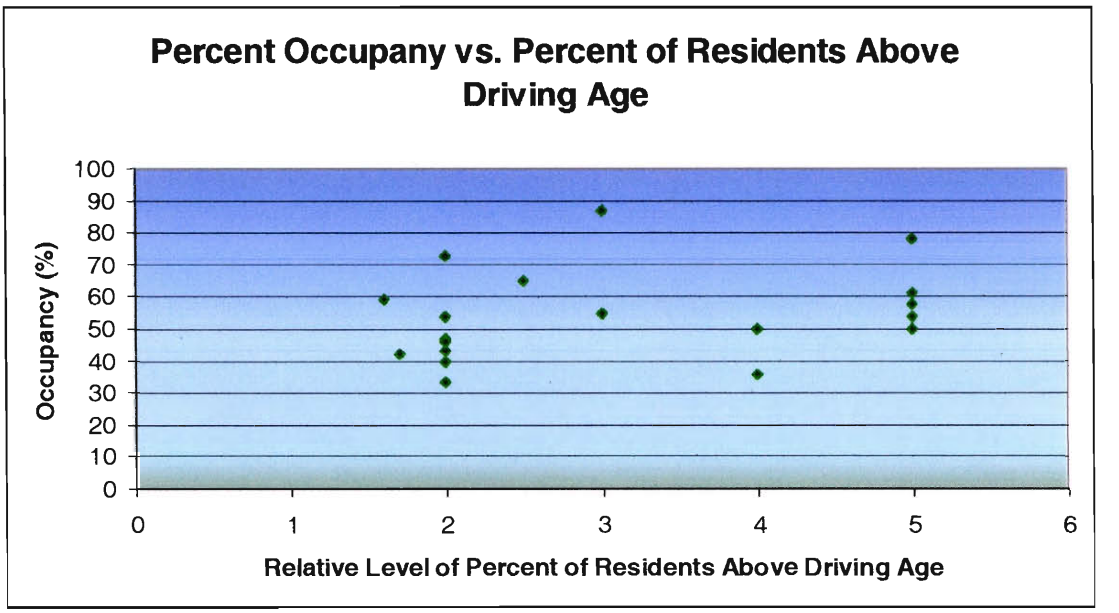


Figure 27: Percent Occupancy vs. Percent of Residents above Driving Age Graph

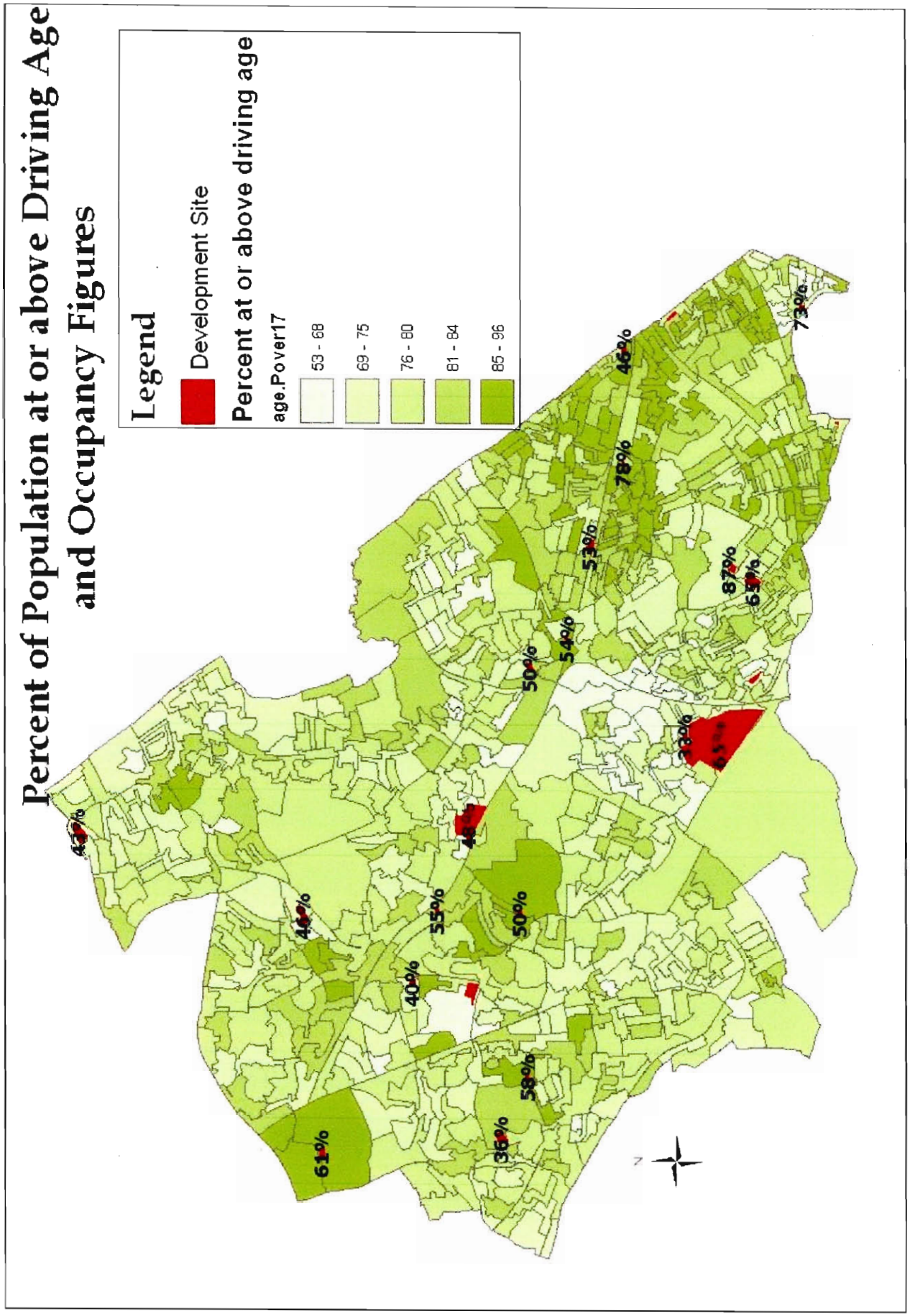


Figure 28: Percent of Population at or above Driving Age and Development Sites with Occupancy Figures

5.4.5 Car ownership Map

When the development site layer is overlaid on the car ownership layer, no observational correlations are detected. As with previous layers, the percentage of residents owning at least one car does not appear to impact the occupancy levels of nearby car parks. See Figure 30 for this map.

When the relative level of percent of households owning a car is plotted on a scale of 1-5 against the occupancy rate for the same development, it is clear that there is no correlation between the two. See Figure 29 for this graph.

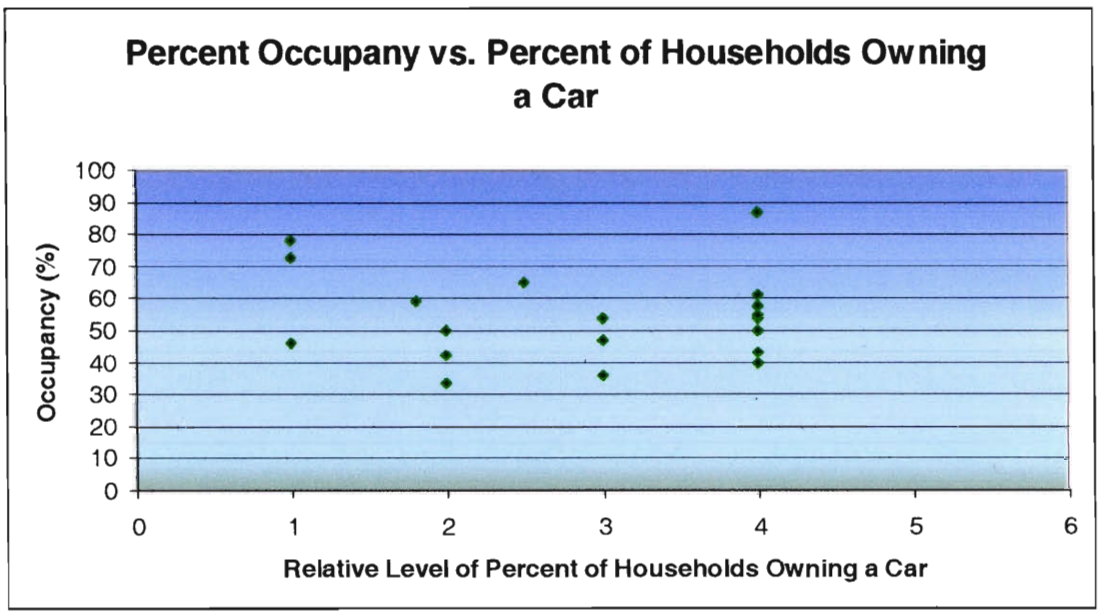


Figure 29: Percent Occupancy vs. Percent of Households Owning a Gar Graph

5.4.6 Absence of Correlations in GIS Maps

Although the GIS analysis of socioeconomic census data gave useful information about the Borough, it did not display any major correlations with the collected occupancy data.

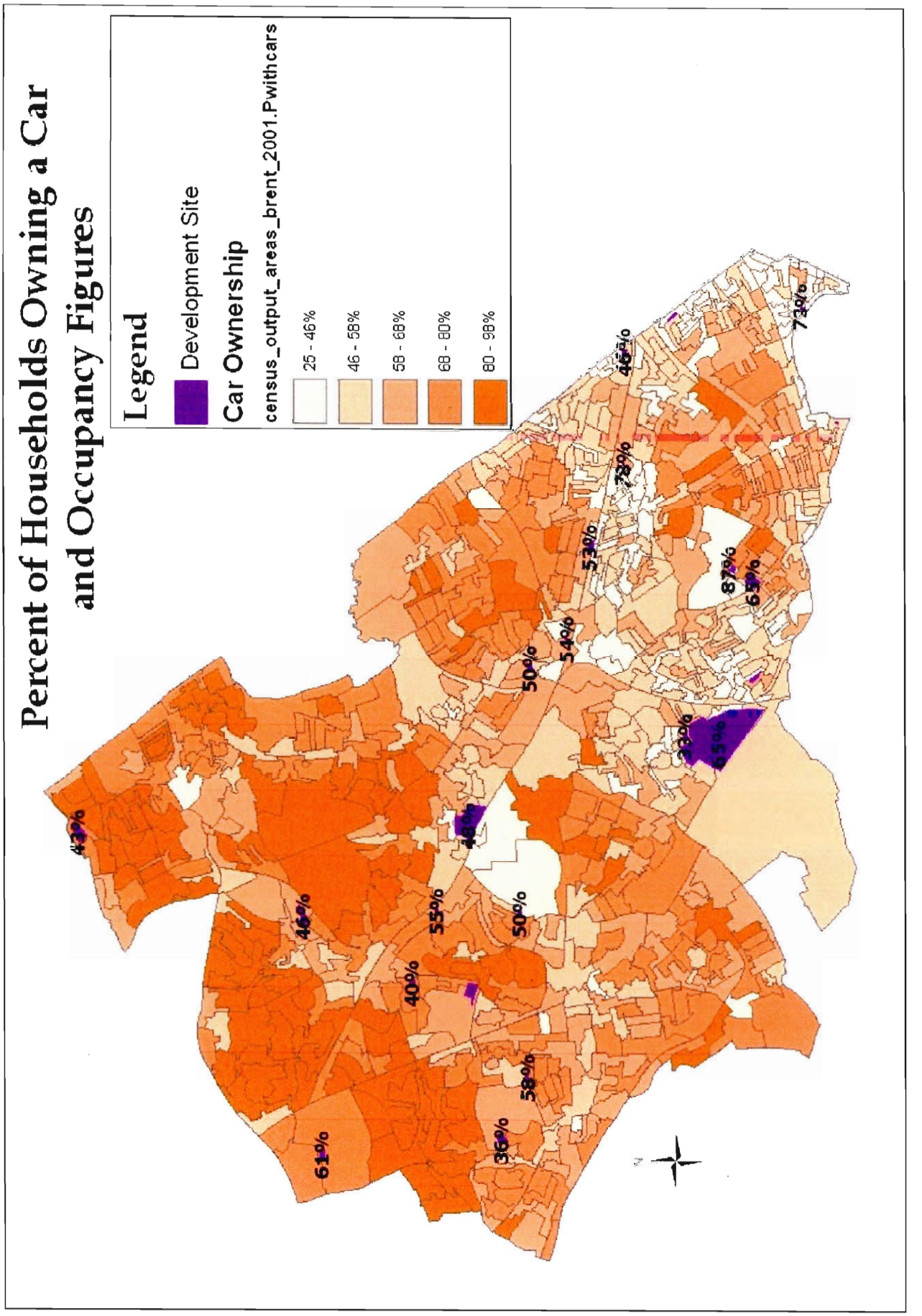


Figure 30: Percent of Population Owning a Car and Development Sites with Occupancy Figures

5.5 Analysis of Residential Developments Prior to and After 1998

Brent residential parking polices changed in July of 1998, when a 50% reduction in parking for social housing compared to market housing was implemented. It was unclear if the reduction in parking for social housing would have any effect on parking after 1998. Figure 31 shows developments broken down into type of housing and the year the applications were approved (decision date), both pre-1998 when old standards applied and post-1998 when the reduction was implemented. The percent occupancy for the car parks and the percent of residents that said parking in their development was adequate are represented as bars. There were no mixed developments built prior to 1998, nor were there any surveys conducted for market housing built since 1998. The chart shows that there was no real change in the percent occupancy for the developments and that residents, both prior to 1998 and after 1998, felt that parking was adequate in their development. The majority of residents felt that parking was adequate for all housing types regardless of when the development was built. The parking policy calling for a 50% parking reduction for social housing is effective and provides adequate parking.

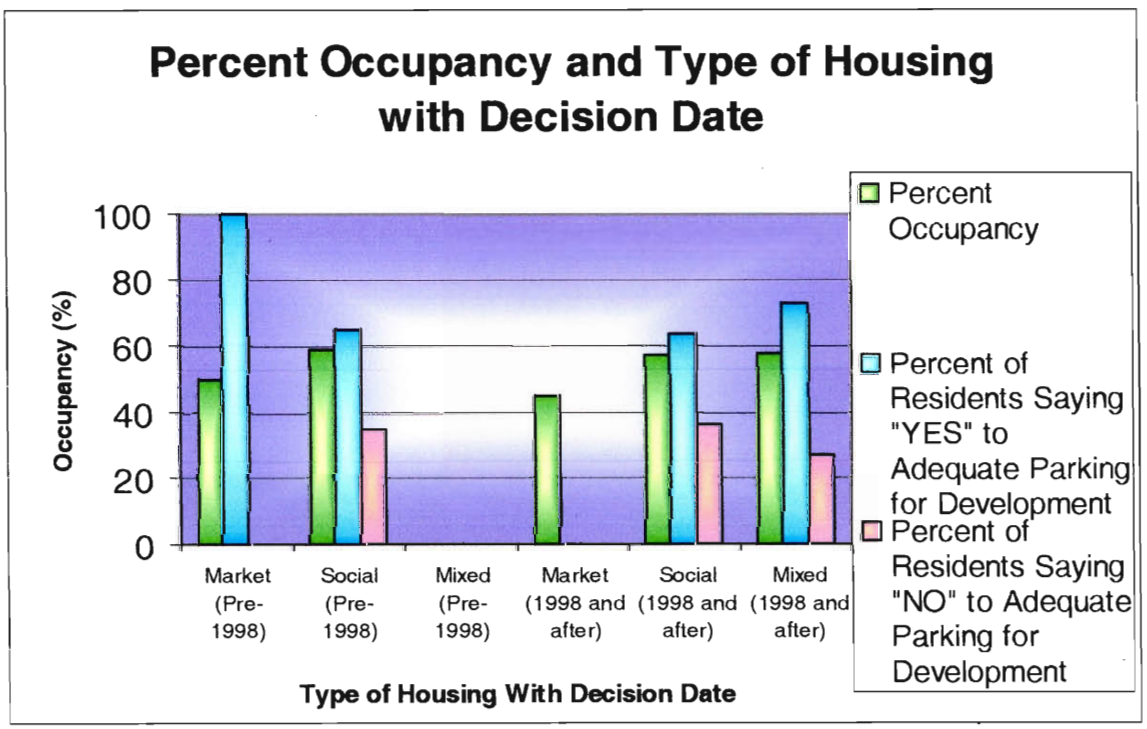


Figure 31: Percent Occupancy and Type of Housing with Decision Date

6 Conclusions and Recommendations

The parking requirements detailed in the Unitary Development Plan created by the Planning Service in the London Borough of Brent provides adequate parking provision for social, mixed, and market housing. Quantitative data collected, cross-referenced with 2001 census data and questionnaire surveys, show that there are no correlations with occupancy figures that would augur for change in the current requirements for parking. All data suggest that allotting 50% less parking provision for social housing is justified as our observations show that no more than 80% of the parking provided is used.

