Promoting Car Clubs in Croydon

An Interactive Qualifying Project Report
Submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
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Degree of Bachelor of Science

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Abstract

In an effort to reduce carbon emissions and alleviate parking and traffic problems, the Croydon Council began work with Worcester Polytechnic Institute to develop a comprehensive car club strategy for the Borough. The team generated recommendations for new car club bays and electric vehicle charge point (EVCP) locations, and created a marketing strategy that included numerous promotional materials for car clubs. The materials and recommendations were given to the Croydon Council to help in their effort to promote and expand the use of car clubs in the Borough.

Acknowledgements

The group would like to thank a few individuals without whom this project would not have been possible:

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- Andrew Edgar – Streetcar
- Mary Toffi – Transport Policy Manager at Richmond
- Nathan Kaczmarski – Transport Planning at the Borough of Islington
- Barry Francis – Head of Infrastructure at the Croydon Council
- Peter Sandler – Senior Policy Officer at TfL
- Chas Ball – Chief Executive at Carplus
- Siân Houston and George Daugherty – Peter Brett Associates
- Terri Saich – Customer Service Program Manager at the Croydon Council

Thank you to everybody who took the time out of their day to attend our final presentation. The feedback and discussion was very helpful.

Executive Summary

The London Borough of Croydon has been working to reduce their carbon emissions and air pollution, as well as to alleviate traffic and parking problems. Car clubs offer a sustainable solution to these efforts. Based on a study conducted by Carplus, on average a car club vehicle can take up to 4 cars off the road, and defer 6 new cars from being purchased (TfL, 2007). Car clubs also produce 33% less carbon compared to the average UK vehicle (Harmer & Cairns, 2009). London has started utilizing car clubs to take cars off the road and has seen a steady growth of users since 2004 ("*Car Club Strategy"*, 2008).

Croydon is seeking to introduce car clubs as a way to reduce carbon emissions, parking pressures and traffic congestion. In February 2011, Croydon finished a 6-month trial with Streetcar where they introduced 28 vehicles for council members to use during the workday and for residential use during all other times ("Car Club Strategy for Croydon", 2011). The goal of this project was to promote car clubs in the Borough of Croydon by identifying new potential car club bays and to raise awareness of car clubs. In order to accomplish this, the group developed the following objectives:

- *Clarify existing car club policies*
- *Identify potential car club bay locations*
- *Raise awareness of car clubs*

Summary of Methodology

To complete the first objective of clarifying existing car club policies, the group reviewed Croydon Council documents and conducted a variety of interviews. The group primarily reviewed the current car club strategy developed by Peter McDonald, and interviewed Michael Murphy from the Croydon Council to clarify the current car club policies in Croydon.

In order to identify potential car club bay locations in Croydon, the group developed a repeatable methodology for choosing optimal bays. The group first interviewed Streetcar, Peter Brett Associates (PBA), and Carplus to establish the optimal criteria for a bay location. Based on the criteria, the group determined that the best areas in the Borough for car clubs would be areas with appropriate demographics and high vehicle density. Thus the group overlaid a TfL demographic analysis map and a car density map from PBA Consultants to determine areas of this borough where car clubs would be successful. These locations can be seen in green, red and orange on the map to the right. Once the 400m x 400m grid locations were determined, the group audited each location and found an optimal location for car clubs in each grid. A rating was given to each location during the audits. A comprehensive write-up was made for each of these locations after every audit. These locations were analyzed, and through information gathered from interviews with Richmond and Islington, recommendations were made for how to implement car club bays.

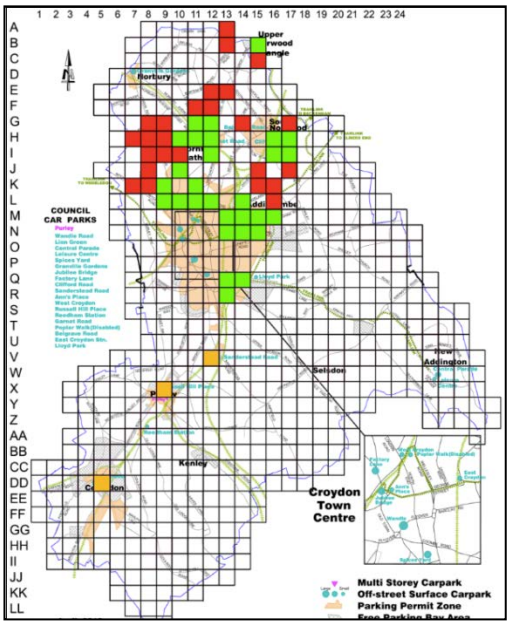

Figure 1 - Audited Locations

To raise the awareness of car clubs in the Borough, the group developed a comprehensive marketing strategy. The group conducted an interview with Carplus and reviewed documents to gather information on developing marketing strategies. Using the information the group developed a marketing strategy and a number of promotional materials primarily using Microsoft Publisher.

Summary of Results

The group identified and audited 57 total grids in the Borough. Of those locations, there were 7 grids that yielded no potential car club bay sites and 7 grids

that yielded multiple sites for car club vehicles meaning a total of 57 potential bay locations were identified. Each location was given a rating from 1-5 during the audit, and a write-up was developed for each location. The results for the ratings are shown in figure 2 below. The group compared the 57 potential bay locations to the Streetcar locations already in Croydon. Based on the overall ratings given to the locations, 23 of the 57 locations ranked higher than the average current Streetcar locations. The group also identified 16 of the 57 bays that are suitable for electric vehicle charging points.

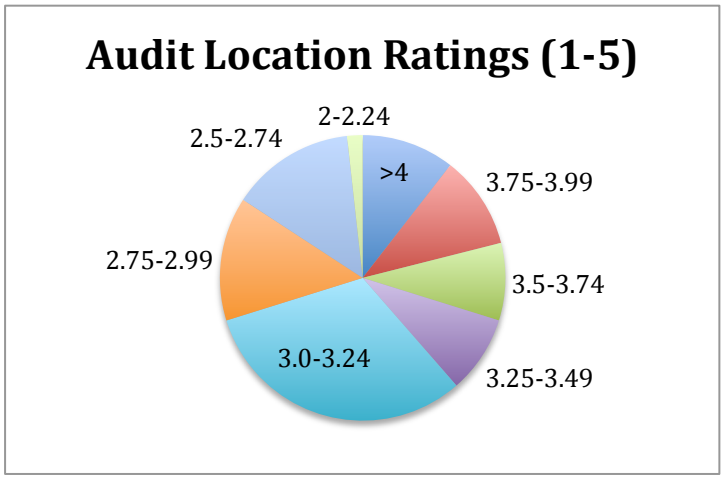

Figure 2 - Audit Location Ratings

In addition to developing a list of bay location recommendations, the group developed a marketing strategy targeting both residents and businesses. The group worked to understand the customer by: identifying the needs of both residents and businesses, identifying their barriers to adopting car clubs and identifying alternative forms of transportation other than car clubs. Using this information, the group developed promotional materials. This included a brochure for residents, a brochure for businesses, 3 posters, a webpage, and a car club bay sign. The brochure developed for residents can be seen below. The group also developed a business consultation plan to use to raise awareness of car clubs. A trial of this plan was conducted and the group learned that many businesses are already aware of car clubs, and that many have identified them as not being cost effective. The consultation plan was reshaped according to this information.