Our study shows that education, unemployment, annual median income, and proximity to public transportation have no affect on the parking in the developments studied, but the placement of parking may have bearing. The social developments studied provided fewer parking spaces than market housing, and still there was adequate parking for the residents in social schemes suggesting that a lower provision is appropriate for affordable housing. Surveys gave insight into how the parking is allocated in an area and suggest that parking problems do not lie in the number of parking spaces but rather in the distribution of spaces within a development.

6.1 Socioeconomic Factors and Parking

GIS layers containing 2001 socioeconomic census data overlaid by occupancy figures suggest that economics is not an influential variable in car-ownership and parking. Analysis of the car occupancy figures on the GIS layers suggest that economic status has no real bearing on the number of cars in a given area. Education, annual median income, and unemployment in each output area show no correlations with the level of occupancy of cars in car parks. With this information and the insight of the residents in each development pertaining to the number of cars a household owns there is no evidence to suggest that socioeconomic variables are definitive factors in car ownership and therefore the number of cars that occupy a car park for that development.

6.2 Public Transportation and Parking

Distance to local tube and train stops has no affect on car occupancy levels for any development. Developments were located throughout Brent and studied so that associations with proximity, if they existed, could be found. It was concluded that distance is not a variable that suggests whether or not a development will have greater occupancy.

6.2.1 PTAL

The Public Transportation Accessibility Level (PTAL) in a housing development area has no affect on the car occupancy of the area. Data from GIS layers containing PTAL and analysis of the surveys conducted conclude that even if the PTAL rating in an area is high, and if the residents rate public transportation high on a scale of one to ten, they still tend to own a car.

6.3 Parking for Developments Prior to and After 1998

The parking policy that allows for a 50% reduction in parking for social housing schemes is effective. There were no significant changes to the parking occupancy levels post 1998 when the reduction was implemented. The Brent Council Planning Service should continue to apply the reduction in parking for social housing as it provides adequate parking for residents.

6.4 Parking Supply

Based on our data, surveys, and general observations, there is adequate parking for developments. Parking problems are not the product of insufficient parking spaces but the allocation of those spaces that are provided. Overall, the developments had more than sufficient parking spaces when analysed quantitatively. Surveys gave insight into how residents use the car parks in their developments. Some residents owning more than one car may double park their cars, potentially blocking others. Cars are parked on streets, making the streets narrow and preventing emergency vehicles from passing by. In a development like Stonebridge, it is not the number of parking spaces that is the problem; it is how those parking spaces are distributed throughout the development and how they are utilised by residents. Some parking is

located directly in front of a unit; the space is not individually assigned but the residents in that unit feel the space is theirs to use. This causes problems for other residents that do not have parking available directly in front of their unit.

6.5 Recommendations for the Brent Council

Upon reviewing the quantitative and qualitative data collected, it is recommended that the current parking policies in Brent remain in place; there is no empirical evidence to suggest otherwise. The Planning Service in Brent Council should continue to review each planning application on a case-by-case basis. The parking policies that have been set forth by the Council and published in the Unitary Development Plan are adequate for the housing developments that have been studied. Only a few small changes are recommended for future parking plans and for visitor parking spaces so that residents' concerns are addressed.

6.5.1 Current Parking Policies

The current parking policies in Brent are sufficient to meet the needs of the residents; we recommend, however, changing the allocation of parking. Although the number of parking spaces is sufficient, residents feel it is the design of the car park that may need changes, along with the allocation of visitor parking. We recommend that visitor parking be labelled. Clearly labelling visitor parking will prevent visitors from taking residents' parking spaces.

We recommend that the Brent Council continue the parking allocation and allotment process that has been in place for the past six years. Median yearly income, unemployment levels, percentage of residents at or above driving age, and distance to tube stops appear not to have an impact on the occupancy figures for the developments studied. Because the factors studied in this project do not affect parking use, it is not necessary to take them into consideration when planning parking.

6.5.2 Social and Market Housing Parking Allotment

Brent's 50% rule, where 0.6 spaces are allotted for a two bedroom social residence, has proven effective. Occupancy figures indicate that none of the social lots studied are filled to capacity and a majority of surveyed residents agree that there is sufficient parking in their development. From studying the social developments built in the past six years, we anticipate that allowing 50% less parking for social housing schemes will be adequate for future developments.

Market housing, which is allotted 1.2 spaces per two bedroom residence, provides ample parking. In most cases, spaces are located in a driveway or garage, or are numbered in a lot. The only recommendation we have for market housing schemes is to build a gated car park whenever possible. Gated car parks are more secure than open lots, and allow only residents from the scheme to park there. This ensures that residents are always guaranteed their space in the car park.

References

Brent Council Borough Census Data. Retrieved February 6, 2004, from the World Wide Web: http://www.brent.gov.uk/demographic.nsf/24878f4b00d4f0f68025663c006c7944/f627f795ea15d9a180256ccc00566a8f!OpenDocument#population

Brent's Unitary Development Plan (UDP). (2004) London, England: Council of Brent.

Button, K., Hensher, D. (Ed.) (2001). Handbook of Transport Systems and Traffic Control. Oxford: Elsevier Science Ltd.

Census Data: Borough of Ealing. Retrieved February 27, 2004, from the World w2ide Web: http://www.ealing.gov.uk/council/demographics/census.asp

Cox, Wendell (2000). How Urban Density Intensifies Traffic Congestion and Air Pollution. Retrieved February 8, 2004, from the World Wide Web: htp://www.goldwaterinstitute.org/pdf/materials/95.pdf

European Conference of Ministers of Transport: A Nordic Initiate for the Furtherance of Security in Transport. (2001). Retrieved February 20, 2004, from the World Wide Web:

Hopkins, L (2001). Urban Development: The Logic of Making Plans. Washington, D.C.: Island Press.

Hullock, K. (2004, January 29). [Interview with Ken Hullock, Director of Brent Planning Services]

Kim, D., Mizuno, K., Kobayashi, S., (2003). Modeling Urbanization by Accessibility in Rapid-Growth Areas. Journal of Urban Planning and Development, 129(1), 45-63.

Leiwen, J., Prskawetz, A., O'Neill, B. (2003). Demographic Composition and Projection of Car Use in Austria.
Retrieved March 23, 2004 from the World Wide Web:
http://www.iussp.org/Brazil2001/s00/S08_02_Prskawetz.pdf

Megacities: Hong Kong Documentation. (2002). Retrieved February 20, 2004, from the World Wide Web:
http://www.megacities.uni.koeln.de/_frame.htm?http://www.megacities.uni-koeln.de/documentation/hongkong/start.htm

Portland Planning and Zoning. (2003). Chapter 33.120: Multi Dwelling Zones. Portland, OR.

Portland Planning and Zoning. (2003). Chapter 33.266: Parking and Loading. Portland, OR.

Pucher, J., Renne, J. (2003). Socio-Economics of Urban Travel: Evidence From the 2001 NHTS. Eno Transportation Foundation, Inc., 57(3), 49-77.

Singleton, R., Straits, B. (1999). Approaches to Social Research. New York: Oxford University Press.

Wong, S., Tong, C., Lam, W., Fung, R.,. (2000). Development of Parking Demand Models in Hong Kong. Journal of Urban Planning and Development, 126(2), 55-74.

Zoning Ordinances: City of Worcester. (1991). Retrived February 20, 2004 from the World Wide Web: http://www.bostonrealestate.com/downloads/WorcesterZoning.pdf

Appendices

Appendix A: Sponsor Mission and Contact

The Planning Service is responsible for all planning matters in Brent. We strive to create a high quality, sustainable environment and protect the conditions in which people live and work. We also seek to pro-actively secure regeneration, combat social exclusion and improve the prosperity of the borough.

Contact Information:
Ken Hullock, Policy Manager, Planning Service
Address: 4th Floor
Brent House
349 High Road
Wembley
HA9 6BZ
Phone: 0208 937 5210
E-Mail ken.hullock@brent.gov.uk

Appendix B: Mr. Hullock's Housing Development Listing

U:\REPORTS\COMPLETIONS (BEST VALUE)\all + affd for US students.rpt

11/02/2004

COMPLETIONS OF RESIDENTIALS ABOVE 20 UNITS TO SHOW AFFORDABLE HOUSING SINCE APRIL 1998

decisiontype	apldcn	asatdate	status	AFFORD HOUSING EXISTING	AFFORD HOUSING PROPOSED	Total units existing	Total units Proposed	dcndate	locaddress1	deccode1	deccode2	deccode3
REF	ALW	15/07/1998	C			0	76	16/03/1994	TELEPHONE H	101	100	103
GTD		11/08/1998	C		36	42	36	16/03/1994	1-42,, RUTLAN	131	301	193
GTD		04/08/1998	C		38	0	38	25/09/1996	Old Grange Tave	100	490	
GTD		15/07/1998	C			0	31	26/02/1997	Telephone Hous	101		
GTD		24/08/1998	C			4	21	14/10/1997	128-134 Prestor	100		
GTD		25/08/1999	C		35	0	35	25/02/1998	Former Haycroft	100		
GTD		18/03/2000	C		73	0	74	18/12/1996	Land at North-E	100		
GTD		12/03/2000	C		102	0	102	11/09/1997	Plot 15, Stonebr	100	193	
GTD		12/03/2000	C		72	0	72	11/09/1997	Plots 17 & 18, S	100		
GTD		20/06/2000	C		71	0	71	30/03/1998	Northwick Park	100	140	
GTD		12/03/2000	C		197	0	197	10/06/1998	Plots 1, 5, 8, 9,	100	193	
GTD		12/03/2000	C		36	0	36	10/06/1998	Plot 16, Stonebr	100		
GTD		16/11/2001	C		92	4	92	30/11/1998	Former Abbey N	100	900	910
GTD		07/12/2001	C		21	0	21	19/11/1998	275-281 Kilburn	100	660	710
GTD		26/11/2001	C		56	0	56	27/08/1999	Cowies of Londo	100		
GTD		30/11/2001	C		32	0	32	22/12/1999	Land to the rear	100	193	
GTD		05/12/2001	C				36	15/01/2001	Lonsdale House,	100	190	
GTD		08/01/2002	C			0	44	29/03/2001	Mitre Public Hou	100		
GTD		02/10/2002	C		40		113	23/08/2000	Wasps R F C Grc	100		
GTD		27/06/2002	C		39	27	41	13/10/2000	1-31 INC, VIAN	100		
GTD		12/08/2002	C		20		61	19/03/2001	CENTURY HOT	100	193	
GTD		20/06/2002	C				30	20/02/2001	Former Futters Y	120	101	
GTD		12/07/2002	C		95	0	95	10/06/1998	Plot 19, 20 & P	100		
GTD		12/02/2002	C				30	19/09/2000	10 Wellington R	120		
GTD		21/03/2003	C		6		27	06/09/2001	159-169A INC,	100		
GTD		01/07/2003	C		20		62	09/10/2001	CENTURY HOT	100	193	
GTD		29/01/2003	C		155		344	05/12/2001	SITE OF HIRST	100	400	660
GTD		25/03/2003	C		24	0	24	23/02/1994	LAND BETWEI	100	193	093
GTD		03/07/2003	C		222	0	222	17/12/1998	For Chalkhill Sit	100		
GTD		03/07/2003	C		79	0	79	02/05/2000	Phase IV, Chalkl	100		

Appendix C: Car Counting Schedule

day	dckey	asatdate	Afford. housing proposed	Total units Proposed	locaddress
1	001077	08/01/2002		44	Mitre Public House, 152 Watford Road, Wembley, HA0 3HF
	001242	02/10/2002	40	113	Wasps R F C Ground, Repton Avenue, Wembley, HA0 3DW
2a	961854	18/03/2000	73	74	Land at North-Eastern end of De Havilland Road, Edgware, Middlesex
2b	970584	24/08/1998		(4) 21	128-134 Preston Road, Wembley HA9
	011473	29/01/2003	155	344	SITE OF HIRST RESEARCH CENTRE, 50 East Lane, Wembley, HA9
3a	972535	25/08/1999	35	35	Former Haycroft Dairy 403-407 Harlesden Road, Willesden NW10 3RR
	982471	26/11/2001	56	56	Cowies of London, Harlesden Road, Willesden NW10
3b	940041	11/08/1998	36	(42) 36	1-42,, RUTLAND PARK MANSIONS, LONDON, NW2
	991347	30/11/2001	32	32	Land to the rear of Gladstone Park JMI School, Sherrick Green Road, Willesden NW10
4 - Stonebridge	971455	12/03/2000	102	102	Plot 15, Stonebridge Estate, Stonebridge, NW10
	971456	12/03/2000	72	72	Plots 17 & 18, Stonebridge Estate, Stonebridge NW10
	980308	12/03/2000	197	197	Plots 1, 5, 8, 9, 11 & 12, Stonebridge Estate, Stonebridge NW10
	980816	12/03/2000	36	36	Plot 16, Stonebridge Estate, Stonebridge NW10
	001391	27/06/2002	39	(27) 41	1-31 INC, VIANT HOUSE, Stonebridge Park, Stonebridge, London
	980290	12/07/2002	95	95	Plot 19, 20 & Part 21, Stonebridge Estate, Stonebridge NW10
5a	940033	15/07/1998		76	TELEPHONE HOUSE, 1-15, SHOOT-UP-HILL, LONDON, NW2
	962166	15/07/1998		31	Telephone House, 1-15 Shoot Up Hill, Cricklewood, NW2 3BA
5b	001632	12/08/2002	20	61	CENTURY HOTEL, Forty Avenue, Wembley, HA9 8QQ
	011078	01/07/2003	20	62	CENTURY HOTEL, Forty Avenue, Wembley, HA9 8QQ
6a	991972	05/12/2001		36	Lonsdale House, Empire Way, Wembley, HA9 0XN
6b	002831	21/03/2003	6	27	159-169A INC, Malvern Road, Kilburn, London, NW6
7a	972577	16/11/2001	92	(4) 92	Former Abbey National Sports Ground, The Mall, Kenton, Harrow, HA3 9UA
7b	961095	04/08/1998	38	38	Old Grange Tavern PH, Dog Lane, Willesden, NW10 1PY
	931836	25/03/2003	24	24	LAND BETWEEN, 20 & 23, WESTVIEW CLOSE, LONDON, NW10
8	972700	20/06/2000	71	71	Northwick Park Hospital, Watford Road, Harrow, HA1 3UJ
9	992651	12/02/2002		30	10 Wellington Road, Kensal Green, NW10 5LJ
	002463	20/06/2002		30	Former Futters Yard , Acton Lane, Harlesden, London, NW10
	981243	07/12/2001	21	21	275-281 Kilburn High Road, Kilburn, NW6 7JR
Chalkhill	981002	03/07/2003	222	222	For Chalkhill Site, Chalkhill Redevelopment, Bluebird Walk, Wembley, HA9
	992454	03/07/2003	79	79	Phase IV, Chalkhill Estate, Wembley HA9

Appendix D: Parking Occupancy Figures

Development	Total Spaces	Spaces Filled	% Filled
Former Mitre House	14	5	35.7
Dairy Close	39	34	87.2
Cowies of London (Cardinal Hinsley Close)	43	28	65.1
Land at North-Eastern end of De Havilland Road,	73	31	42.5
Gladstone School	28	15	53.6
Rutland Park Mansions	37	29	78.4
Dog Hill Lane	40	20	50.0
Land Between 20-23 Westview Close	28	15	53.6
Phase 2, For Chalkhill Redevelopment	63	24	38.1
Phase 4, Chalkhill Redevelopment	37	19	51.4
Northwick Hospital	83	51	61.4
Former Abbey National Sports Ground	92	43	46.7
Forty Ave (Century Court)	37	18	48.6
Forty Ave (Travlers Court)	14	10	71.4
Malvern Road	11	8	72.7
Wasps RFC Ground	134	77	57.5
Lonsdale House	24	12	50.0
128-134 Preston Road	25	10	40.0
Telephone House, Shoot Up Hill (Now known as Jubilee Heights)	89	41	46.1

Appendix E: On-street Parking Figures

Development	Off-street
Former Mitre House	0
Dairy Close	3
Cowies of London (Cardinal Hinsley Close)	4
Land at North-Eastern end of De Havilland Road,	24
Gladstone School	2
Rutland Park Mansions	0
Dog Hill Lane	2
Land Between 20-23 Westview Close	1
Phase 2, For Chalkhill Redevelopment	0
Phase 4, Chalkhill Redevelopment	1
Northwick Hospital	2
Former Abbey National Sports Ground	35
Forty Ave (Century Court)	0
Forty Ave (Travlers Court)	0
Malvern Road	0
Wasps RFC Ground	32
Lonsdale House	0
128-134 Preston Road	0
Telephone House, Shoot Up Hill (Now known as Jubilee Heights)	0

Appendix F: Survey Form

Development: _____
Date: ___ / ___ / ___
Time: ___ : ____

Address:		
Does your household own a car?		
If YES	How many cars?	
	How often do you use it/them?	
	What do you use it/them for?	
	How east is it for you to find parking at home?	
If NO	Do you want to own a car?	
	Why or why not?	
	How do you get around?	
How would you rate public transportation in this area on a scale from 1 to 10?		
Do you think there is adequate parking available at your housing?		

THANK YOU!

Appendix G: Survey Results – Car Owners

Colour Ledged	
Type of Dwelling	*Colour*
Market	
Mixed	
Social	

Develop-ment	Date	Time	**YES own car**	# cars	How often used?	use for	how easy to find parking?	rate pub. trans	adequate parking in dev?	**Other comments**
128-134 Preston Road	24/3/04	18:05	yes	1	Everyday	Business and Pleasure	Easy, everyone is allocated 1 space	7	Yes	
128-134 Preston Road	24/3/04	18:05	yes	1	Everyday	Work and Social	Everyone allocated 1 space per household	8	Yes	
Cowies of London (Cardinal Hinsley Close)	25/3/04	19:03	yes	1	Everyday	School, Shopping	Easy, everyone is allocated 1 space	5	Yes, More visitor parking	
Cowies of London (Cardinal Hinsley Close)	25/3/04	19:03	yes	3	Everyday	Everything	Easy, everyone is allocated 1 space	1	Yes	
Cowies of London (Cardinal Hinsley Close)	25/3/04	19:03	yes	1	Everyday	Everything	Have their own parking space	7	Yes	
Dairy Close	25/3/04	18:35	yes	2	Everyday	School, shopping, work	Easy, everyone is allocated 1 space	3	Yes, More visitor parking	
Dairy Close	25/3/04	18:35	yes	1	Everyday	Work, shopping	Has own parking space	6	Yes, More visitor parking	

Land at North-Eastern end of De Havilland Road, Edgeware, Middlesex	24/3/04	18:25	yes	2	2-3 times a week	shopping / doctor	Not very easy	5	No	
Land at North-Eastern end of De Havilland Road, Edgeware, Middlesex	24/3/04	18:25	yes	1	Everyd ay	Work	Easy	6	Yes	
Gladstone School	25/3/04	18:45	yes	1	Not often	Shopping	Easy	5	Not safe but good	
Gladstone School	25/3/04	18:45	yes	1	Not often, almost never		Not easy, some people own more than 1 car	1, perso n uses bus route 226, says it is horri ble	For other people yes,	
Gladstone School	25/3/04	18:45	yes	1	Everyd ay	Work	Fine, further up the road is tougher though	9	Yes	
Gladstone School	25/3/04	18:45	yes	1	Everyd ay	School/s hopping	No	7	No, parking needs to be more controlle d people that shouldn't park in the car park use it anyways. The school blocks them in when in session. The rear of the school borders the	

									development and people park there to pick up students	
Forty Ave	31/3/04	18:15	yes	1	Everyday	work & travel	easy	5	yes	person that answered door doesn't drive, car is for household
Forty Ave	31/3/04	18:15	yes	2	Everyday	work, errands	easy, 1 parking space allocated the other car is easy to park on the street, can usually find parking	n/a; has never used it	yes	
Forty Ave	31/3/04	18:15	yes	1	Everyday	pleasure	easy; has a parking bay	4; but doesn't use it often	yes	
Malvern Rd (Regal Court)	4/1/04	18:26	yes	1	Everyday	Work, has a taxi	Has a resident permit	6	yes	
Dog Hill Lane	5/4/04	17:55	yes	1	Everyday	General things	easy, has 1 designated parking space	6	yes	
Dog Hill Lane	5/4/04	17:55	yes	1	Everyday	Work/social	Designated space	8	yes	
Land Between 20-23 Westview Close(Sycamore Court)	5/4/04	17:30	yes	1	Everyday	Work	yes, not towards the back though	4	yes, most of the time because parking is for residents, sometimes others park there though, once in a while	

Land Between 20-23 Westview Close(Sycamore Court)	5/4/04	17:30	yes	1	3x/week	pleasure	easy	4	yes	
Phase 2, Chalkhill Redevelopment	7/4/04	17:45	yes	1	Daily	Travelling	good	8	yes, parking spaces taken up by teachers at nearby school	
Phase 2, Chalkhill Redevelopment	7/4/04	17:45	yes	2	Daily	Travelling	easy	7	yes	
Phase 2, Chalkhill Redevelopment	7/4/04	17:45	yes	1	Daily	domestic	easy	1.5	very (yes)	
Phase 2, Chalkhill Redevelopment	7/4/04	17:45	yes	1	Daily	Travelling	Sometimes hard	8	yes	
Phase 4, Chalkhill Redevelopment	7/4/04	17:45	yes	2	Everyday	Work/social	very easy	8	yes	
Phase 4, Chalkhill Redevelopment	7/4/04	17:45	yes	1	Everyday	Shopping /work	easy	n/a	yes	
Phase 4, Chalkhill Redevelopment	7/4/04	17:52	yes	2	Everyday	Social	Easy	8	yes, as it stands now	
Phase 4, Chalkhill Redevelopment	7/4/04	17:52	yes	1	Everyday	Business and Shopping	Easy	5	Easy even though no designated spaces	
Phase 4, Chalkhill Redevelopment	7/4/04	18:05	yes	1	Everyday, morning	Nursery School	Fine, as it stands	8	Yes	
Phase 4, Chalkhill Redevelopment	7/4/04	18:05	yes	1	3-4x/week	Shopping /family	Easy	6	No	

Phase 4, Chalkhill Redevelop ment	7/4/04	18:17	yes	1	Everyd ay	Everyday things	Difficult	7	No, mostly because of visitor parking (note this unit was facing the street and had street parking in front of the develop ment	
Northwick Hospital	13/4/04	19:45	yes	2	everyd ay	work/sch ool/social	Wicked (bad, no good)	9	No, patients from the hospital park in car park during the day, evening hours are not as bad, have to pay for parking permit and still hard to find a parking space during the day, not enough visitor parking	
Northwick Hospital	13/4/04	20:10	yes	2	Everyd ay	work/do mestic	Allocated parking space	9	yes	
Northwick Hospital	13/4/04	20:10	yes	2	1 daily, 1 weekly	work	Ok, no problem	7	Yes, but not enough visitor parking and not in allocated spaces, visitors get clamped, and does not like	

									fact that they must pay to park in their own driveway	
Former Abbey National Sports Ground	13/4/04	20:45	yes	1	everyd ay	work	Yes, own driveway	n/a	Yes, fine for her, said others with more than one car park on sidewalk s	
Former Abbey National Sports Ground	13/4/04	20:50	yes	3	Everyd ay	school, shopping , family reasons	Sometimes not easy	5	No, want more parking spaces	
Wasps RFC Ground	14/4/04	18:35	yes	3	2 Everyd ay, 1 Weeke nds	Everythin g (shoppin g)	Easy, designated	6	yes	(54 Compton Ave, Market housing, had 2 car garage)
Wasps RFC Ground	14/4/04	18:35	yes	2	Everyd ay	pleasure	Easy, own spaces	6	Yes for the househol d, not enough for the develop ment, many cars block the streets	(40 Compton Ave, market housing, had a 1 car garage
Wasps RFC Ground	14/4/04	18:40	yes	2	Weeke nds	leisure	Ok, have a garage and driveway	5	yes	33 Compton Ave, market housing, had 1 car garage
Wasps RFC Ground	14/4/04	18:40	yes	3	Everyd ay	pleasure	Easy	9	yes	30 Compton Ave, market housing, had a 1 car garage

Wasps RFC Ground	14/4/04	18:50	yes	1	Everyd ay	shopping /getting around	Ok, 1 designated space	n/a	no on weekend s visitors take all available parking spaces	24 Hasting Close, Social housing, had a paved space in front of unit
Wasps RFC Ground	14/4/04	18:50	yes	1	Everyd ay	Work	yes, easy 1 designated space	5	yes	6 Hasting Close, social housing, had a paved space in front of unit
Wasps RFC Ground	14/4/04	18:50	yes	2	1every day, 1 once a week	leisure	No problem, have 2 spaces	8	yes	21 Chillcot Close, market housing, had 1 car garage
Stonebridg e Estate (plot #19)	29/3/04	19:40	yes	2	Daily	Work/ journeys	Difficult, especially after 5	5	no	
Stonebridg e Estate (plot #20)	15/4/04	17:40	yes	1	Everyd ay	Work/soc ial	Normal, easy	5	yes, if used correctly	Open parking, anyone can park anywhere and often people own more than 1 car
Stonebridg e Estate (plot #20)	15/4/04	17:40	yes	1	Everyd ay	Work/soc ial	Easy	n/a	no, will need more parking	
Stonebridg e Estate (plot #20)	15/4/04	18:05	yes	4	Everyd ay	Work/ple asure	Not too good	n/a	yes	
Stonebridg e Estate (plot #20)	15/4/04	18:05	yes	2	Everyd ay	Work/goi ng out	Difficult, not enough spaces	n/a	no	
Stonebridg e Estate (plot #21)	15/4/04	18:40	yes	1	everyd ay	work/soci al/ school	not easy	5	no	
Stonebridg e Estate (plot #21)	15/4/04	18:40	yes	1	everyd ay	outings/ dropping kids off	difficult	7	no	
Stonebridg e Estate (plot #17)	15/4/04	18:20	yes	1	Everyd ay	Going places	Very hard	10	no	

Stonebridge Estate (plot #17)	15/4/04	18:20	yes	1	once a day	shopping	alright	5	no	
Stonebridge Estate (plot #18)	15/4/04	18:45	yes	1	Everyday	Work/school	Easy, on the weekends not so good	8	At the moment yes, once development is finished, no	
Stonebridge Estate (plot #18)	15/4/04	18:45	yes	1	Everyday	Work/ shopping	not so bad	8	yes	
Stonebridge Estate (plot #16)	15/4/04	18:15	yes	2	Everyday	Work	Average	n/a	no	
Stonebridge Estate (plot #16)	15/4/04	18:15	yes	2	Everyday	Work/social/ shopping	Not easy at all	n/a	no	
Stonebridge Estate (plot #8)	15/4/04	19:30	yes	1	Everyday	going out	ok	4	no	
Stonebridge Estate (plot #1)	15/4/04	19:35	yes	1	Everyday	Get around	ok, park in front of unit	3	At the moment yes, once development is finished, no	

Appendix H: Survey Results – Residents without Cars

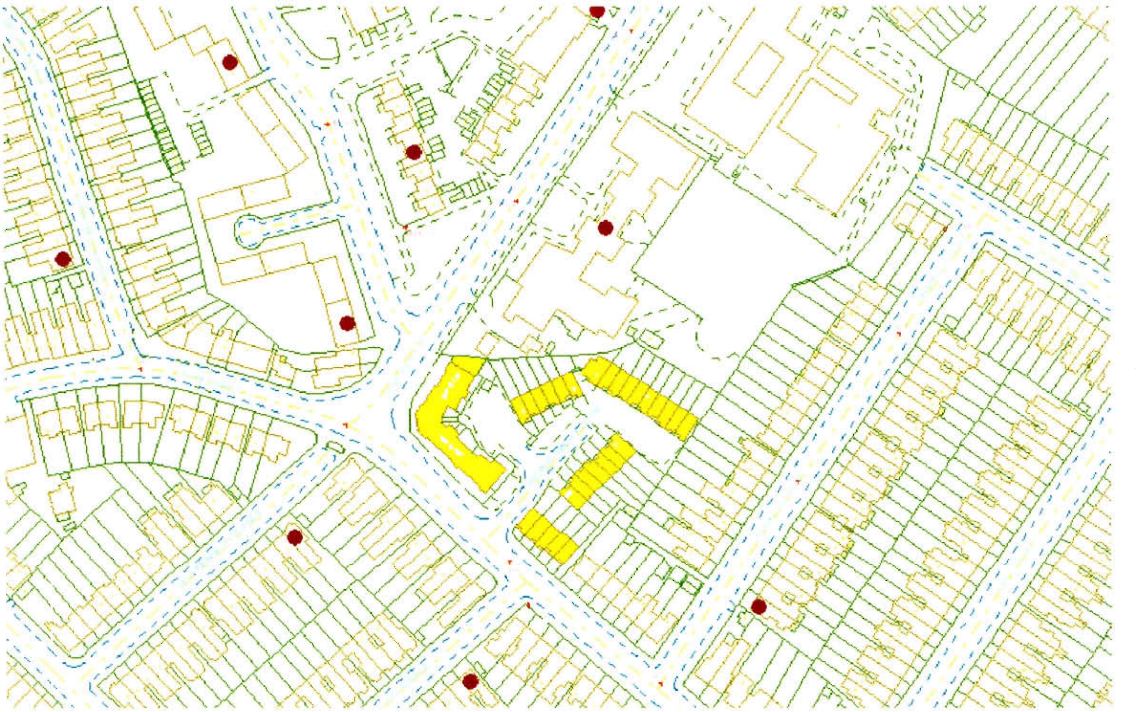
Development	Date	Time	**NO car**	want to own?	why/why not?	how get around?	rate pub trans	adequate parking in dev?	Other comments
Dairy Close	25/3/04	18:35	No	Yes	Price, too expensive, does not drive	Walk or bus	5	Yes	
Land at North-Eastern end of De Havilland Road, Edgeware, Middlesex	24/3/04	18:25	No	Yes, if could drive	Do not drive	Public transportation	2	If people have more than 1 car	
Land at North-Eastern end of De Havilland Road, Edgeware, Middlesex	24/3/04	18:25	No	Yes	Convenience	Public transportation	7	Yes	
Land at North-Eastern end of De Havilland Road, Edgeware, Middlesex	24/3/04	18:25	No	Yes	Time, just moved in and need to save for a car so they can get around better	Public transportation	1	No	
Malvern Rd (Regal Court)	4/1/04	18:26	no	yes	Because of parking, hard to park	Bus mostly	6 (but said that it was poor)	No, there is no real parking for residents	
Malvern Rd (Regal Court)	4/1/04	18:26	no	yes	no one drives	Bus	6	No, only a little parking on the road and in front of housing, no real parking	

Malvern Rd (Regal Court)	4/1/04	18:26	no	yes, in the future	no license	Bus or train	5 (bus #7, she takes very often she rated at a 1)	No, need a permit that you have to renew every 6 months, fend for yourself for parking	
Dog Hill Lane	5/4/04	17:55	no	no	don't know	The bus sometimes	10	No	(Did not speak English that well, may have been confused
Land Between 20-23 Westview Close(Sycamore Court)	5/4/04	17:30	no	yes, but disabled	disabled	Public transportation	5	yes	
Phase 4, Chalkhill Redevelopment	7/4/04	18:17	no	n/a	Not driving at the moment	others drive her around	n/a	yes	
Phase 4, Chalkhill Redevelopment	7/4/04	18:22	no	yes, next few months	has not passed driving test yet, easier to get around	Train/bus	8	yes	
Phase 4, Chalkhill Redevelopment	7/4/04	18:22	no	going to university	Maybe in about 3 years or so	Bus/train	8	yes	
Northwick Hospital	13/4/04	19:45	no	No, Don't drive	No particular reason	Public transport	6	yes	
Former Abbey National Sports Ground	13/4/04	20:45	no	no, not really	Don't drive and don't intend to drive on the roads	Walk, bike, bus	7	Yes	