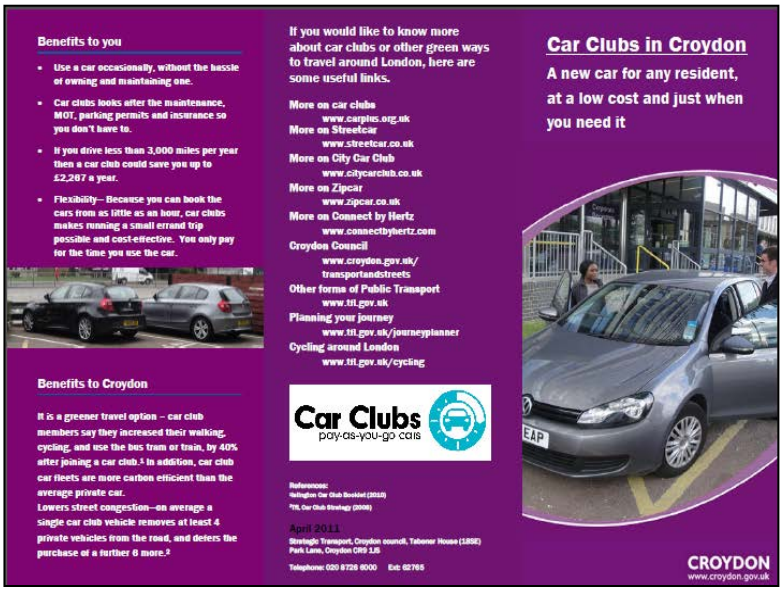

Figure 3 - Car Club Brochure

Summary of Recommendations

In order to promote car clubs, the group developed the following set of recommendations. These recommendations were generated based on the findings from the project:

1. **The group recommends that the council follow a 5-year car club bay implementation plan.** This plan involves a yearly implementation of 10-20 bays that are evenly spread out throughout the Borough, starting with the most optimal bay locations.

2. **The group recommends the Borough to remain as a single operator borough.** This would allow for an easier distribution of bays around the Borough, simpler contract management, and allow residents and businesses to have access to more vehicles around the Borough.

3. **The group recommends that the council establish EVCPs at 16 specified locations around the Borough.** These 16 locations are all located nearby existing feeder pillars, thus having reduced costs and complications to implement.

4. **The group recommends that residential and business brochures should be utilized to raise awareness of car clubs in the Borough.** Both brochures should be handed out or mailed to residences and businesses that are nearby a new car club bay. These brochures should also be distributed around public locations such as bus stops and terminals, train stations, town hall, etc. Specifically for the business brochure, it should also be brought along to business conferences to better inform and entice businesses to join car clubs.

5. **The group recommends that promotional posters be used to inform the public.** The poster was designed to quickly grab the attention of readers and inform them of some benefits of joining a car club. These posters should be placed in bus stops, bus terminals, train stations, tram stops, and other high traffic public locations.

6. **The group recommends that the Council inform households within a 400m radius around every proposed car club bay location that a car club bay will be installed nearby.** Informing the residents will make them more receptive to car club vehicles when they are actually implemented because they will already be aware of how the car clubs work and what the benefits are.

7. **The group recommends that the Council consult businesses.** It is important for car club vehicles to be used during the workweek. Businesses represent a large group of potential daytime workweek users.

8. **The group recommends consulting hotels.** Hotels could potentially offer car clubs to their clients.

9. **The group recommends that the Council install car club bay signs next to every car club bay in the Borough.** These signs act as a bay identifier and as a marketing tool. There is a short description of the purpose of the bay and a link to find more information that informs people who walk by. The sign also acts as a beacon for car club members trying to locate a vehicle, as well as aiding in the spread of a nationally recognized logo for car clubs.

Car clubs are an important step towards reducing carbon emissions and air pollution in Croydon. Car clubs can reduce the number of private vehicles on the road, which has a number of benefits for the Borough. To do this, additional car club vehicles need to be introduced into the Borough, and awareness of car clubs needs to be raised. The materials and recommendations developed in this report work to promote car clubs, and can be used by the Borough to further develop their strategy for car clubs.

Table of Authorship

The four group members were involved in a variety of tasks to complete the project. Below highlights the major responsibilities of each person.

Kevin Ducharme – Kevin's major responsibilities were related to the proposed bay location results and recommendations. Kevin created all of the results tables and was heavily involved in analyzing the results maps with in order to create the bay location recommendations. Kevin also heavily involved in creating the lists of bays to put in per year in the five year strategy and helped created the pros and cons tables in the results section. In addition, Kevin wrote the acknowledgments page.

Calvin Lam – Calvin contributed greatly to developing the promotional material and the marketing strategy. He designed and developed the residential brochure, the business brochures, all 3 residential posters and the car club bay sign. He also wrote the executive summary. Calvin also contributed significantly to the web content. In addition, he conducted the Islington interview with Adeola, the Carplus interview with Rick, and all the trial business consultations with Adeola.

Adeola Otuyelu – Adeola's primary responsibility was researching and compiling a list of businesses that use car clubs and a list of potential businesses. She was involved in developing the business and residential consultation strategy and participated in a trial consultation. She was also in charge of communicating and setting up interviews throughout the project.

Richard Tombarelli – Richard Tombarelli was responsible for a wide variety of tasks. Richard was involved in establishing the direction of the project, and oversaw the team activities to assure that the project objectives were being met. Richard was directly involved with every part of the project. Specifically, he developed all of the maps used in the report, developed the webpage content, led most interviews, and wrote a large portion of the report including a significant amount of each chapter.

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1. Introduction

Car clubs were formed in Switzerland in the late 1940's as a means to provide private citizens access to motor vehicles. Private cars were extremely expensive to purchase and maintain, thus citizens opted for "pay-as-you-drive" car clubs. This idea has been around for more than 70 years and has seen tremendous growth in interest in the last decade. As of 2010 there were more than 800,000 car club members worldwide with many private car club companies such as Zipcar, Streetcar and City Car Club (Belson, 2010). In the last decade car clubs have been marketed not only as an inexpensive alternative to private vehicle ownership, but as a "carbon-friendly" sustainable form of transportation. National and local governments have begun utilizing car clubs as a way to take cars off the road and promote the use of public transportation. Motor vehicles are a leading contributor of carbon emissions and by taking cars off the road, there is a significant reduction in carbon emissions as well as parking and traffic problems. London has utilized car clubs to take cars off the road and saw growth in membership of 300 percent in 2007 ("*Car Club Strategy*", 2008). The borough of Croydon has just recently included car club promotion in their sustainability efforts. The Borough is looking to reduce carbon emissions and alleviate parking and traffic problems by promoting the use of car clubs throughout the Borough.

The borough of Croydon already operates a car pool program and is in the process of developing a strategy to further promote car clubs in the Borough. Many concerns and questions remain to be addressed however. For example: Where are the best places for car clubs to be located throughout the Borough? What strategy should the council take for introducing new car club bays? How can the Borough raise awareness of car clubs? By addressing these questions, the Croydon Council will be able to make informed decisions regarding the development and expansion of car clubs in the Borough.