Former Abbey National Sports Ground	13/4/04	20:50	no	no	Don't drive	bus	9	No, but sometimes when son comes to visit others block her driveway and he cannot park in the space that is intended for her use	
Wasps RFC Ground	14/4/04	18:50	no	yes, plan to buy	New, just moved, don't have enough money yet	bus	8	yes, for the scheme	14 Compton Ave, Social housing, had paved space in front of unit
Stonebridge Estate (plot #19)	29/3/04	19:40	no	no	relatives have cars	Buses	8	don't know	
Stonebridge Estate (plot #19)	15/4/04	18:55	no	no, owned a car once	Disabled	public transport	6	yes	
Stonebridge Estate (plot #21)	15/4/04	18:35	no	yes	No particular reason, maybe everyday use	Foot (walk)	4.5	No	
Stonebridge Estate (plot #17)	15/4/04	18:20	no	no	Can't drive, they way they drive is crazy	walk	8	No	
Stonebridge Estate (plot #8)	15/4/04	19:30	no	no	Can't afford	bus/train	7	Yes	
Stonebridge Estate (plot #5)	15/4/04	19:20	no	Yes, in the future	Don't drive	Transport	6	Yes	
Stonebridge Estate (plot #15)	15/4/04	18:50	no	no	n/a	bus/walk	9	Yes	
Stonebridge Estate (plot #15)	15/4/04	18:50	no	maybe	n/a	bus/tube	1	Yes	

Appendix I: Schematic Site Layouts

128-134 Preston Road



Cowies of London

Dog Lane

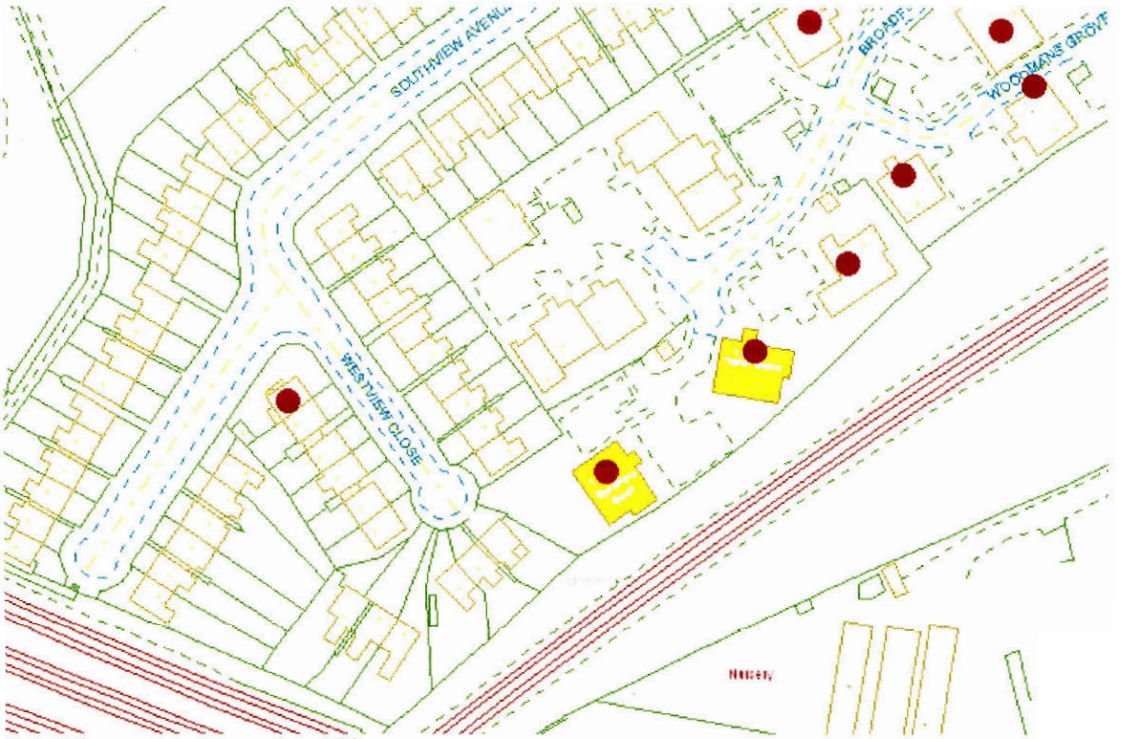
Former Abbey Nation Sports Ground

Former Haycroft Dairy - Dairy Close

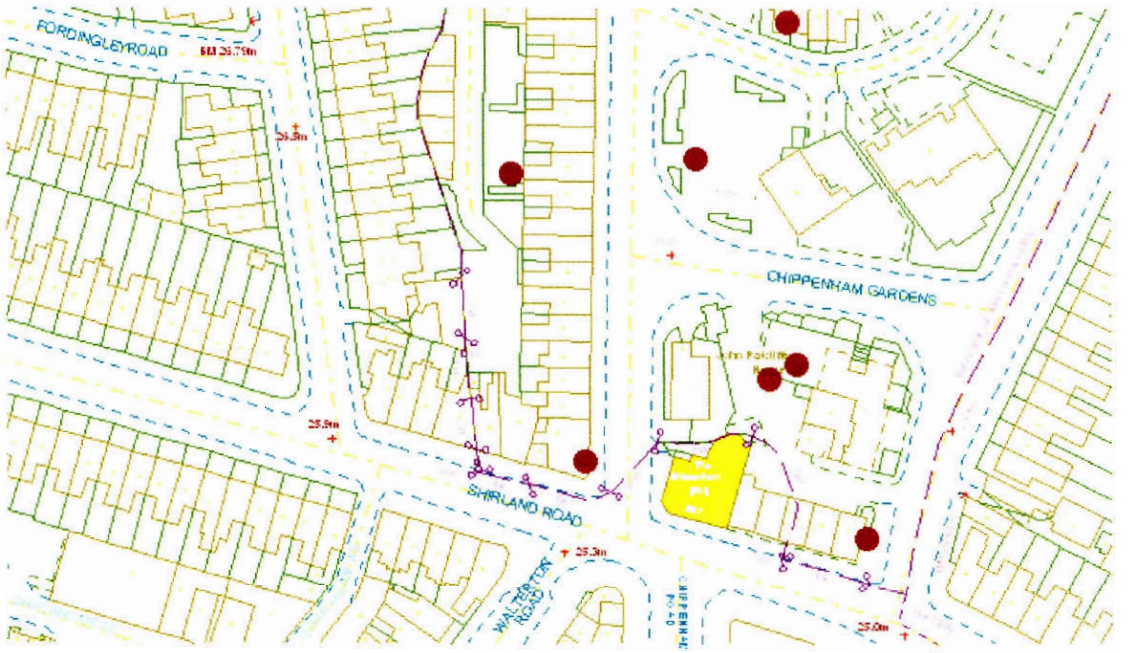
Former Hirst Research Centre

Former Wasps Rugby Ground

Forty Ave



Land between Westview Close

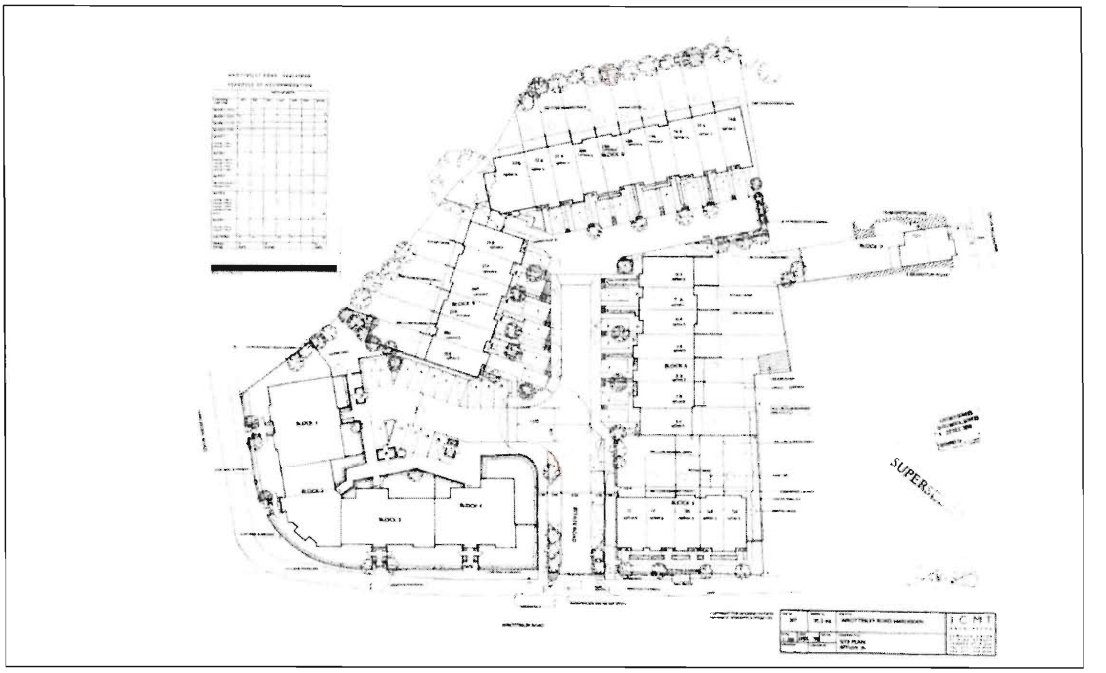


Malvern Road

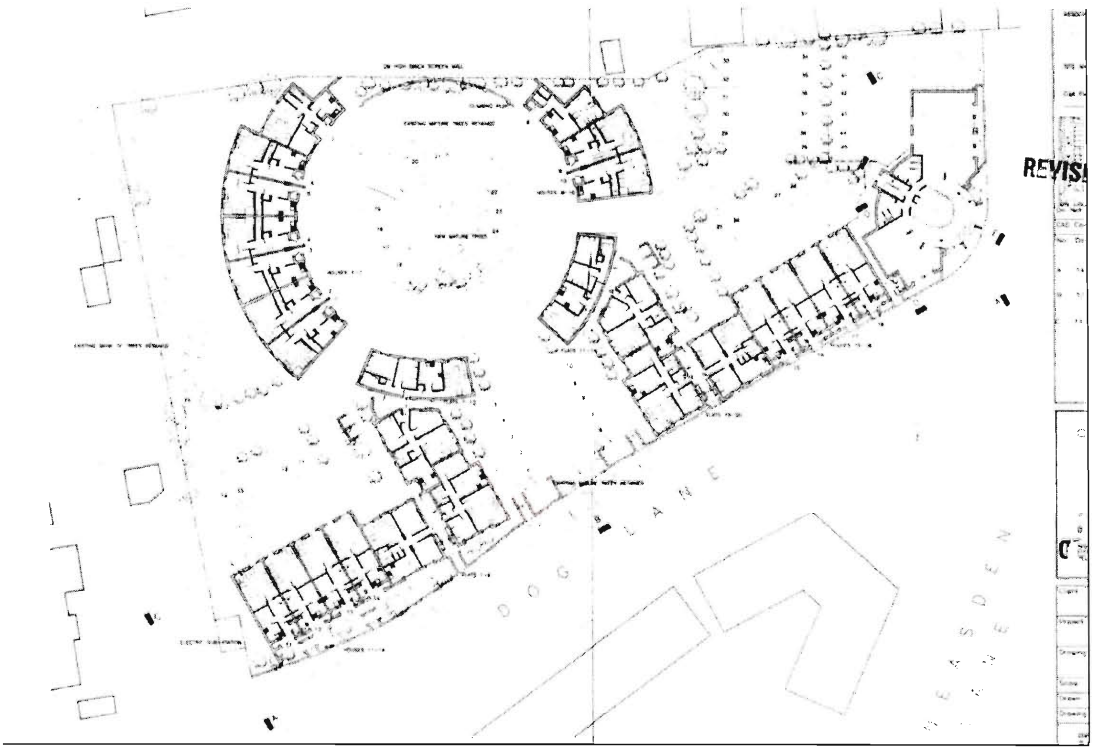
Mitre House

Northwick Park Hospital

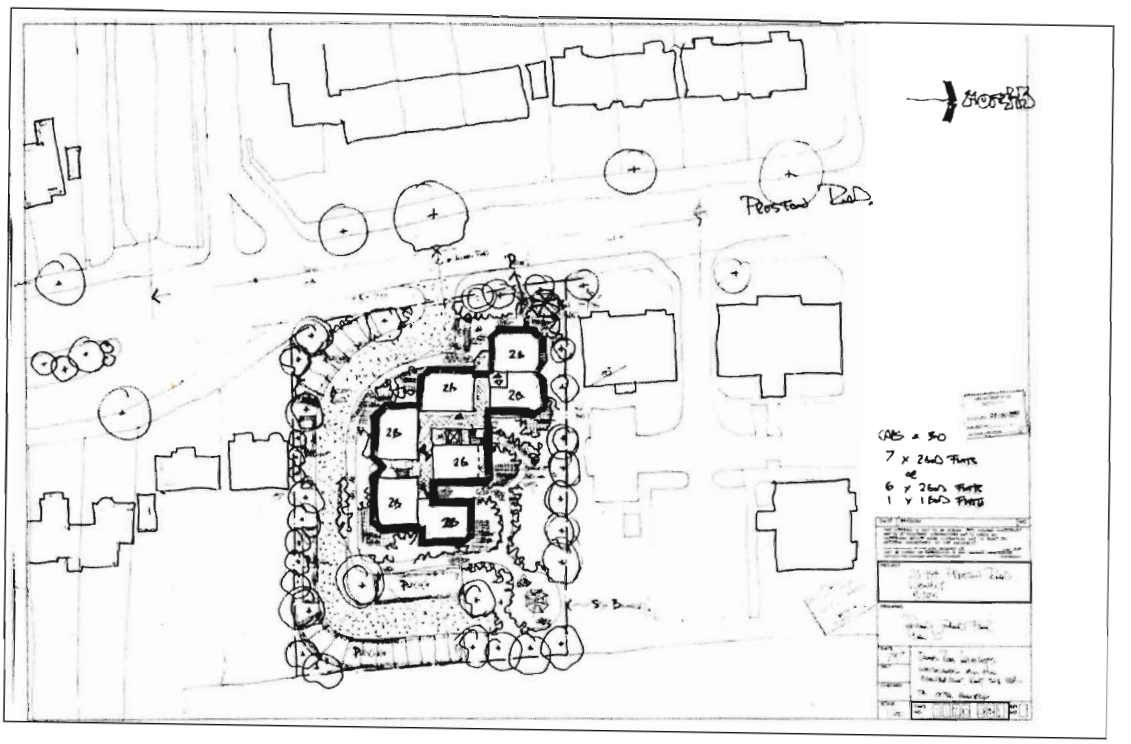
Appendix J: Site Diagrams



Cowies of London



Dog Lane



Preston Road

Appendix K: Selected Committee Reports

K1: DeHavilland Road

Planning Sub-Committee on 18 December, 1996 **ITEM NO. 2 / 5**

REFERENCE:	96/1854
RECEIVED:	29 October, 1996
WARD:	Queensbury
PLANNING AREA:	Kingsbury Kenton Consultative Forum
LOCATION:	Land at North-Eastern end of De Havilland Road, Edgware, Middlesex
PROPOSAL:	Reserved matters for demolition of existing light-industrial buildings and construction of new 2/3-storey residential development comprising 74 no. units of 8 no. 1-bed flats, 26 no. 2-bed flats, 21 no. 2-bed houses, 12 no. 3-bed houses, 4 no. 5-bed houses and 3 no. 3/4 disabled/wheelchair houses including access road, associated landscaping and children's play area.
APPLICANT:	Metropolitan Housing Trust
CONTACT:	Burgess Mean Architects
PLAN NO'S:	NE/001c, 002, 003b, 004-029, 30

RECOMMENDATION

Approval

EXISTING

Industrial site of approximately 1.6 ha (4 acres) on south side of junction of Mollison Way and De Havilland Way. The site is occupied by a number of pre-war industrial units.

To the north of the site are two-storey semi-detached properties within the London Borough of Harrow. To the south of the site are the rear gardens of two-storey detached houses in Holyrood Gardens (within the Laings Queensbury Estate Area of Distictive Residential Character) which lie within the Borough.

To the southwest of the site are the light industrial promises of BACS.

PROPOSAL

Demolition of existing light industrial buildings and construction of new 2/3 storey residential development

including new access road, associated landscaping and childrens play area comprising 74 no. units - 8 no. one-bedroom flats, 8 no. two-bedroom flats, 22 no. two-bedroom houses, 23 no. three-bedroom houses, 12 no. four-bedroom houses and 2 no. five-bedroom houses.

HISTORY

95/1684 - Outline approval for residential development) all matters reserved), see 'Background' in remarks section.

90/0478 - Determination that use for B2 purposes requires planning permission.

1972 - Approval for change of use to international telephone exchange.

PLANNING POLICY

POLICY CONSIDERATIONS

Policies within Brent's adopted Unitary Development Plan are relevant to the consideration of this application.

Those relevant relate to the design of the new housing development. The site is also covered by site specific proposal DP1 which states:

"Continued use or redevelopment for employment purposes of the north eastern segments of the site may be for B1 or residential uses. Any redevelopment should include improvements to parking provision and access for the estate as a whole and landscaping buffers between employment and residential uses. Residential development should include a childrens play area."

The site lies within an open space deficiency area (including for childrens play).

CONSULTATION

Consultees comprise:-

Ward Councillors
2 - 98 (inc), BACS, De Havilland Road
1-9, 2-28, 1-15 (inc) Amy Johnson Court, Mollison Way
57 The Highlands
62-82 (evens) Stag Lane
59-75 (odd) Stag Lane
2-56 (evens) Holyrood Gardens
London Borough of Harrow
Thames Water Utilities
Brent & Harrow Family Health Services Authority
Director of Education
Wembley Police Crime Prevention Design Advisor

Advertised in press and on site as a major application.

Responses and details of the design process are as per the previous report.

REMARKS

1. BACKGROUND

At the 5th December 1995 Development Control Sub-Committee the Council considered an outline application (with all matters reserved) for the residential development of this site.

The Committee carefully considered this application in the light of the Council's Unitary Development Plan policies on the protection of industrial land and the provision of housing.

The Committee resolved to approve the application subject to conditions and a planning obligation which required that prior to the commencement of works a scheme for the protection and/or alteration of services (specifically gas, water, electricity, telephone) be submitted to and approved by the local planing authority and that the development be constructed in accordance with the approved scheme and that the development be in furtherance of the Chalkhill Initiative.

As the principle of residential development has been considered and determined at outline stage the only matters before the Committee relate to the 'reserved matters' (i.e those matters reserved for later approval); these being: siting, design, landscaping, external appearance and means of access i.e the design of layout of the residential development. It is important to note that the Council cannot lawfully reconsider the principle of residential development on this site. This has already been considered and approved.

2. INTRODUCTION

As stated above, this application is solely concerned with design and layout considerations, the principle of residential development having been considered at outline stage in 1995. As this is a major development for Brent, on a large (for Brent) suburban site the Council should rightly expect a quality housing scheme that adds to rather than detracts from Kingsbury's character. This report considers this matter.

3. THE PROPOSED HOUSING MIX

The mixture of one to four-bedroom housing has been set by the requirements of the Council's housing department in its instruction to Metropolitan Housing Trust and is considered acceptable. All of the houses would have private gardens.

Three of the units would be designed from the outset for use as wheelchair units.

4. AFFORDABLE HOUSING PROVISION

The requirement of the outline approval for affordable housing would easily be met as the development would have 100% affordable housing provision through Metropolitan Housing Trust through 41 rented units and 33 shared ownership units (the shared-ownership units would be mainly on the road frontage).

5. LAYOUT CONSIDERATIONS

In terms of the layout, the development comprises broadly two separate elements. Firstly along the De-Havilland Road frontage would be three storey shared ownership flats following the broad sweep of the site.

The layout has been the subject to discussions with your officers. It is clear and understandable in the form of a number of readily identifiable streets with housing fronting onto these. It would not have the character of an `estate' but of a natural extension to the street pattern of Kingsbury. Overall it is considered to be an acceptable example of urban design.

The layout has been considered by Brent's Crime Prevention Design Advisor and is considered acceptable on that ground. Almost all adjoining gardens of houses backing on to the site would be backed on to by rear gardens of the new houses, bar one small area next to a parking court.

6. ELEVATIONAL APPEARANCE

On the De-Havilland Road frontage the development would comprise of three storey flat blocks. This height would be below the height of the adjoining BACS building. Appendix 1 of the previous report shows a cross section through De-Havilland Road illustrating comparative heights of the proposed development in comparison with the two storey housing on the other side of the road. As this graphically illustrates the development would be very much comparable in height with the surrounding housing.

It is considered that the designs of the road frontage shared ownership blocks are the best aspect of the development and would give the development a strong public face.

The unusual shape of the site is strongly exploited in the design. The development would comprise a sweeping crescent of pavilion blocks with the height emphasised at the pedestrian gateway into the development. The use of brick friezes, balconies and articulated entrance canopies produces a richly detailed development, specifically sought by your officers.

One block which causes a potential problem is at the far north-eastern end of the development where a three storey block would be just 1m off the site boundary. Whereas Council guidance requires this to be 4m. This does, however, comply with the minimum 15m distance between the rear windows of houses on Holyrood Gardens to a blank wall (by 7m). This aspect has been subject to considerable discussion. A three storey building is clearly required here to mark the most visually prominent corner. Relocating has not proved practical as this would impact on the location of adjoining blocks and would disrupt the sight lines onto the development along the pedestrian `gateway'. For these reasons this is considered acceptable.

Behind the road frontage the development would be exclusively two-storey in the form of short terraces, bar one three storey block which forms an attractive `landmark' building in the centre of the development next to a proposed `linear park'. Council officers views as to the elevational appearance of the two-storey blocks are as per the previous report.

7. AMENITY SPACE

The amenity space provision is easily in accordance with Council standards. Almost all of the properties would have garden depths matching or exceeding that set out in Council guidance.

8. DENSITY

The proposed density would be 180 hrh (73 hra) which is below the Council's normal maximum of 190 hrh (77 hra).

9. THE PROPOSED LANDSCAPING

The site having a former use for industrial purposes has just a few semi-mature trees. All bar two would be protected and retained within this scheme. The existing frontage hedge would be protected, retained and replaced by a new mature beech hedge where appropriate.

Apart from the public open space the majority of the landscaping would be planting in front and rear gardens. Given an adequate design, to be secured by condition, of the front garden landscaping and parking areas the Councils' landscape advisor considers that in those terms the development will be acceptable.

10. PRIVACY AND OUTLOOK

The distances between windows and adjoining housing and gardens are all fully in compliance with Council standards on privacy and outlook.

11. PARKING AND TRAFFIC

The number of parking spaces proposed for site would be 80. The UDP requirement is 113 spaces. The level of provision would be 108% as opposed to the required 141%. This is considered acceptable, however, for the grounds given in the previous report.

The Council's Highway Consultancy considered the traffic-impact issue at the outline stage, making a reasonable assumption as to the likely density of the development and the likely number of units. This was considered acceptable. The scheme is one of the first major housing developments to be designed to the Council's new highway layout standards which give less space to roads to provide more space for housing.

The Council's Highway Consultancy also consider that the means of access and the internal layout is acceptable, following amendments which have been achieved.

The layout includes a number of speed tables to keep traffic speeds down to low, safe levels.

The outline approval required a minimum of 150 off-street spaces to be created for BACS to solve the parking problem on De-Havilland Road. A scheme showing up to 210 spaces has been separately submitted and approved and should shortly be implemented.

12. THE IMPACT ON SCHOOL PLACES AND OTHER LOCAL FACILITIES

As per previous report.

13. THE PROPOSED LINEAR PARK

An area of what otherwise would be wasteful roadway has instead been proposed as a small `linear park' with children's play facilities for the under 5s. The detailed design of this would be secured by condition.

14. PUBLIC ART

As per previous report.

15. LAND DECONTAMINATION

As per previous report.

16. OTHER MATTERS

Loss of property value is not a material planning consideration.

Noise during construction is not a material planning consideration and can be controlled by Environmental Health powers. A condition on hours of work, etc. was attached to the outline approval.

17. CONCLUSION

Overall the proposal is considered to represent a scheme with an acceptable urban design with a varied elevational appearance. The design of the road frontage is a strong positive feature. The shortfall in parking provision is considered acceptable for a scheme of affordable housing and the scheme complies with density and all other guidance.

The scheme is therefore recommended for approval.

RECOMMENDATION: Grant Consent

CONDITIONS/REASONS:

(1) The discharge of surface water form the proposed development should not exceed 60l/sec and any additional flow should be stored on site until the peak is over. No building over sewer is permitted.

Reason:
To prevent flooding.

(2) The development hereby approved shall be carried out and completed in all respects in accordance with the proposals contained in the application, and any plans or other particulars submitted therewith,
prior to occupation of the building(s).

Reason: To ensure that the proposed development will be carried out as approved so as to avoid any detriment to the amenities by any work remaining incomplete.

(3) Prior to the occupation of any units within the phase of the development of which it forms a part details of speed tables or equivalent traffic calming measures (including details of design and materials) shall be submitted to and approved by the Local Planning Authority and so implemented.

Reason:
To ensure a safe and attractive pedestrian environment.

(4) No other windows or glazed doors (other than any shown in the approved plan) shall be constructed in walls of the building as extended without the prior written consent of the Local Planning Authority.

Reason:
To minimise interference with the privacy of the adjoining occupiers and in the interests of good neighbourliness.

(5) No plumbing or pipes, other than rainwater pipes, shall be fixed on the external faces of the building so as to be visible from a public highway.

Reason:
In the interests of visual amenity.

(6) Details of materails, (including samples of brickwork, roofing materials, fenestration (including scaled drawings (including a cross section) and manufacturers details), paving and road surface material and manufacturers details of doors, eaves, soffits and bargeboards) for all external work shall be submitted to and approved by the Local Planning Authority before any work is commenced.

Reason:
To ensure a satisfactory development which does not prejudice the amenity of the locality.

(7) All street facing windows shall have a minimum reveal of 80mm.

Reason:
To ensure an adequate usual appearance through a variation in depth and texture.

(8) Prior to the occupation of any of the hereby approved units, a scheme of phased construction shall be submitted to and approved by the Local Planning Authority and this scheme shall be followed.

Reason:
To minimise disruption to future residents.

(9) Prior to the occupation of any of the hereby approved units, details of the design and boundary treatment of the "linear park" (including the design of the play equipment) shall be submitted to and approved by the Local Planning Authority and so implemented.

Reason:
To ensure an adequate design of this important facility.

(10) Prior to the occupation of any of the houses, details (at 1:20 scale) of the materials, design and landscaping of a typical front boundary treatment shall be submitted to and approved by the Local Planning Authority and so implemented.

Reason:
To ensure an adequate visual appearance.

(11) In all areas where roads directly adjoin rear gardens of properties adjoining the site, further details of boundary treatment shall be submitted to and approved by the Local Planning Authority and so implemented prior to the occupation of the proposed development.

Reason:
To protect community safety by minimising the opportunities for crime.

(12) The details of the brick plinth and the treatment of the flank wall of Block 17 shall be as set out in the letter from Burgess Mean Architects dated 27/11/96.

Reason:
To ensure a satisfactory visual appearance.

(13) Further details of the proposed development shall be submitted to and approved by the Local Planning Authority before any work is commenced and the development shall be carried out and completed in all respects in accordance with the details so approved before the building(s) are occupied. Such details shall include:-

- the proposed boundary treatment including all fences, walls and gateways;

NOTE - Other conditions may provide further information concerning details required.

Reason: These details are required to ensure that a satisfactory development is achieved.

INFORMATIVES:

(1) For purposes of clarification, the following condition of outline approval 95/1684 is considered discharged: 5 (with the exception of materials and fenestration).

REFERENCE DOCUMENTS:

1. Planning approval 95/1684
2. Letters of objection
3. Brent's adopted UDP
4. Brent Supplementary Planning Guidance

Any person wishing to inspect the above papers should contact Mr A Lainton, The Planning Service, Brent House, 349 High Road, Wembley, Middlesex, HA9 6BZ, Tel. No. 020 8937 5318

K2: Lonsdale House

Planning Sub-Committee on 15 January, 2001 **ITEM NO. 3 / 02**

REFERENCE:	99/1972
RECEIVED:	21 September, 1999
WARD:	Preston
PLANNING AREA:	Wembley Consultative Forum
LOCATION:	Lonsdale House, Empire Way, Wembley, HA9 0XN
PROPOSAL:	Erection of 4-storey block comprising 36 self-contained flats, 35 x two-bedroom and 1 x one-bedroom units, with associated basement and surface car-parking spaces and erection of refuse and cycle storage building
APPLICANT:	Bishopswood Estates
CONTACT:	Wastell & Porter Architects
PLAN NO'S:	1000/30, 1000/31, 1000/32, 1000/33, 1000/34, 1000/35
	This Permission is issued in conjunction with a Deed of Undertaking dated 15 January 2001

SUMMARY

This item was considered at the 22 August 2000 Sub-Committee when Members were minded to approve this application.

A copy of the report and supplemental report submitted to the last Sub-Committee is attached. Your officers remain of the view that permission should not be granted for this development for the reasons set out in the attached report.

If any permission is to be granted with regard to this proposal, then it should be subject to the applicants entering into an obligation under Section 106 of the Town and Country Planning Act 1990, as amended to make a contribution of £25,000 towards non-car access improvements in the locality and a contribution of £50,000 towards the provision of affordable housing elsewhere.

RECOMMENDATION

Grant subject to a Section 106 legal agreement

SECTION 106 DETAILS

The application requires a Section 106 Agreement, in order to secure the following benefits:-

1. Contribution of £25,000 to non car access improvements in the locality
2. Contribution of £50, 000 towards the provision of affordable housing elsewhere

EXISTING

This 0.28 hectare site with a 43 metre frontage lies on the north-west side of Empire Way between the 3-storey residential development at Raglan Court with end ground floor retail units to the south-west and Empire Parade, a two-storey block with shops/commercial units on the ground floor and residential uses above. The site is currently vacant, having previously been used as a warehouse building with offices occupying much of the site. The site backs onto 3-storey flats at The Gables and two-storey detached and semi-detached houses and two-storey shops and commercial uses with residential uses above in Wembley Park Drive. Bounding part of the North-Eeast side of the site is a single-storey industrial building converted to a number of units which lies to the rear of and has access adjacent to Empire Parade.

PROPOSAL

The scheme proposes the erection of an irregular 'Y' shaped four-storey building over 19 parking spaces and some residents storage facilities which are set partly below ground level, with lifts and stairs providing access to the upper floors. The vehicle access to the basement is beneath the building's rear extension, off a 4.1-metre-wide access road with 1.35 metre footpath proposed along the south-west boundary of the site. A vehicle turning-head is provided by the entrance to the ramp with the access road extending to the north-west corner of the site where a further 4 parking spaces are proposed. A building for refuse and cycle storage would be sited between this parking area and the turning head, although no details of this building have been submitted. There is stepped and a ramped pedestrian access to the front of the building from Empire Way. A vehicle drop off point is proposed by the entrance into the site in front of the building.

The building has overall dimensions of 39 metres x 39 metres, with a shallow hipped roof design with the finishes indicated as smooth red brick, buff artificial stone and grey concrete tiles or artificial slate, with white UPVC windows and doors and glazed balcony panels. The frontage of the building is set back 2 metres from the back edge of the pavement adjacent to Empire Parade, and 5 metres at the opposite end, with the central section set back 10 metres. An area of landscaping is proposed in front of this recessed section and along the back edge of the pavement. The staggered south-west side elevation is set 6.5 - 8.5 metres from the Raglan Court boundary. The north-east side elevation at the front is separated from Empire Parade by 1.5 metres and the stepped in 5 metres, with the projecting rear section 12.5 metres from the boundary. The projecting arm of the development at the rear is set 11 - 15.5 metres from the rear boundary with the Wembley Hill Road properties.

The windows in the habitable rooms in this projecting rear area face north-east and south-west towards the side boundaries, with the kitchen window recessed behind a 2 metre deep small terrace in the rear elevation. Within the main part of the building, the habitable room windows mainly face to the front and rear of the site, with some inward facing windows at the front. In the front side units there is however a side window for the second bedroom in the north-east elevation, set 5 metres from the boundary behind a terrace, whilst at the other end of the development a kitchen window is proposed in the side elevation set behind balcony terrace 9 metres from the boundary and 11.5 metres from the nearest building at Raglan Court which contains some windows in this side elevation.

Communal gardens with an area of 900 square metres are proposed to the rear of the building. The drawings indicate the provision of a new 2 metre high close boarded fence

along the Raglan Court boundary and new 2.5 metre high, close-boarded fences along the other two boundaries.

HISTORY

88/2150 & 88/2151 - Identical outline applications for the demolition of the existing buildings and erection of 48 residential units. The indicative scheme showed a 3 storey 'T' shaped building with 12 one bedroom and 36 bedsit units and 53 parking spaces. Approved on 1st February 1989. No details submitted.