The goal of this project is to assist the Croydon Council in the development of a comprehensive strategy to raise the public awareness and utilization of car clubs within the Borough. The project involves three main objectives. The project will: clarify existing car club policies; identify potential car club bay and EVCP locations; and develop promotional material for car clubs and electric vehicles.

To accomplish these objectives the project team conducted a variety of tasks while in the Borough. The group first reviewed Transport for London (TfL) and Croydon Council documents to learn about the car club policies currently in place in the Borough. Interviews were held with Croydon Council members, Streetcar officials, TfL, Carplus, and representatives from other boroughs to learn more about car clubs. After learning about the existing car club policies, the group worked to identify potential car club locations. This involved developing a set of criteria for car club bay placement, then choosing the locations in the Borough that met these criteria. These potential locations were then individually audited to determine whether they would be successful for car club bays or EVCP sites. Finally, the group developed a marketing strategy and generic promotional material for car clubs. By completing the tasks the group developed materials and recommendations for the Croydon Council car club strategy.

2. Literature Review

To fully understand car clubs and the topics being addressed with this project, the group did extensive background research. Literature was reviewed to gain knowledge that would be beneficial towards completing the project. Research was conducted primarily on the history and structure of car clubs, on the advantages of car clubs, and the interest for car clubs in Croydon. Below outlines some of the major findings related to the project.

2.1 History of Car Clubs

2.1.1 General Information

A car club can be defined as a "pay as you drive" rental club, where members are able to access and rent vehicles without private ownership of the vehicles. Car clubs are considered to be a carbon reducing, sustainable form of transportation. Car clubs are sometimes referred to as car sharing networks, but should not be confused with car-pooling organizations. In a car club, vehicles are available in reserved parking spaces, and can generally be rented on an hourly, daily, or weekly basis. Commercial operators, community groups, employers, and informal resident groups operate car clubs ("*Making Car Sharing and Car Clubs Work*", 2004). This section provides information about the history and goals of car clubs, with consideration to clubs in Europe and North America.

2.1.2 General History

Founded in 1948 in Zürich, Switzerland, Sefage was the forerunner of the modern car club. Privately owned cars were practically unheard of at that time, due to high expenses, so members of Sefage pooled their money in order to buy a car that they could all share together. Switzerland then led the way again with larger car clubs when ShareCom was founded in 1987. ShareCom had the same purpose as Sefage in the sense that it allowed members to collectively share cars, it did however, have other purposes as well related to sustainability. The main goal of

ShareCom was to conserve energy and natural resources. Along with ShareCom, Auto-Teiler Genossenschaft was also founded in Switzerland, the very same year, and had the same goals and purposes (Schönbeck, Schwoll, & Linssen-Robert, 1998). After Switzerland, the idea of car clubs spread to Germany, Austria, and the Netherlands, starting with Germany's StattAuto, which was founded in 1988 in Berlin. Under German law, StattAuto could not be a charitable club like Switzerland's car clubs, so it was incorporated as a business. StattAuto's success spurred other car clubs to begin such as StattAuto in Bremen and StadtteilAUTO in Aachen (Schönbeck, Schwoll, & Linssen-Robert, 1998). All of these car clubs that led the way for future clubs had the same common goals; to conserve energy and give those who could not afford a private car the opportunity to share a car with others. Other European countries that have followed suit more recently are the UK, Denmark, Italy and Sweden (Enoch & Taylor, 2006). Recently, there has been strong growth in London, and other locations in the UK (Harmer & Cairns, 2010). By early 2005, Europe was home to over 100 car clubs with more than 120,000 members (Enoch & Taylor, 2006) and the numbers have likely grown, though definitive data is not available.

This increase in car clubs in Europe can partially be credited to the European Car Sharing organization (ECS). ECS was created in October 1991 to promote existing car clubs and to help new ones start. Beyond promoting the number of car clubs and car club members, the goals of ECS are to reduce the number of cars on the streets and to reduce pollution and carbon emission (Schönbeck, Schwoll, & Linssen-Robert, 1998). Reducing traffic and carbon emission has been a more recent goal because when car clubs first started there were far fewer privately owned cars on the road as there are today. ECS also provides information on how to start a car club including a car club's organization and operations (Schönbeck, Schwoll, & Linssen-Robert, 1998).

Car clubs have also started to call North America home with the United States and Canada having around 60,000 and 10,000 members respectively (Enoch &

Taylor, 2006). Like the recent clubs in Europe, the goals of the North American car clubs are to reduce carbon emissions and traffic on the road. Since 1998, there has been exponential growth in car club memberships in the United States (Shaheen, Schwartz & Wipyewski, 2004).

2.2 How Car Clubs Work

2.2.1 General Overview

There are wide varieties in the types of car clubs in existence today. A car club can simply be a few neighbors or a small community that buys a car together. It could be a community that shares one or two cars and only has a small number of members, or it could be a large national organization, such as Zipcar, that has thousands of members and cars throughout a country and even multiple countries. The neighborhood or community car clubs are typically non-profit organizations run primarily by volunteers. The national level car clubs are generally organized by international companies (Enoch & Taylor, 2006).

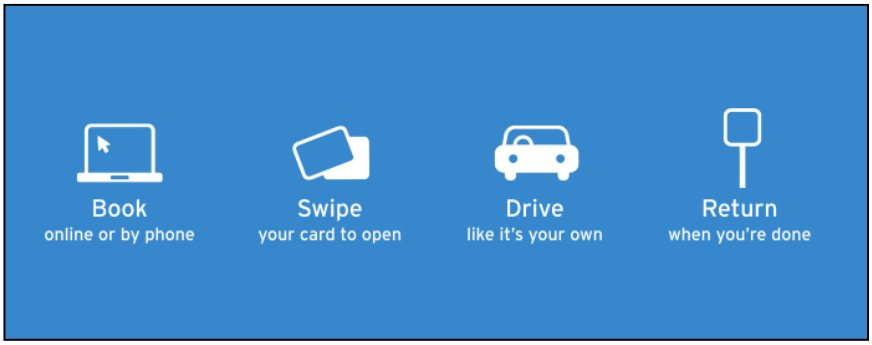


Figure 4 - Streetcar Operation Guide (streetcar.co.uk)

Car Clubs work by giving the customer the ability to rent a car for a short period of time. Figure 4 shows Streetcar's published overview of how to use a car club vehicle. Cars can be booked in person, on the Internet, or by telephone, although, in-car booking using a smartcard or mobile telephone is becoming increasingly popular. The cars are located in specifically marked bays in popular and accessible locations, including residential neighborhoods, rail station car parks, public car parks, supermarket car parks, shopping center car parks, and town center

car parks. All other vehicles are prohibited from parking in the marked bays. The operator pays for all upkeep of the car club vehicles. The majority of car club vehicles are unlocked by RFID cards, which are sent to car club members through the mail. The key to the engine is then located in a user personalized pin locked compartment inside the vehicle ("Zipcar", 2010). Car club vehicles are usually leased by the car club operator and are typically replaced every two to three years ("*Making Car Sharing and Car Clubs Work*", 2004).

Government agencies offer grants as incentives to begin car clubs in particular locations (Enoch and Taylor 2006). Once the car club gets going financial responsibilities are passed on to the owners of the car club. It is difficult to find information on the smaller car clubs at the community and neighborhood levels because they are so small and only operate among a few members. National organizations, however, usually have their members pay a monthly or annual membership fee after the joining fee. Along with the joining and membership fees members will have to pay per hour when using one of the cars. This hourly rate varies between clubs and is determined by the owning organization. There are, however, special cases such as in Hanover, Germany where car clubs are attempting to integrate with public transportation system. As an incentive, a public transportation season ticket holder pays a reduced joining fee and no annual membership fee. The catch is that the public transportation ticket holders pay a heavily inflated hourly rate when using a car club vehicle (Enoch & Taylor, 2006). Despite all the membership and operational costs, according to Carplus (2011) a driver that drives no more than 6,000 miles per year could save up to £3,500 if they join a car club compared with the costs of owning and maintaining their own private car.

2.2.2 Car Clubs in London

The four car clubs that presently operate in London are Streetcar, Zipcar, City Car Club, and Hertz Connect. Zipcar merged with Streetcar in April 2010 in an effort

to expand its business in Europe. Of the four car clubs servicing London, only Streetcar is presently operating in Croydon ("*Streetcar*", 2011). The closest City Car Club vehicle is located in Sutton ("*City Car Club*", 2011), and Zipcar only operates in the Inner Boroughs ("Zipcar", 2011). All four car club operators in London charge an annual fee from £50 to £60, and have hourly rates of around £5-£9 depending on the vehicle. All four car club operators include 20 to 30 miles free per rental period, and charge a lower fixed rate for fuel afterwards (Streetcar.co.uk, Zipcar.co.uk, ConnectbyHertz.com, CityCarClub.co.uk, 2011). There were roughly 30,000 car club members in London as of 2008 ("*Car Club Strategy*", 2008).

2.2.3 Streetcar

Streetcar is currently the only car club operator in Croydon. Streetcar is the United Kingdom's largest car club with over 1,200 locations across 10 cities. Streetcar has a wide variety of cars in its fleet including; Volkswagen Golf, Volkswagen Polo, BMW 1 series 5-door, BMW 3 series Sedan, Volkswagen Touran. Streetcar vehicles accommodate from one up to seven people (Streetcar, 2010). The range of vehicles that Streetcar has provided to Croydon includes Mini Coopers, Toyota Prius, Volkswagen Polos and Golfs ("Streetcar-Pricing", 2010).

Figure 5 - Car Club Bay (Flickr.com/photos/amcgore)

2.2.4 Car Club Bays

The bays for car club vehicles are just like most parking bays in London. The bays are where the car club vehicles "live" and are used only for the one particular car club vehicle assigned to it. The bays are marked and are generally the same size and in the same places that you would find regular parking spots. The only

difference between a car club bay and a regular parking bay is that they are marked as reserved spots for car club vehicles. The availability of club car bays ultimately comes down to the owner of the spot, and their willingness to include a club car bay. For off street parking (in a car park or on a private residence drive way), terms are discussed between the owner of parking spot and the club car operator. For on street parking (most public parking areas, metered parking, permit parking), terms are discussed between the Borough and the car club (Plowden, 2010).

2.3 Advantages of Car Clubs

Car clubs have many advantages that make them highly beneficial and marketable. Car clubs have become increasingly popular in the last decade due to their carbon reduction and environmental benefits. Essentially, car clubs reduce the total number of cars on the road and promote the use of public transportation. By doing these things, car clubs have both environmental and energy saving advantages, as well as social benefits and benefits for the communities in which they exist.

Literature shows that car clubs essentially reduce the number of cars on the road, and reduce the mileage driven by cars in general. Harmer and Cairns found that every one car club car vehicle on the road results in roughly 11 privately owned cars being sold off. They also found that car club members are much less likely to purchase new vehicles; taking this into consideration means there is a reduction of roughly 25 privately owned cars on the street for each new car club vehicle in service. Figure 6 is a graph that details the tendency for members to reduce the number of private cars owned. The graph shows that roughly 24 percent of members sold at least one vehicle after joining the car club. Zipcar reported that 13 percent of their members sold at least one car since joining the car club, and 40 percent have avoided buying a new car (City CarShare, 2005). Cervero and Tsai found a similar trend in San Francisco car clubs, stating that members were much less likely to purchase a new car after joining the car club (Cervero & Tsai, 2004).

Transport for London (TfL) however; found that on average four private vehicles were sold and six were deferred from purchase for every car club vehicle ("Car Club Strategy", 2008). While the TfL estimates were considerably lower than those by Harmer & Cairns (2010) and Cervero and Tsai (2004), they still show a substantial reduction in the number of private vehicles on the road when car clubs are implemented.

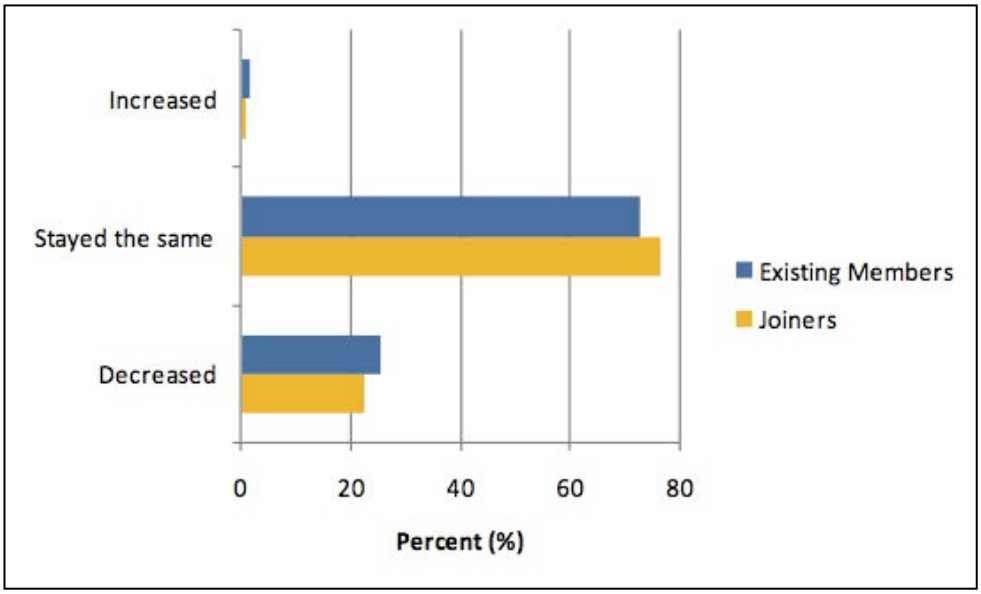


Figure 6 - Private Car Ownership Tendencies (Harmer & Cairns, 2010)

Harmer and Cairns found that car club members make more frequent journeys by public transportation, by bike, and on foot than the general public (Harmer & Cairns, 2010). Figure 7 below outlines the findings from a 2010 survey of public travel usage. The chart shows that car club members utilize public transportation and travel by means other than cars more often than the average citizen. This suggests that car clubs enable members to better utilize public transportation when needed. This also suggests that car clubs reduce the total mileage driven by private vehicles. Cervero and Tsai found that there was a 47 percent decrease in mileage driven by car club members, which agrees with Harmer and Cairns' findings (Cervero & Tsai, 2004). Research in Edinburgh showed that car club members experienced a 60-70 percent reduction in total mileage driven in a

motor vehicle ("*Making Car Sharing and Car Clubs Work*", 2004). The overall reduction in cars on the road and the increase in use of public transportation yields many benefits as discussed below.