89/0637 & 89/0638 - Identical applications for the demolition of the existing buildings and erection of 48 residential units. The scheme also proposed 12 one bedroom and 36 studio units with a total of 53 parking spaces (20 within the basement) but a 4 storey building over basement parking was proposed across the frontage. Refused on 23rd January 1991 as it was out of scale and character with adjoining properties with an adverse impact on the streetscene and it failed to make adequate provision for pedestrian safety and vehicular access to and within the site.

00/0848 - Erection of a part 4 and 5 storey building comprising 42 flats (40 two bedroom and 2 one bedroom) with basement parking for 19 cars and storage facilities, erection of bicycle/refuse storage building and provision of access road and surface parking for 8 cars. To be considered with this scheme.

PLANNING POLICY

3.7 URBAN DESIGN PRINCIPLES
BE2 Townscape: Local Context and Character
BE3 Urban Structure: Space and Movement
BE5 Urban Clarity & Safety
BE6 Public Realm: Landscaping
BE7 Public Realm: Streetscape
BE9 Architectural Quality
BE11 Intensive & Mixed-Use Developments
4.7 NOISE AND VIBRATION
EP2 Noise & Vibration
5.6 AFFORDABLE HOUSING
H1 Requirement for Affordable Housing
H2 Proportion Of Affordable Housing Sought
H4 Off-Site Affordable Housing 'Provision In Lieu'
5.9 THE NEEDS OF DIFFERENT HOUSEHOLD TYPES
H8 Dwelling Mix
H9 Containment Of Dwellings
5.10 NEW RESIDENTIAL DEVELOPMENT
H10 Housing On Brownfield Sites
H12 Residential Quality – Layout Considerations
5.11 RESIDENTIAL DENSITY
H14 Residential Density
6.6 THE TRANSPORT IMPACT OF DEVELOPMENT PROPOSALS
TRN2 Public Transport Integration
TRN3 Environmental Impact Of Traffic
TRN4 Measures To Make Transport Impact Acceptable
6.9 ROADS, SAFETY AND TRAFFIC MANAGEMENT
TRN20 London Distributor Roads
6.10 PARKING AND TRAFFIC RESTRAINT
TRN23 Parking Standards – Residential Developments
TRN24 On-Street Parking/Heavily Parked Streets
6.11 FRIEGHT
TRN34 Servicing In New Development

6.12 TRANSPORT NEEDS OF DISABLED PEOPLE AND OTHERS WITH MOBILITY DIFFICULTIES

TRN35 Transport Access For Disabled People & Others With Mobility Difficulties
PS14 Residential Development (Use Class C3)
PS15 Standard for wide bay parking
PS16 Cycle parking standards

7.7 EMPLOYMENT AREAS PLANNING FRAMEWORK

EMP9 Development Of Local Employment Sites

14.6 REGENERATION FRAMEWORK FOR WEMBLEY

WEM4 Residential Development Within The Wembley Regeneration Area
WEM7 Mix Of Uses Within The National Stadium Policy Area
WEM8 Access To Development - The National Stadium Policy Area

14.7 TRANSPORT IN WEMBLEY

WEM12 On-Street Parking Controls For Wembley

14.8 URBAN DESIGN QUALITY IN WEMBLEY

WEM17 Urban Design Quality – Wembley Regeneration Area
WEM18 The Public Realm - Wembley Regeneration Area

POLICY CONSIDERATIONS

1) Adopted UDP

E1 Design of development should contribute to local streetscene, provide an attractive facade with appropriate materials, the bulk and height be in keeping with the surrounding area, maintains adequate daylight, sunlight, privacy and outlook, the lines/layout are carefully related to the locality, adequate and appropriate landscaping, proper means of access to and within site including access for disabled, adequate storage/recycling of waste.

E2 Respect for local design. Innovative designs, where appropriate, may be accepted.

E3 High standard of landscaping expected, with adequate landscaped frontage and screening of obtrusive development from neighbouring residential properties.

E6 Seeks to minimise environmental impacts of development.

E8 Adequate noise insulation in new noise sensitive development.

E18 New development to be designed to reduce opportunities for crime.

H1 Increase in supply of housing sought.

H2 Affordable housing secured on a scale commensurate with meeting need.

H6 Residential development assessed in its design and relationship with character of area, environmental impact on adjoining properties and back gardens, maintenance of privacy, outlook, community safety, sunlight, daylight, provision of amenity space, impact on traffic/pedestrian safety, noise disturbance, creation of quality landscaping, parking provision.

H9 20+ unit schemes within 400 metres of shops/services - provision of dwellings designed to wheelchair standards.

H10 Safe and convenient pedestrian and traffic access, parking to standard, facilitating ease of mobility for elderly, young children and disabled.

H11 Density - regard had to density in locality, but normally not to exceed 190 habitable rooms per hectare (hrph). Higher densities considered in predominantly non family schemes (220 hrph maximum) and locations with very good public transport accessibility.

H12 20+ unit schemes - Mix of family/non-family units sought.

H13 Provision of amenity space commensurate with needs of prospective occupants, having regard to character and nature of development and supplementary planning guidance.

H25 Residential development of secondary employment sites no longer appropriate for employment purposes which include a significant element of affordable housing will be permitted.

EMP12 Development of secondary employment sites for other uses not normally permitted except where environmental problems exist or are likely and the Council will identify alternative uses, difficulties in accommodating employment uses to modern standards and no effective demand and is in accordance with policy EMP13.

EMP13 Alternative uses of secondary employment sites normally housing including where applicable an element of affordable housing, community group accommodation and open space in local open space deficiency areas, or exceptionally large retail or leisure developments.

2) Replacement UDP

BE2 Proposals should be designed with regard to local context, making a positive contribution to the character of the area, taking account of the existing landforms, need to reinforce existing urban spaces, materials and townscape features. Innovatory contemporary designs not precluded.

BE3 Regard for existing urban grain, development patterns and density in layouts, including spaces around building to be functional and attractive, respect for the form of the street by building to the established line of frontages, prioritize movement by foot, cycle and public transport.

BE5 Seeks design layouts to be understandable, free from physical hazards and reduce opportunities for crime.

BE6 High standard of landscaping is required reflecting the way the area will be used, character of locality and surrounding buildings, adequate landscaped frontage, new planting, boundary treatments to complement the development and enhance the street scene, screening obtrusive development from neighbouring residential properties.

BE7 High quality of design and materials required for the street environment.

BE9 Creative and high quality design solutions for new buildings required specific to site's shape, size, location and development opportunities and designed to be of a scale/massing/height appropriate to its setting and townscape location, respect (whilst not necessarily replicating) adjoining development and satisfactorily relate to them, exhibit a consistent/considered application of principles, have attractive front elevations addressing the street at ground level with well proportioned windows and frontage entrance, layout promoting the amenity of users providing satisfactory sunlight, daylight, privacy and outlook for existing residents, use materials of high quality/durability complementary to the surrounding area.

BE11 Higher density developments than prevalent in the area will be encouraged in appropriate locations and to include a mix of compatible uses. Failure to incorporate secondary uses where this would undermine the existing character of the area's regeneration prospects will be resisted taking account of the scale/nature of the scheme relative to the existing mix of land uses and feasibility of incorporating

secondary uses due to primary use and site characteristics. Design of intensive/mixed use developments should have satisfactory relationship between units and protect the amenity of adjoining and proposed residents.

EP2 Noise sensitive development permitted unless noise level to users cannot be acceptably attenuated.

H1 Housing developments of 10+ units should provide affordable housing with a range of unit sizes.

H2 30%-50% shall be affordable units having regard to exceptional costs associated with the site, its suitability for affordable housing, walking distances to shops/services, public transport accessibility, housing needs of area and need to secure a mix of units.

H4 Affordable housing should be provided in situ. Off-site 'provision in lieu' will only be permitted where the configuration of the building or its amenities and services are not suitable for meeting the needs of households in need of affordable housing.

H8 10+ unit schemes - mix of family/non-family units sought. Exceptions may be made for sites unsuited to non-family accommodation.

H9 Residential development should be self contained.

H10 Housing promoted on previously developed land not protected in the plan for other uses.

H12 Layout and urban design of residential development should have site layout that reinforces/creates an attractive/distinctive identity appropriate to its locality, housing facing streets, appropriate parking, avoids excessive ground coverage and private and public open landscaped areas appropriate to character of area and needs of prospective residents.

H14 The appropriate density should be determined by achieving an appropriate urban design, make efficient use of land and meet the amenity needs of potential residents, with regard to the context and nature of the proposal, including public transport accessibility, constraints and opportunities of the site and type of housing proposed. Proposals of 190+ habitable rooms per hectare should demonstrate the suitability of the site and how the design and layout would be of the necessary quality.

TRN2 Development should benefit and not harm the operation of the public transport network.

TRN3 Any proposal that causes or worsens an unacceptable environmental impact from traffic will be refused.

TRN4 Where transport impact is unacceptable, measures will be considered, where necessary secured at the developers' expense, which could mitigate this impact, including public transport improvements, extension/bringing forward on-street parking controls/waiting restrictions, improved pedestrian/cycle facilities, traffic calming, road safety, highway improvements, measures to reduce car usage.

TRN20 Development increasing use of existing access onto London Distributor Roads must not harm distribution of traffic, especially buses.

TRN23 Parking for residential development should be to maximum standard, with lower standards for affordable housing.

TRN24 On-street parking controls will be extended where on-street parking following development has/will have unacceptable impact on road safety, emergency service access, amenity or traffic management. Priority given to areas affected by the proposed National Stadium. Contributions to introduce/extend/bring forward on-street controls may be secured where significant safety/traffic management problems likely to be caused.

TRN34 Servicing to standard required.

TRN35 Access to parking spaces/public transport for disabled required, together with disabled parking.

PS14 Residential parking standards - 0.5 space for one and two bedroom units in this area of very good public transport accessibility, with a reduction of up to 50% for affordable housing by registered social landlords.

PS15 10% of spaces provided for the disabled within 30 metres of building.

PS16 Cycle parking - 1 space per dwelling.

EMP9 Development of Local Employment Sites for uses other than employment uses will not normally be permitted, except where unacceptable environmental problems exist/would occur and the Council identify appropriate alternative uses and no effective demand for the premises or medium term prospect of redevelopment. Alternative uses normally housing (including substantial element of affordable housing, community group accommodation or open space in local open space deficiency areas. Exceptionally affordable housing permitted on vacant sites.

WEM4 High density residential development encouraged within the Wembley Regeneration Area. Developments of 10+ units should be a mixture of general market and affordable housing suitable for smaller households unless policy H4 ('provision in lieu') applies.

WEM7 Within the National Stadium Policy Area large scale development should contribute to achieving a mix of land uses.

WEM8 Development in the National Stadium Policy Area should be designed principally for access by public transport/walking/cycling rather than private car. Planning obligations sought for the improvement of local infrastructure and public transport, where transport impact of proposal justifies such measures.

WEM12 On-street parking controls will be enhanced/extended as part of major developments.

WEM17 Development in Wembley Regeneration Area should contribute to creation of world class environment, produce a distinctive and identifiable place with an urban mixed use character where the pedestrian has priority.

WEM18 Development in Wembley Regeneration Area should contribute to creating pedestrian friendly and distinctive public realm around and between buildings, including, where appropriate, public art and new structural landscaping.

CONSULTATION

Transportation - Subject to a financial contribution of £25,000 towards non-car access improvements in the area and the reduction of car parking provision to 21 spaces, there are no objections on transportation grounds to the revised proposal.

The provision of 23 spaces and a drop-off point would exceed the requirement of 0.5 spaces per 1/2 bedroom units with a maximum 20% greater, which results in 18 spaces and 21 maximum. It is suggested the small parking area in the rear garden be removed.

Cycle parking for at least 8 bicycles needs to be accommodated. Separate vehicle and pedestrian access addresses previous safety concerns. The width of the access and gradient to the basement parking is acceptable although a transitional 2.4 metre length at either end will need to be reduced to 5° to prevent grounding.

The occupiers of 85 neighbouring properties and the 3 Ward Councillors were notified of this revised scheme which resulted in one letter of objection with no grounds specified. Site notices were placed on site. Notification in respect of the original scheme gave rise to two letters, one offering no objection but raising concerns about the affect of pollution and noise from traffic affecting the complainant's health, whilst the second questioned the applicant's commitment to any one proposal for the site.

REMARKS

This site with its former warehouse and ancillary office building forms a local employment site. Under the Adopted Unitary Development Plan there was a site specific proposal for the redevelopment of the site for either offices, residential or an hotel due to the previous planning permissions granted of this site and them representing uses more appropriate to a mixed retail and residential area close to Wembley Stadium. Under the Replacement Unitary Development Plan there is no site specific proposal but it is a site which falls within the Wembley Regeneration area and within the National Stadium Policy Area.

Under the various policies set out above the loss of local employment sites is permissible if their redevelopment is likely to cause environmental problems. In view of the preponderance of residential uses within the vicinity of the site, this is a site, notwithstanding its previous use, where industrial or warehouse development would be no longer appropriate. Alternative uses include housing with a substantial element of affordable housing, with high density housing being appropriate in the Wembley Regeneration Area with developments of at least 10 units requiring a mix of general market and affordable housing suitable for smaller households, with consideration being given to off site 'provision in lieu' affordable housing.

There is no objection in principle to housing on this site. The scheme proposed is high density, with a density of 350 habitable rooms per hectare, which is significantly higher than the outline proposal approved in 1989 for 36 studio and 12 one bedroom units.

The proposal has been amended from the original submission in order to improve the layout and relationship with adjacent sites. These changes, including the removal of the ramped access to the basement parking from the front to the rear of the building has enabled the building to be brought forward in order to better address the street and relate it to the neighbouring buildings, which to the north-east lies on the back edge of the pavement (Empire Parade) with the Raglan Court building being set behind a short forecourt area.

This four storey building, with a semi-basement, despite the use of a pitch roof with a shallower angle of pitch, is higher than its neighbours. However it is not disproportionately higher and together with its size and bulk is not considered out of scale and character in the streetscene. There are certain reservations above the quality and suitability of some of the materials suggested for the vertical surfaces but these issues could be addressed at a later stage is permission were to be granted.

Whilst this infill scheme provides a contrast with the simple form and character of neighbouring development it is not considered to be innovatory. Its design and appearance makes a reasonable contribution to the streetscene, particularly in view of the present nature of the site, but it is not considered to be of outstanding quality.

The form, layout and design of the scheme has been modified principally to address the constraints associated with neighbouring sites. The number of windows for habitable rooms

in the side elevations has been reduced to address previous concerns about lighting to windows in the north-east elevation and their outlook on the relationship with Empire Parade and the industrial premises to the rear located along the site boundary and on the opposite side the relationship with and implications for privacy with regard to windows in the side elevation of Raglan Court. As indicated in the introduction of the proposal the revised scheme still includes windows for a second bedroom in the north-east elevation and for a kitchen in the south-west elevation, but it is considered that whilst not entirely desirable their position, distance from the boundary and relationship with neighbouring development does not provide any overriding reason to withhold permission on grounds of outlook and relationship with neighbouring development.

The modifications have resulted in the windows for habitable rooms in the rear projecting section being sited on the north-east elevation 12 metres from the industrial premises, whilst on the opposite side being located over the ramp to the basement parking. Again, whilst not entirely desirable, this is not considered sufficient reason to withhold permission.

By bringing much of the proposed building forward and reducing the surface parking, this has allowed more amenity space to be provided. The 900 square metres proposed however falls considerably short of the minimum standard specified in SPG17 "Residential Design Standards" which would require a total of 1,425 square metres. A reasonably sized and usable area can be provided, which could be further improved if the Transportation Section's suggestion for deleting the rear surface parking area was adopted, and in view of the promotion of higher density development in the Wembley Regeneration Area, it would prove difficult to object to this aspect of the scheme. The perimeter fencing proposals are considered to be satisfactory.

As will be noted from the Transportation Section's observations, whilst the parking for this scheme has been significantly reduced, there is still an overprovision in the context of the Council's standards and policies and Central Government Guidance to promote alternatives to private car usage, especially in areas well served by public transport.

The applicants are willing to pay the requested financial contribution of £25,000 towards non-car access improvements in the area.

Generally within the scheme, the room sizes meet the minimum specified in PPG17, although a few of the bedrooms do fall slightly below standard. The general arrangement of the accommodation is satisfactory and a reasonable standard of amenity should be available notwithstanding the proximity of the development to the industrial units along the north-west boundary of the site and the site fronting a well trafficked road.