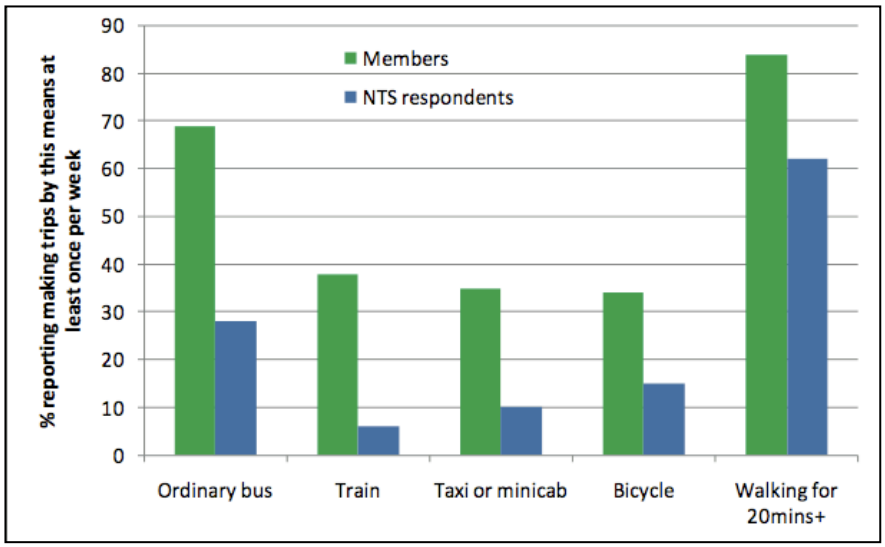


Figure 7 - Non-Motor Vehicle Travel by Car Club Members and National Travel Survey (NTS) Respondents (Harmer & Cairns, 2010)

2.3.1 Environmental and Energy Savings Advantages

Private vehicles have many benefits when it comes to convenience and ease, but in today's environmentally conscious world, the negative environmental impacts are of increasing concern. Car clubs offer a more sustainable form of transportation that has a number of environmental benefits when compared to private vehicles (Shaheen, Schwartz & Wipyewski, 2004).

As discussed above, car clubs reduce the mileage driven by cars, and increase members use of public transportation. These two aspects of car clubs result in less carbon emissions, energy savings, and environmental benefits. Research shows that car clubs are roughly 33 percent more efficient than private car usage in terms of carbon dioxide emissions (Harmer & Cairns, 2009).

As citizens are becoming more conscious of the environment, more emphasis and attention is being put on ways to save and conserve energy. In the theme of

sustainability, car clubs offer citizens access to electric vehicles and less carbon producing vehicles. Car club cars have lower carbon emissions than the average UK car. Figure 8 below shows the comparison between car club vehicles and average UK vehicles with respect to carbon emissions (Harmer & Cairns, 2010). The survey clearly shows that car clubs allow member's access to cars with significantly lower carbon emissions, compared to the average UK vehicle. Car clubs also offer members access to electric vehicles, and are in the process of introducing electric vehicles into their fleets of rental cars (Jeffry, 2010).

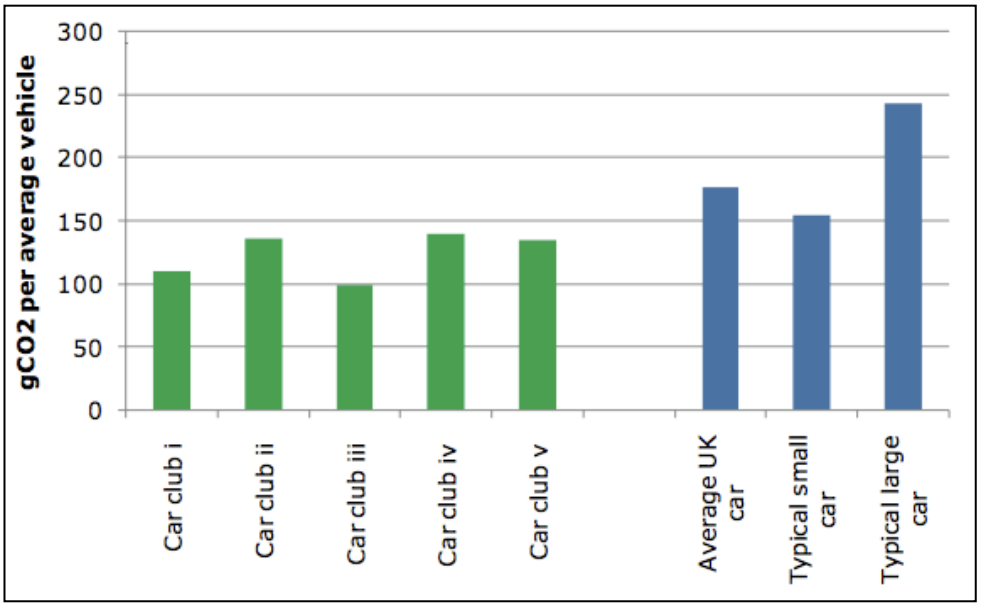


Figure 8 - Comparing Emissions from Car Club Vehicles with Average Emissions from UK Cars (Harmer and Carns, 2010)

2.3.2 Social and Community Benefits

Car clubs provide numerous advantages for the communities in which they exist. Car clubs provide "flexible and affordable car use, without the costs and hassles associated with car ownership" ("*Making Car Sharing and Car Clubs Work*", 2004). This means that citizens now have the ability to use a car without paying the high fixed cost of purchasing a car. A case study of the Brighton & Hove Car Club in the south of England outside London showed that car club vehicles complemented the bus and rail usage and encouraged a "living without a car" lifestyle ("*Creating growth, cutting carbon"*, 2011). Car clubs allow the following people to drive cars

that may not have been able to otherwise ("*Making Car Sharing and Car Clubs Work*", 2004):

- People with access to limited parking at work or home
- People who cannot afford the costs associated with car ownership (including the initial purchase price, insurance, and maintenance)
- People who need vehicles with different capabilities. For example, people who need a higher occupancy vehicle can rent a van.

For those people who drive less than 6,000 miles a year, a car club could save them up to £3,500 every year (Carplus, 2011). This is significant savings for the community members. Cervero and Tsai found that the City CarShare car club program in San Francisco was consistently cheaper compared to rental cars and taxis (Cervero & Tsai, 2004).

As discussed above, car clubs take a significant number of cars off of the road, which helps reduce traffic congestion and parking problems. Car clubs promote the use of public transportation; this reduces traffic congestion and parking pressure in urban areas (Harmer & Cairns, 2010). By promoting public transportation, there is also a reduction in capacity expansion requirements related to highways, roads and parking due to car clubs.

2.3.3 Disadvantages of Car Clubs

Car clubs are advantageous to the user for traveling less than 15,000 kilometers per year. This means that car clubs do not provide a cost saving advantage for users when the number of kilometers driven per year is more than 15,000. In a study done by Prettenthaler and Steininger, roughly 69 percent of households in Europe own a car that is driven less than 15,000 kilometer per year, which means that 31 percent of people would be financially better off continuing with their current form of transportation (Prettenthaler, Franz, 1999).

There are also a number of drawbacks to selling a private car and utilizing a car club vehicle. Ray Holan, an automotive journalist, stated that some of the drawbacks are:

- Having to walk to the car anytime you want to use it
- Not being guaranteed a car when you need one

(Holan, 2006)

2.4 Croydon's Interest in Car Clubs

Croydon is working to reduce the pollution in the Borough from motor vehicles and to alleviate traffic and parking problems. Working alongside Transport for London and Streetcar, the Croydon Council is looking to promote the use of car clubs as a sustainable form of transportation (Croydon Council, 2011).

2.4.1 Transport for London Car Club Plan

In March 2008, Transport for London (TfL) announced a comprehensive plan for the development of car clubs in London through 2011. TfL states that car clubs "help reduce congestion and parking pressures, compliment the public transport system, provide accessibility to key services and facilities without the related costs of car ownership, and reduce car usage and the associated pollution" ("*Car Club Strategy*", 2008). The main constraint to the expansion of car clubs in London is the availability of parking spaces. TfL finances parking spaces and helps to build awareness of car clubs. TfL is planning on starting pilot schemes in the outer boroughs of London, including Croydon, to introduce and promote the idea of car clubs ("*Car Club Strategy*", 2008).

2.4.2 UK Carbon Reduction Efforts

The London Department for Transport is working to improve their transportation system so that they are greener and safer for the communities. The department is encouraging sustainable local travel, promoting lower carbon transport and is working to tackle local road congestion. The UK implemented the

UK Climate Change Act in 2008, which is the world's first national long-term legally binding framework. This act commits the government to cut emissions by at least 80 percent by 2050. Domestic transport makes up 21 percent of the UK's total carbon dioxide emissions. Passenger cars contribute 55.2 percent of the carbon dioxide emissions from the transport sector (Figure 9) ("*Creating growth, cutting carbon"*, 2011).

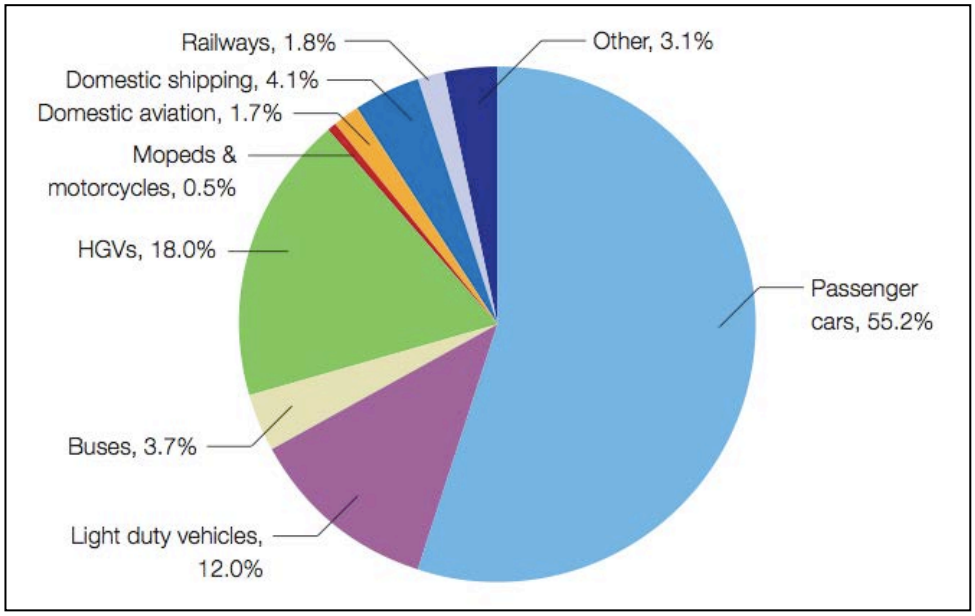


Figure 9 - Breakdown of Carbon Dioxide Emissions in the Transport Sector as of 2008 (*"Creating growth, cutting carbon"*, 2011)

2.4.3 Traffic Congestion Problems

The horrible traffic congestion and other related traffic issues stem from the poor designing and building of roadways in the past. Circling Croydon City is a ring road, which is essentially a long road surrounding Croydon with multiple exits leading to various parts of the city. It was designed to allow for easier access to various sections of the city. This road is plagued with multiple junctions, frequent changes in the number of lanes, multiple under and overpasses, poor signage and multiple chokepoints, which funnel two or three lanes into one. These features from the ring road are also mirrored in the roadwork throughout the Borough; making traffic congestion in Croydon a serious problem (Marshall, 2011).

2.4.4 Parking Problems

The Croydon Council is constantly trying to improve the parking situation in the Borough. The old operational hours of Controlled Parking Zones (CPZ) for the 5 sub-zones (North, South, West, East Inner, and East Outer) existed from 9am to 5pm, Monday to Saturday. Since its inception in the 1990's the lifestyle of citizens has greatly changed, including shopping, travelling, and entertainment habits. These have resulted in the increase of privately owned vehicles, and thus the increase in demand for parking areas. The council is currently proposing to extend the hours to between 8am and midnight, seven days a week. They are also proposing to extend the hours of council operated car parks to 24 hours a day, seven days a week. These proposals are to reflect the high demand for more parking spaces ("Croydon Council", 2010).

2.4.5 Car Club Pilot Program

The council of Croydon launched a car pool pilot program last year for its staff. This car pool pilot program is to help free up parking spaces to reduce the amount of traffic in the town center each day, and to help reduce carbon emissions. In addition, the cars are shared with local residents during off-peak business hours on a pay-as-you-go format. During this six-month trial period, which is still going on, there are 30 vehicles on standby.

2.4.6 Croydon Council's 6-Month Trial

From August of 2010 to February 2011 Croydon Council had a 6-month trial of car clubs for its staff. The trial program was introduced to help reduce costs and carbon emissions in the Borough. The council has 1284 staff members who travel around 1.1 million miles every year. The move is part of a program to end payment of annual car allowance and high mileage rates to a relatively large number of staff. The Streetcar trial vehicles are available exclusively to the members of Croydon Council during the workday and available to the local residents at all other times. The 6-month trial has seen the number of cars grow to 29 vehicles as demand has

increased (Croydon Council, 2011). Pending the success of the trial, the council is anticipating adding up to 100 more cars to the car club pool. As Councilor Jason Perry noted "The concept of car sharing has been growing…. The pool car trial we are conducting will give us a better idea of how such a scheme could work in Croydon." Furthermore, Councilor Perry hints at the prospect of electric vehicles becoming part of the mix "I am also looking forward to the prospect of providing electric-powered pool cars…. becoming more likely as technology advances and the provision of charging points becomes more widespread," ("Croydon Council", 2010). This prospect, however, depends on the expansion of electric vehicle charging points (EVCP's) in Croydon, since presently there is only one installed in the entire Borough at 222 Purley Way, Croydon, CR0 0XZ ("EV-Network", 2011).