The applicants, notwithstanding the Council's policy, are unwilling to provide any affordable housing within this scheme. In view of this they have been requested to make a payment 'in lieu' in order to provide such affordable housing as would have been required under this scheme at another site. For this application they have offered to make a contribution of £50,000 towards affordable housing if this scheme were implemented. In support they indicated:-

> ".... it is neither reasonable nor practical, economically and socially, to expect a single block of flats on a small site to be split between affordable and private housing. I cannot make any greater contribution to affordable housing as I cannot afford it and the project becomes uneconomic."

The necessary financial contribution towards affordable housing for this scheme has been calculated to be £590,000.

As the applicants are unwilling to provide any affordable housing within this scheme or adequate finance for it to be provided elsewhere, it is recommended that this application be refused. As there is also an overprovision of parking within the scheme it is also recommended this form an additional reason for refusal.

RECOMMENDATION: Grant Consent

CONDITIONS/REASONS:

(1) The development to which this permission relates must be begun not later than the expiration of five years beginning with the date of this permission.

Reason: To conform with the requirements of Section 91 of the Town and Country Planning Act 1990.

(2) Before any building works commence on the site, a scheme providing for the insulation and ventilation of the proposed building(s) shall be submitted to and approved by the Local Planning Authority.

Reason: To ensure that the occupiers are not subjected to excessively high noise levels and to ensure an adequate standard of amenity.

(3) Details of the air-conditioning, ventilation and flue extraction systems including particulars of noise levels shall be submitted to and approved by the Local Planning Authority before any works commence on site.

Reason: To safeguard the amenities of the adjoining occupiers.

(4) During demolition and construction on site:-
(a) - The best practical means available in accordance with British Standard Code of Practice B.S.5228: 1984 shall be employed at all times to minimise the emission of noise from the site;
(b) - The operation of site equipment generating noise and other nuisance causing activities, audible at the site boundaries or in nearby residential properties, shall only be carried out between the hours of 0800 - 1700 Mondays - Fridays, 0800 - 1300 Saturdays and at no time on Sundays or Bank Hoidays;
(c) - Vehicular access to adjoining and opposite premises shall not be impeded;
(d) - All vehicles, plant and machinery associated with such works shall at all times be stood and operated within the curtilage of the site only;
(e) - No waste or other material shall be burnt on the application site;
(f) - A suitable and sufficient means of suppressing dust must be provided and maintained.

Reason: To limit the detrimental effect of construction works on adjoining residential occupiers by reason of noise and disturbance.

(5) The building works hereby approved shall not commence until vehicle wheel washing facilities have been provided on site to the satisfaction of the Local Planning Authority. Such facilities shall be used by all vehicles leaving the site and shall be maintained in working order until completion of the appropriate stages of development.

Reason: To ensure that the construction of the proposed development does not prejudice conditions of safety and cleanliness along the neighbouring highway.

(6) Detailed drawings shall be submitted to and approved by the Local Planning Authority before any work is commenced to indicate the finished site and ground floor levels intended at the completion of the development in relation to the existing site levels and the levels of the adjoining land and the development shall be carried out and completed in accordance with the details so approved.

(Note: The gradients of any new road or turning area should not exceed 1:25 and those of parking or loading bays should not exceed 1:40).

Reason: To ensure that the development is satisfactorily sited and designed in relation to adjacent development and the highway and that satisfactory gradients are achieved.

(7) Details of materials for all external work, i.e. bricks, fenestration and roofing materials,

including samples, shall be submitted to and approved by the Local Planning Authority before any work is commenced.

Reason: To ensure a satisfactory development which does not prejudice the amenity of the locality.

(8) All areas shown on plan 1000/35 and such other areas as may be shown on the approved plan shall be suitably landscaped with trees/shrubs/grass in accordance with a scheme to be submitted to and approved by the Local Planning Authority prior to commencement of any demolition/construction work on the site, such landscaping work to be completed during the first available planting season following completion of the development hereby approved Such scheme shall also indicate:-
- proposed walls and fencing along the site frontage and within the site, indicating materials and heights.
- screen planting along the North West and North East boundaries.
- adequate physical separation, such as protective walls and fencing, between landscaped and paved areas.
- existing contours and any alteration, such as earth mounding, thereto.
Any trees and shrubs planted in accordance with the landscaping scheme which, within 5 years of planting are removed, dying, seriously damaged or become diseased shall be replaced to the satisfaction of the Local Planning Authority, by trees and shrubs of similar size and species to those originaly planted, or such other species as may be agreed with the local planning authority.
In the event that no scheme is submitted and approved prior to commencement of construction works, the Local Planning Authority shall be empowered to prepare a scheme which shall be forwarded to the applicant or any subsequent occupier of the site, and such scheme shall be implemented as required above.

Reason: To ensure a satisfactory standard of appearance and to ensure that the proposed development enhances the visual amenity of the locality.

(9) The perimeter close boarded fencing as specified on drawing no 1000/35 on the South West, North West and North East boundaries shall be erected prior to the first occupation of any of the residential units hereby permitted.

Reason : In the interests of the occupiers of the proposed units and neighbouring properties

(10) Details of a scheme showing those areas to be treated by means of hard landscape works shall be submitted to and approved by the Local Planning Authority, in writing, prior to the commencement of development. Such details shall include detailed drawing(s) of those areas to be so treated, a schedule of exact materials and samples if appropriate.

Reason: To ensure a satisfactory standard of development in the interests of local visual amenity.

(11) Prior to the commencement of the use of any part of the approved development all parking spaces, turning areas, access roads, footways shall be constructed and permanently marked out in accordance with the approved plans. Thereafter they shall be retained and used solely in connection with the development hereby approved and for no other purpose.

Reason: To enable vehicles using the site to stand clear of the highway so that the proposed development does not prejudice the free-flow of traffic or the conditions of general safety along the neighbouring highway.

INFORMATIVES:

None Specified

REFERENCE DOCUMENTS:

1. Adopted Unitary Development Plan 1996.
2. Replacement Unitary Development Plan Draft Deposit 2000.

Any person wishing to inspect the above papers should contact Neil Bleakley, The Planning Service, Brent House, 349 High Road, Wembley, Middlesex, HA9 6BZ, Tel. No. 020 8937 5016

Appendix L: Selected Committee Report Summaries

L1: Viant House

Residential Scheme Summary

NAME OF SCHEME: Viant House

ADDRESS: 1-31 INC, Viant House, Stonebridge Park, Stonebridge

NUMBER: 00/1391

NUMBER OF UNITS: 41 (all units include one common room)

Studio Apartments:
1 Bedroom units: 25 normal, 12 full wheelchair flats
2 Bedroom units: 2 normal, 1 Wardens
3 Bedroom units:
4 Bedroom units:

NUMBER OF PARKING SPACES: 3 parking spaces total
1 additional space for staff

COMENTS AND OBSERVATIONS: Housing for elderly. Complaints cite that 3 spaces are inadequate, Parking layout designed to ensure minimal loss of trees. Car parking standard for very sheltered (Category 2.5) is 0.1 spaces per unit + 1 space for Warden. Cycle parking for staff also needs to be provided. Development is short 2 spaces plus staff parking.

L2: Wasps Rugby Football Club Grounds

Residential Scheme Summary

NAME OF SCHEME: Wasps RFC Ground

ADDRESS: Repton Ave., Wembley

NUMBER: 00/1242

NUMBER OF UNITS: 113

Studio Apartments:
1 Bedroom units: 16
2 Bedroom units: 60
3 Bedroom units: 37
4 Bedroom units:

NUMBER OF PARKING SPACES: 46 have a single parking space
36 are in the curtilage of the property.
9 spaces are near the north entrance
1 is a car port for a disabled person
52 properties are to have a garage and a parking space within the curtilage
13 have double garages with two spaces in front within the curtilage
2 will have a detached block of double garages with parking spaces in front

COMENTS AND OBSERVATIONS: Of the 113 flats, 17 are detached, 18 are semi-detached, and 78 are in terraces. 40 are affordable dwellings. 57 are two storey, 56 are three storey. 19 of the two stories have an accommodation in the roof.

Appendix M: Site Descriptions

Chalkhill Estate

Chalkhill Estate was located in Barnhill Ward. While it is still in construction, many phases of this scheme have been completed. The housing is mostly arranged in two storey terraces with flats scattered throughout. The group performed field studies and surveys in Phase 2 and Phase 4 of the development. Phase Two contained 63 parking spaces, 24 of which were filled. In Phase 4, 19 out of 37 were occupied. On a percentage basis, this computes to 38% occupancy in Phase 2 and 51% in Phase 4, totalling 41% for the entire development. There was one car that was parked in an unallocated location. Only two of the fourteen residents surveyed expressed inadequacy in the parking supply. This location is especially interesting to our liaison because is will be on the northern end of the new Wembley redevelopment area, for which our figures will be considered.

Northwick Park Hospital

This development is located at the northwest corner of Brent in the Northwick Park Ward. The units in this development are exclusively live-work dwellings, meaning all of the residents are key personnel of the nearby hospital. Upon talking to Nicole Marls, a member of the management team, we learned that the housing in the development has intermediate rent levels, which rate half way between social and market housing. 61% of the 83 spaces that we studies were occupied. Surveys indicated that although people have a moderate car ownership rate (75%), they do not need them for work. Since there is a free bus service from the development to the hospital complex, it is rare to find people bringing their car onto the hospital property. It is more common for them to use it for daily errands or weekend trips.

Gladstone School

This development is located in the Dudden Hill Ward. Thirty-two units built to the rear of Gladstone School were recently erected along with 28 parking spaces to accommodate its residents. All dwellings were located in one building, but all unit entrances were through outdoor doorways. The evening occupancy study showed that slightly more than half of the spaces were filled, with 15 of 28 spaces having cars in

them. Two addition cars were parked on the private way to the development. All residents that we surveyed had cars and expressed some sort of displeasure with parking. Their main concern was the school taking up spaces in the residential lot during pick-up and drop-off times, and also teachers parking in spaces reserved for people living in the dwellings.

DeHavilland Road

This development, located in the Queensbury Ward, contained 74 dwellings off of DeHavilland Road. These units are terraced dwellings with parking arranged in front of each unit. We counted 73 spaces in the complex and noted that 31 were occupied. There were also 24 car parked along the street in unallocated areas. A majority of these cars were parked on DeHavilland Road on the outskirts of the development we were studying. There was further on street parking along the entire length of DeHavilland Road, which indicates that the on street parking near this particular development was not a result of inadequate supply. We received mixed results from the survey when we asked about ease of parking. Public transportation did receive low scores from some residents, and the PTAL agrees that that there is poor coverage in that general area.

Malvern Road

Malvern Road is located in the Kilburn Road follows the curvature of the border between Brent and the Borough of Kensington and Chelsea. The development included 27 units arranged in flats. Primary figures suggested that 21 units would be private housing, but all dwellings appeared to be affordable in the complex. The parking seemed to be arranged haphazardly on an unmarked concrete landing in front of the building. There were five cars parked on it, but there appeared to be room to fit seven cars. Residents told us that there were four spaces on the road that were available to anyone who owned a permit. Further questioning revealed that the permits were issued by the borough and that anyone in the borough who owned a similar permit could park there, even if they did not live in the development we studied. Residents did not hold the parking situation in high regard and had many complaints about the supply and parking trends. One resident cited parking as the main reason that she did not own a car. The committee reports stated that the proposal required twelve parking spaces.

Rutland Park Mansions

The Rutland Park Mansions are located in the Willesden Green Ward. Contrary to its name, this development is an arrangement of affordable flats. All of the parking in this complex was located in one large parking lot. Spaces were numbered, showing that residents were allocated specific spaces to park in. 29 out of the 37 spaces were filled, giving a 78% occupancy rate.

Former Abbey National Sports Ground

This group of terraced housing units located is located in Barnhill Ward. Housing in this development is classified as social. There were 92 residents located on the property; no flats were contained within the development. In front of each housing unit was a gated parking space intend for that one unit. Out of the 92 spaces, 43 were occupied and there were 35 cars parked on street. Residents discussed trouble finding parking for visitors or for their multiple cars.

Viant House

The Viant House is located in the Stonebridge Ward, just north of the large Stonebridge Estate. It is a sheltered housing development for the elderly. The UDP states that sheltered housing needs less parking allocation per unit. It contains 41 units arranged in flats, 39 of which are affordable dwellings. There are three parking spaces allocated for the residents of the Viant House, and at the time we visited the site one was occupied. There was a multitude of cars parked in front of the development on the street. There were also cars parked on a concrete flat in the vicinity as well. We counted a total of twelve cars parked in unallocated areas surrounding the Viant House. There were other developments nearby that may have contributed to the on street parking. We could not gain approval from the Newcome House management team to conduct surveys; therefore we can not accurately gauge the residents' opinions on parking.

Jubilee Heights

Located in the Ward of Mapesbury, Jubilee Heights is a market housing development arranged in flats. There was a parking numbered parking lot and a numbered underground parking garage. Forty Three percent of the spaces in the

parking lot were occupied and 50% of the underground garage was occupied. The development required key access so that only residents are able to enter the grounds. We were granted permission to study the parking, but not to conduct surveys to the residents.

16 Acton Lane, 279 Kilburn High Road and 10 Wellington Road

We were unable to perform field studies in these developments because they required secure access. The contact information did not lead to any information about the development or its management team. The developments on Acton Lane and Wellington Road were both market housing flats and contained thirty dwellings. The housing on Kilburn High Road was exclusively affordable flats and contained 21 dwellings.

Stonebridge Estate

Stonebridge Estate is the largest social housing development in Brent. It is currently in construction and is being built in phases. We observed parking in plots 1, 5, 8, 9, 11, 12, 15, 16, 17, 18, 19, 20, and 21. Sixty-three percent of the 454 spaces we counted were occupied. There were 65 instances of on-street parking.

Former Haycroft Dairy (Dairy Close)

This development is located in Kensal Green Ward. This site contains flats and terraced housing units, all of which are social. The site was located in Dairy Close, off of Harlesden Road, a major road running through Brent. There was a car park located behind the flats and all terraced units had a space for a car located in front of their unit along with 2 disabled spaces. No visitor parking was identified. This development was the most occupied with 34 of the 39 spaces filled (87.2%) and 3 cars parked in unallocated spaces. Residents felt that more visitors parking should be supplied.

Cowies of London

Cowies is located in Kensal Green Ward. This site contains flats and terraced housing units, all of which are social. The site was located in Cardinal Finsey Close, off of Harlesden Road, a major road running through Brent. The car park was located behind the flats and space was available for cars in front of the terraced units. No

visitor parking was identified. The development had 43 parking spaces with 28 filled (65.1%) and 4 cars parked in unallocated spaces. All residents surveyed owned at least one car.

Century Hotel

Century Hotel is located in Preston Ward. This development contains both market and social housing. This is both a gated car park only allowing access if a key card is swiped at the gate, and an open air car park. Fifty-five percent of the spaces in the car park were occupied, with 28 out of the 51 spaces filled. All of the residents surveyed owned a car, and all of them indicated that finding parking in their development was easy. Because of nearby on-street parking and allocated spaces for residents, there did not appear to be any need for additional parking.

Empire Way

Empire way, or Lonsdale House, is located on the same street as Wembley Stadium and the nearby conference centre, in Tokyngton Ward. Parking was located on the back and sides of the building. Of the 24 spaces in the car-park, 12 of those were filled with parked cars for an occupancy rate of 50% filled. There were no cars parked in unallocated spaces in the car park and no on-street parking. Unfortunately, residents were not surveyed at this development because no access was available to the building

Former Wasps Rugby Grounds

The former Wasps rugby ground is located in Sudbury Ward. The development is mixed, containing both market and social housing. The market housing units each had a garage and a driveway for cars that was allocated to them. The social housing did not have individual garages but did have a space to park in front of their unit that was not allocated. The development was 57.5% filled with a total of 134 spaces and 77 cars filling those spaces. The garages were not counted as spaces because research in the committee report suggested that garages were not used to house cars but rather used as storage units. There were 32 cars parked on street, causing the road to be very narrow in some places. Seven out of eight residents surveyed owned a car. Residents complained about the lack of visitor parking on weekends and holidays.

128-134 Preston Road

128-134 Preston Road is located in the Preston Ward. The development was all market housing in the form of flats. The development was gated as was the open air car park. The car park had 25 total parking spaces with 10 being filled giving it a 40% occupancy level. The residents surveyed said that each unit was allotted an individual parking space and that parking was not a problem in their development.

Dog Lane

Dog Lane is located in Welsh Harp Ward. The development was all social housing units in the form of terraced housing and flats. The development had a total of 40 spaces with 20 of them filled for a 50% occupancy level. There were two cars parked in unallocated parking spaces throughout the development. The residents are allocated a parking space, and two out of three residents surveyed said that there were enough parking spaces for the development.