Andrew Edgar, who is the commercial director of Streetcar, also stated, "Streetcar is very pleased to be able to deliver both cost savings and environmental benefit to Croydon Council and its residents. By using Streetcar vehicles during the business day, the council gets low-emission vehicles when they need them and local residents can use the vehicles in the evenings and at weekends." He also stated that the Croydon Council is doing very well in terms of efficient vehicle utilization. ("Croydon Council", 2010)

2.5 Electric Vehicles and EVCPs

2.5.1 Electric Vehicles

Many car clubs utilize electric vehicles instead of the traditional gasoline vehicle (Harmer & Cairns, 2010). Electric vehicles (EV's) have been around since the late 1800's. In fact they once ruled the road outselling gasoline power cars ten to one in the 1890's ("Electric Auto Association", 2010). However, they lost their appeal once mass-producing of the gasoline-powered car began in the early 1900's. Now different organizations and companies are trying to bring them back to life due mainly to cut down on pollution. EV's, run completely off electricity unlike gasoline cars. An electric vehicle gets charged from an electric vehicle charging point (EVCP).

London is currently promoting the influx of electric vehicles. London implemented a congestion charge to reduce the physical presence of cars in the city, and to improve the air quality of the city. Vehicles with low emissions (i.e. electric vehicles) were exempt from this charge. In 2011, there is a £5000 UK government grant for each electric vehicle to help push the use of electric vehicles. Citizens in Croydon still value the ease and convenience of a private car and electric cars is a sustainable option for this luxury. (Croydon Council, 2011).

2.5.2 EVCPs in Croydon

London and its boroughs are working to install a grid of EVCPs to accommodate electric vehicles. London plans to have 1600 EVCPs on public property by 2015. There is a plan to have 4 on-street and 34 off-street EVCPs in place by March 2013. The Croydon Council has purchased charging points from two suppliers: 365 Energy and PodPoint. When charging points are purchased, they need to have a formal owner, unless they are being installed by the council and on council land. (Croydon Council, 2011).

There are many specifications that TfL recommends looking for when identifying locations for EVCPs. On street bays include those on streets in town centers, residential areas. Off street bays include those placed for private use, located in places such as workplaces, residential apartments etc. The following considerations have to be taken when looking for EVCP locations:

- Visibility
- Road Space
- Electrical Connection
- Foot traffic
- Proximity to short stay attractions
- Context of surroundings

(Croydon Council, 2011)

2.5.3 Cost of EVCPs

EVCPs are very expensive to install. Between the initial cost of the actual equipment and the cost of installing, the total price can range between a minimum of £1,000 to nearly £10,000. Below is a table taken from TfL's Guide for the implementation of electric vehicle charging infrastructure.

Item	COST £ (approx)					
	Restricted/open access		Charging point type			
	Restricted	Open	A On-street Public Shared RA	B Off-street Public Shared RA/OA	C Off-street Private Shared RA/OA	D Off-street Private Not-shared OA
Charging point equipment	3,500	500	3,500	3,500/500	3,500/500	0-500
Charging point installation	1,000-1,500	500	1,500	1,000/500	1,000/500	0-500
Feeder pillar equipment	500	0	500	500/0	500/0	0
Feeder pillar installation	300-500	0	500	300/0	300/0	0
Connection mains – feeder pillar	1,000-1,500	0	1,500	1,000/0	1,000/0	0
Connection/commissioning feeder pillar – EVCP	500	0	500	500/0	500/0	0
Road signs	100-200	100	200	200/100	100	0
Bay road markings	200-500	200	500	200	200	0
EVCP branding and logos	0-200	0	200	200/0	0	0
Traffic management order	0-500	0-500	500	500	0	0
Total Cost £ (approx)	**7,100-9,400**	**1,300-1,800**	**9,400**	**1,800-7,900**	**1,300-7,100**	**0-1,000**

Figure 10 - TfL Guide to Implementing EVCP Infrastructure, 2010

Even the cheapest charging point type, one that is installed off-street and is only used privately, costs £1,000, split between the cost of buying the EVCP and installing the EVCP. The most expensive EVCP type to be installed would be the ones that are placed on-street, in view of the public and with restricted access. Restricted access means that users need to be a member of the charging point operator in order to use the EVCP.

The literature reviewed allowed the group to better understand the topics addressed with this project. By reviewing the history and structure of car clubs, the advantages of car clubs, and the interest for car clubs in Croydon, the group attained a better foundation of knowledge to use when completing the project. The methodology used to complete this project is discussed in the next section.

3. Methodology

The purpose of this project is to assist the Croydon Council in the development of a comprehensive strategy to raise public awareness and utilization of car clubs within the Borough. The car club strategy was developed by the Croydon Council to reduce carbon emissions and alleviate the current parking and traffic problems in the Borough. In order to accomplish the project goal, the group identified three main objectives, with tasks to complete each objective. The group first worked to clarify the existing car club policies in Croydon. The group then identified 56 new locations and detailed each location. Finally, the group developed a comprehensive marketing strategy for the council, including a variety of promotional materials to raise awareness of car clubs. The tasks for each objective are outlined below:

- **Clarify existing car club policies**
    - Extended background research by reviewing key documents
    - Interviewed key informants
        - Mary Toffi - Transport Policy Manager for Richmond
        - Nathan Kaczmarski – Transport Planning Manage for Islington
    - Reviewed the 6-month car club trial
        - Interviewed Michael Murphy – Croydon Council Facilities Manager
    - Establish an integrated plan with PBA Consultants
- **Identify potential car club locations**
    - Created inventory and mapped out parking locations in Croydon
    - Developed logistic and demographic criteria for location of new car club bays
        - Interviewed key informants
            - Andrew Edgar – Commercial Director of Streetcar
            - Mary Toffi – Transport Policy Manager for Richmond
            - Barry Francis – Head of Infrastructure for Croydon

        - Peter Sadler – Senior Policy Officer for TfL
        - Chas Ball – Chief Executive at Carplus
        - PBA Consultants
    - Demographic analysis
    - Car density analysis
    - Conducted potential location audit
- **Raise Awareness of Car Clubs**
    - Reviewed documents
        - *Innovation* by Carlson and Wilmot
    - Interviewed Chas Ball – Chief Executive at Carplus
    - Performed cost analysis
    - Created promotional material that the Council could use
        - Business and residential information pamphlets
        - Bay location sign/indicator
        - Basic promotional posters

Each objective and related tasks are discussed in depth below:

3.1 Clarify Existing Car Club Policies

Before beginning any analysis on potential car club spaces, and before developing any marketing material, the group worked to clarify and understand the current car club policies in Croydon. The group gathered information through this objective that was used throughout the rest of the project.