Land Behind Westview Close

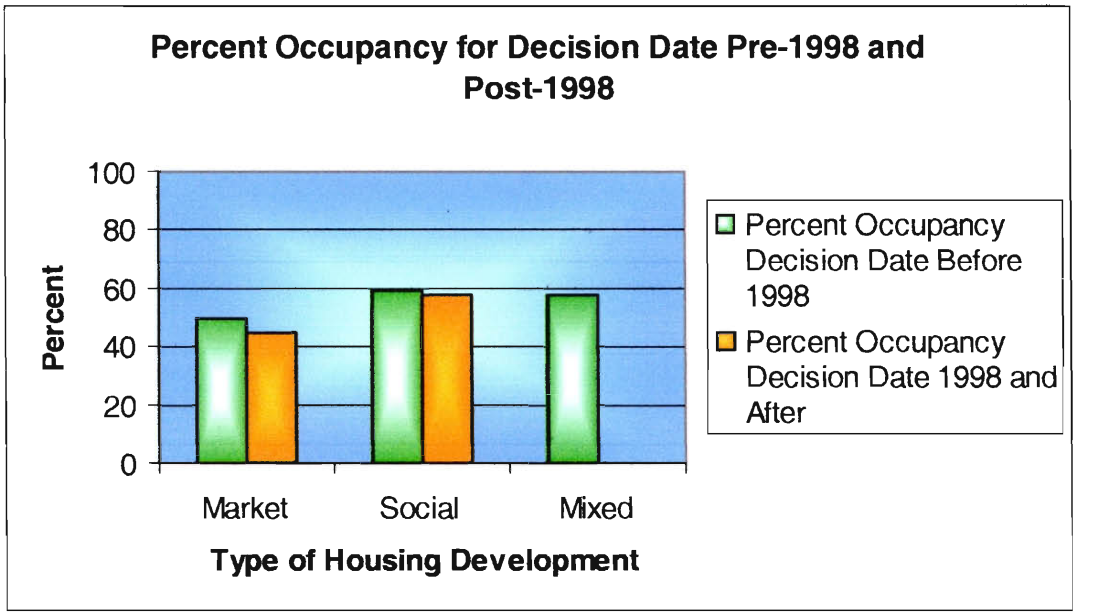
The land behind Westview Close is located in Dudden Hill Ward. The development was all social housing units, all of which were flats. There was a total of 28 parking spaces with 15 spaces filled for a 53.6% occupancy level. There was one car parked in an unallocated space. All residents surveyed said that parking was adequate in their development. No complaints about the parking situation.

Appendix N: Breakdown of Dwellings by Number of Inhabitable Rooms

Note: to determine the number of bedrooms each dwelling, subtract one from the number of rooms in a flat and subtract two from the number of rooms in a terraced dwelling.

	Flats								Houses								
Dev No	1 Room	2 Room	3 Room	4 Room	5 Room	6 Room	7 Room	8+Room	1 Room	2 Room	3 Room	4 Room	5 Room	6 Room	7 Room	8+Room	Total
940033		10	61	5													76
940041				36	3	39											78
961095			20								1	2	15				38
962166		29	2														31
970584		6	15									4					25
972535			6								11	15	1	2			35
961854		8	26								21	12	3	4			74
971455								40								62	102
971456											28	22	18	4			72
972700		32									20	19					71
980308		88										99					187
980816		11	2								3	13	3	2		2	36
972577		8	8								46	30	4				96
981243										8	13						21
982471		15	12									24	4	1			56
991347		2	12									10	8				32
991972		1	35														36
001077		33	11														44
001242											16	60	37				113
001391	27	37	4														68
001632		1	61														62
002463	24	1	5														30
980290													95				95
992651		7	22	1													30
002831		21	6														27
011078		1	61														62
011473		55	221	9									28	31			344
931836		24															24
981062		70	54								10	60	28				222
992454		16	41	20				2									79

Appendix O: Percent Occupancy Pre and Post 1998 Policy Changes



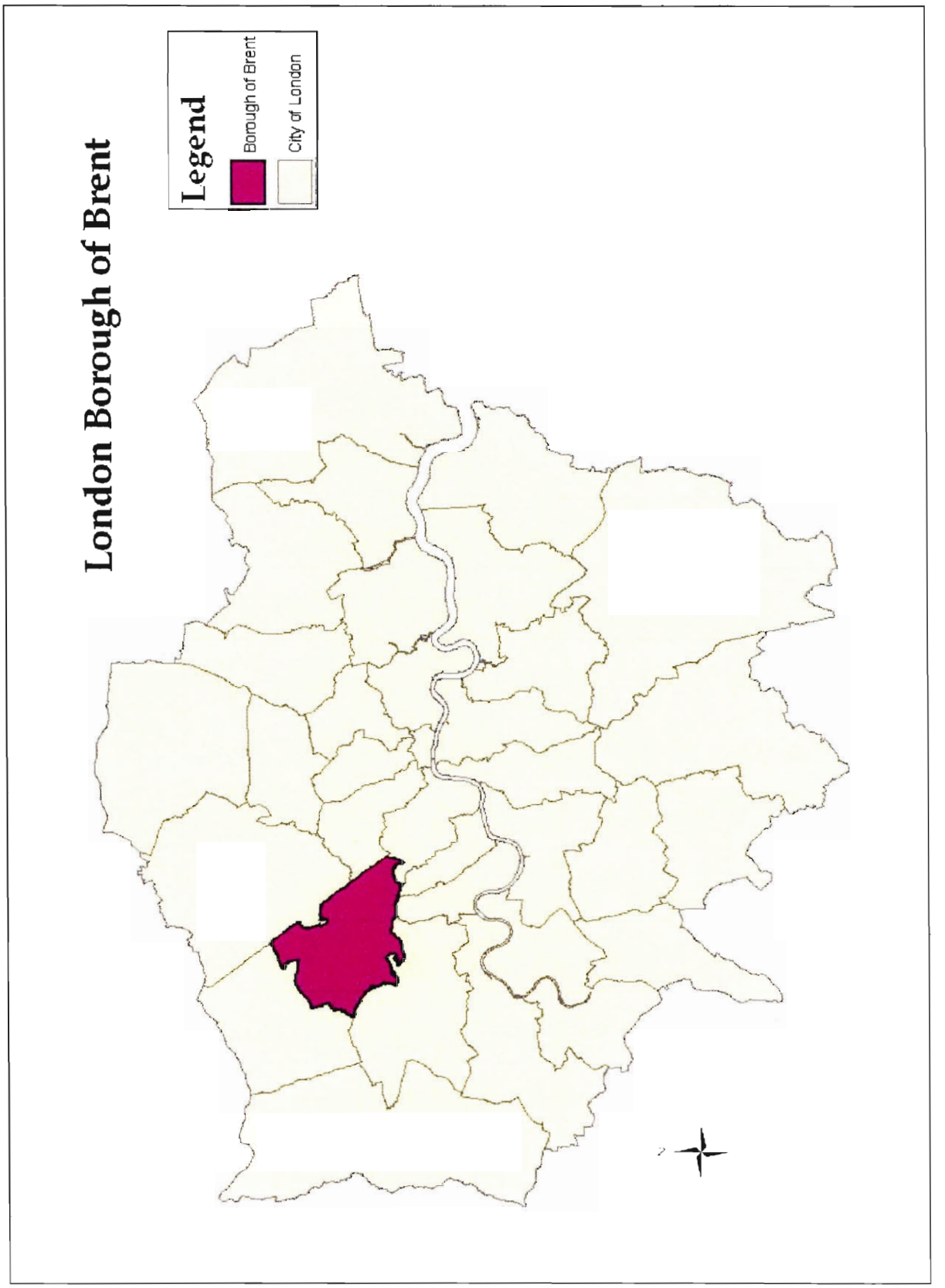
Appendix P: Market and Social Housing Examples

P1: Typical Market Housing Examples – Detached or semi-detached individual units

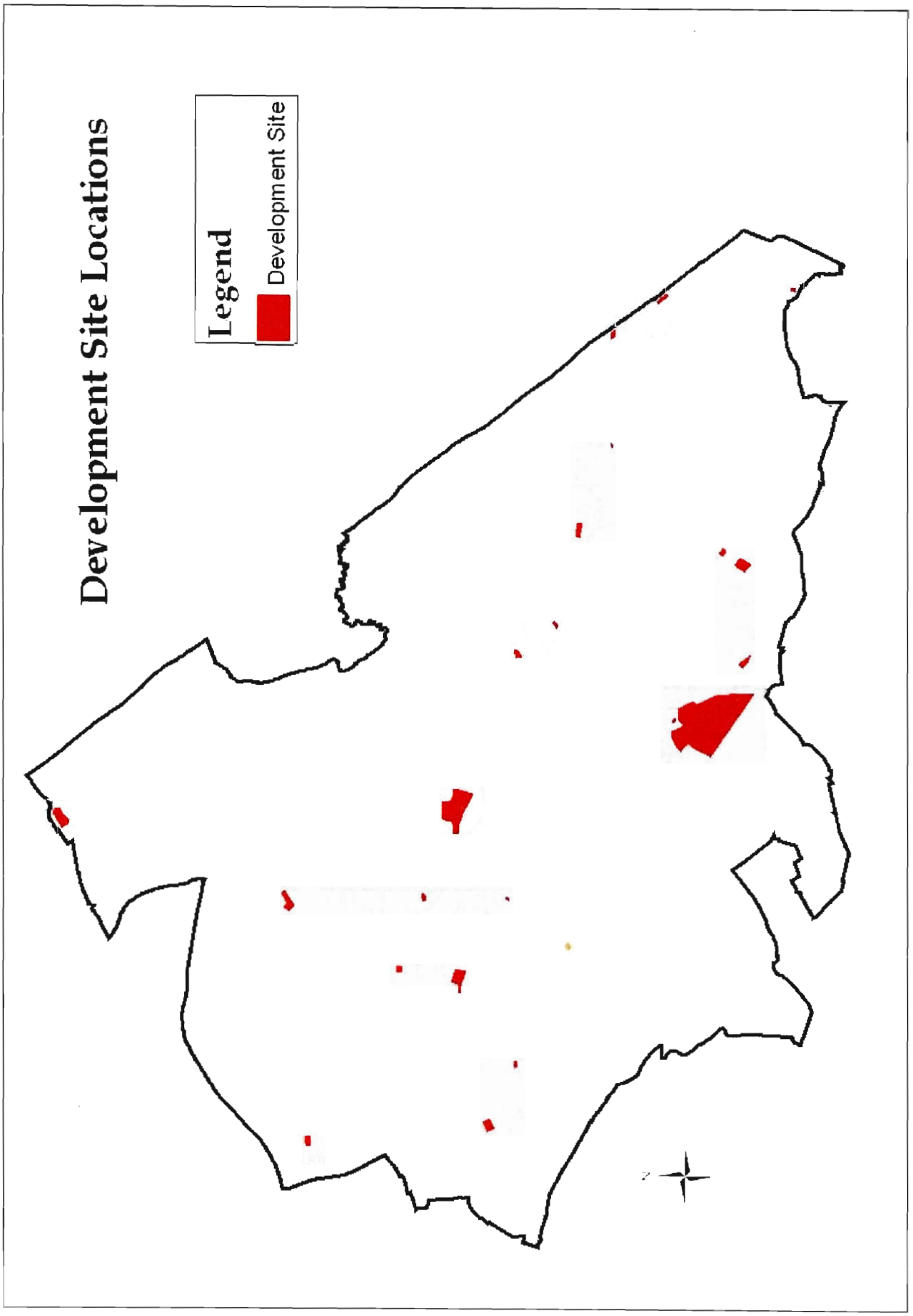
P2: **Typical Social Housing Examples** – Closely attached units or multi-storey flats.

Appendix Q: Additional GIS Layers and Maps

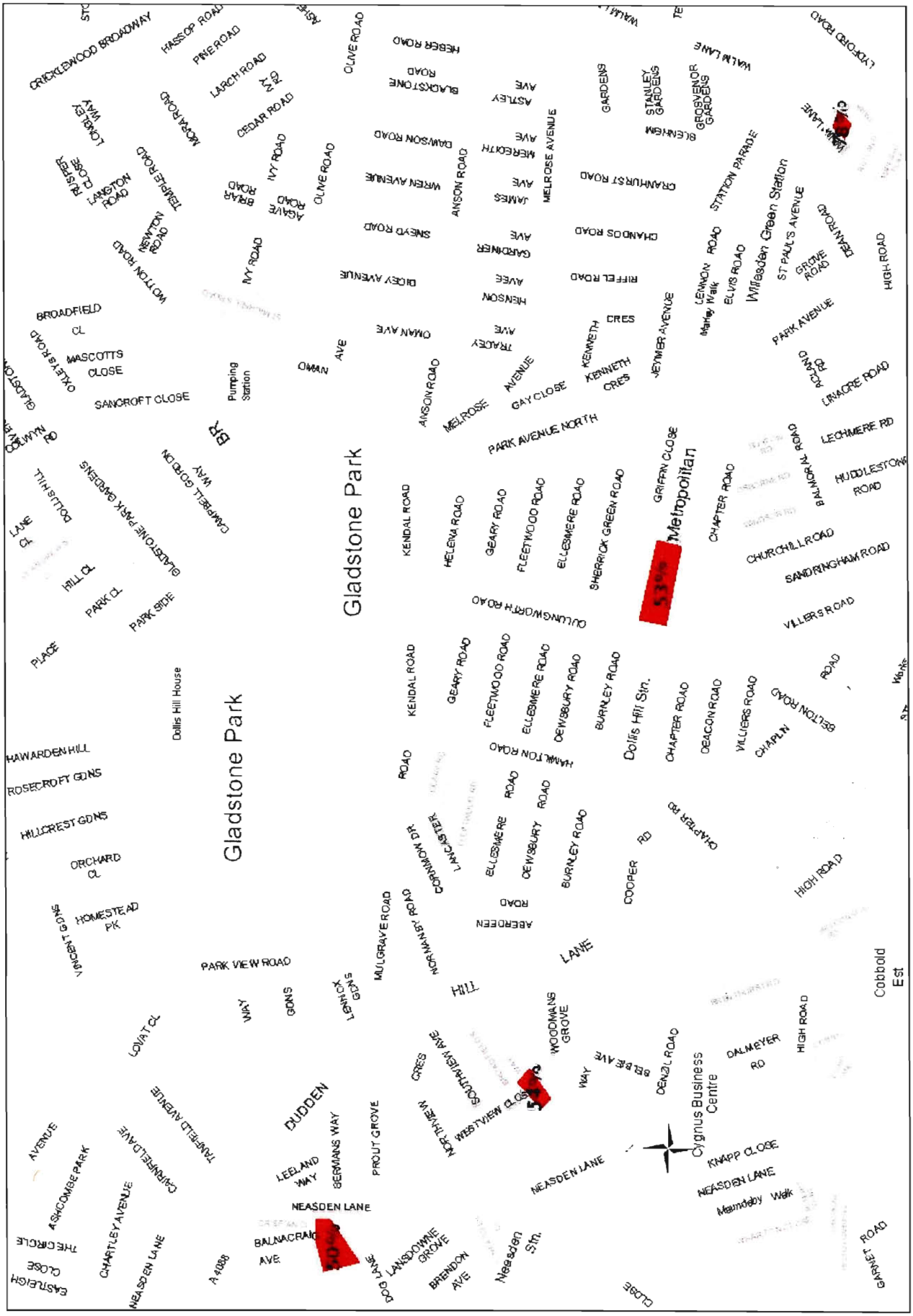
Q1: Location of Brent in the City of London



Q2: Location of Developments in Brent



Q3: Close-up of Developments and Street Map



Appendix R: Gantt Chart

Objectives and Tasks	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Research Housing Specifics							
Obtain Listing and Location of Developments							
Obtain Parking and Dwelling Figures							
Read and Summarize Committee Reports							
Obtain Layouts of Developments							
Perform Field Studies							
Conduct Surveys							
Interview Property Managers							
Evaluate Parking Factors and Demand							
Acquaint Ourselves With Brent's Software							
Set Up Database for GIS Information							
Look For Existing GLS Layers							
Input Collected Figures from Field Studies							
Create GIS Layers							
Marge Layers							
Analyse Data and Look for Correlations							
Formulate Reccomendation and Conclusions							
Final Report							
Writing							
Editing							
Presentation Preparation							
Final Presentation							

Appendix S: PTAL Rating vs. Resident's Opinion of Public Transportation