3.1.1 Extend Background Research by Reviewing Key Documents

The group began the project by reviewing material that was not available to us while in the United States. A number of documents were provided to the group including:

- Croydon Council Car Club Strategy
- TfL Car Club Publications
- A TfL Car Club Analysis
- PBA Consultant Documents

The group thoroughly reviewed each of these documents to clarify the existing car club policies. The group reviewed the Croydon Council Car Club Strategy document to understand the council's position on car clubs thus far, and to understand the current state of car clubs. The TfL Car Club Publications were reviewed to understand TfL's plans and policies regarding car clubs. The TfL Car Club Analysis was reviewed and was determined to be a good document to be utilized for choosing bay locations. Finally, the PBA Consultant Documents were reviewed to understand what work has been done so far that is related to this project. Key information from these documents is referenced later in this paper. The information provided in these documents allowed the group to understand that Croydon has started to implement car clubs, that Croydon understands the benefits of car clubs, and is ready to further implement the scheme across the Borough.

Through research, the group found that the only car club operator currently in the Borough was Streetcar. Thus, the group utilized the Streetcar online Website to create an inventory of all Streetcar locations in the Borough. This allowed the group to establish a current state picture of the Borough with respect to car clubs. This inventory can be seen in the results section.

To better understand what other boroughs have done to introduce car clubs, the group met with a number of representatives from each borough. The group worked to choose boroughs that had highly developed car club infrastructures, and boroughs that were comparable to Croydon. The group met with:

- Mary Toffi – Transport Policy Manager for the London Borough of Richmond
- Nathan Kaczmarski – Transport Planning for the London Borough of Islington

3.1.2 Interview with Mary Toffi

The group met with Mary Toffi during the first week of the project. Mary Toffi is the transport policy manager for the London Borough of Richmond. Richmond has a highly developed, multi-operator car club. Being directly involved in the implementation of car clubs in the Borough, Mary was able to give the group valuable information regarding car clubs. Mary described the course of action Richmond used for implementing car clubs. At the end of this meeting, Mary recommended that the group talk to a single-operator borough. She gave the group a contact from the borough of Islington.

3.1.3 Interview with Nathan Kaczmarski

The group conducted an interview with Nathan Kaczmarski from the borough of Islington. Nathan is part of the Transport Planning department and was placed in charge of overseeing car club growth in Islington roughly 3 years ago. The goals entering into the interview were to find out how the Borough went about implementing car clubs, any of the troubles that they ran into, and how they handled promotion / marketing.

3.1.4 Interview with Michael Murphy – Facilities Manager

The group conducted an interview with Michael Murphy to learn about the 6-month car club trial in Croydon. Michael is a Facilities Manager and was directly involved in the trial, and in promoting the use of car clubs in the council. From the

interview the group learned more about how the car club trial started, how it has developed through the 6-months and the plan for the future.

3.1.5 Establish Integrated Plan with PBA Consultants

Before arriving in London, the group found that a consultant company had begun work regarding car club strategy development in the Borough. The consulting company, PBA Consultants, a transportation planning consultancy, started to develop a plan to identify key locations in the Borough for car club bays. A plan was established for the group to continue the work that the consultants had started, giving the group a head start on the project. With PBA Consultants input, a timeline was established for the project, allowing for integration of PBA Consultants work already done.

3.2 Identify Potential Car Club Bay Locations

One of the main objectives, as requested by the council, was to determine optimal locations in Croydon for car club bays. The group decided to first analytically choose different on street and off street locations throughout the Borough that would likely have a high level of car club membership. After the sites were chosen the group worked to audit each site in person to further determine whether or not it would be a successful location for a car club bay.

3.2.1 Inventory of Locations

To begin the analysis, the group had to first establish an inventory of potential locations in the Borough. The group met with Barry Francis, an infrastructure manager, to request a comprehensive map of the locations in the Borough where car clubs could potentially be located. Barry gave a map of all council owned car parks and on street parking in the Borough. Through background research, the group determined that citizens would walk up to 400m to use a car club location frequently, thus a 400m by 400m grid was laid on top of the map. This

was done using ArcGIS, a geographic mapping tool. The group then analyzed and ranked each of these grids based on criteria described below.

3.2.2 Criteria Development

To understand the criteria needed for a successful car club bay, the group independently researched car club bays, and conducted a number of interviews with a variety of people. Interviews regarding location criteria were conducted with:

- Andrew Edgar – Commercial Director of Streetcar
- Mary Toffi - Transport Policy Manager at the London Borough of Richmond
- Barry Francis – Head of Infrastructure for the Croydon Council
- Peter Sadler – Senior Policy Officer, Motorized Travel TfL
- Chas Ball – Chief Executive at Carplus
- PBA Consultants

3.2.2.1 Interview with Andrew Edgar – Commercial Director of Streetcar

The group met with the Andrew Edgar, the commercial manager of Streetcar, to gain insight into what criteria Streetcar considers when looking at car club bay placement.

3.2.2.2 Interview with Mary Toffi - Transport Policy Manager at the London Borough of Richmond

The group conducted a face-to-face interview with Mary Toffi from the borough of Richmond to learn of any considerations Mary may have for bay placement based on the experience Richmond had with implementing car clubs.

3.2.2.3 Interview with Barry Francis – General Manager of Infrastructure for Croydon

The group conducted a face-to-face interview with Barry Francis to learn of any considerations to take when looking at car club bay placement with regards to parking planning and development restrictions.

3.2.2.4 Interview with Peter Sadler – Senior Policy Officer, Motorized Travel TfL

The group conducted a phone interview with Peter Sadler to ask questions regarding a demand analysis document sent to the Borough from TfL. The document includes a demand analysis map for Croydon, where certain areas are highlighted as the best areas to introduce car clubs. The analysis was based off of demographic information gathered from MOSAIC data. The group worked to gain insight as to how the document was put together, and how the analysis was done. This allowed the group to understand what was missing from the analysis, and how the analysis could be improved.

3.2.2.5 Interview with PBA Consultants

The group conducted a face-to-face interview with PBA Consultants to review what criterion is needed for car club bay placement. The criteria that PBA Consultants found were compared with what the group found.

After conducting the interviews the group compiled a list of criteria for optimal bay placement. This criterion can be seen in the Results section of the report. The group decided that a two-part analysis needed to be performed on the different grids, and then each grid was audited based on criteria.

3.2.3 Demographic Analysis

Based on the findings from the interviews and research, the group decided that one of the most important considerations to take when determining whether or not a location would be successful is the demographics of the residential surroundings of the location. The group obtained a TfL publication detailing the socio-demographics of different areas in the Borough. The publication outlined the potential demand for car clubs for different areas of the Borough based on MOSAIC demographic data. The group decided to conduct a phone interview with a representative from TfL to gain further information. TfL explained that the demographic analysis was based off of 70 different classifications. TfL determined

which sets of people had the highest propensity to joining a car club by interviewing members in the boroughs of Camden and Islington. The interviews involved noting which demographic classification the interviewee fit into, then gauging the level of interest in car club membership. Once TfL established which classifications were more likely to join a car club, they sent out demand analysis reports to each borough. The reports showed which areas were most likely to have high levels of membership based on the specific demographics of the region. The group utilized this report to base their demographic analysis on. Instead of repeating this lengthy procedure, the group used the data as a starting point for further analysis.

To incorporate the TfL demand analysis, the group utilized Adobe Photoshop CS, a graphic editing program, to overlay the analysis on top of the map of council owned locations. This map can be seen below in figure 11. The darker regions on the figure identify locations with potentially high demand for car clubs.

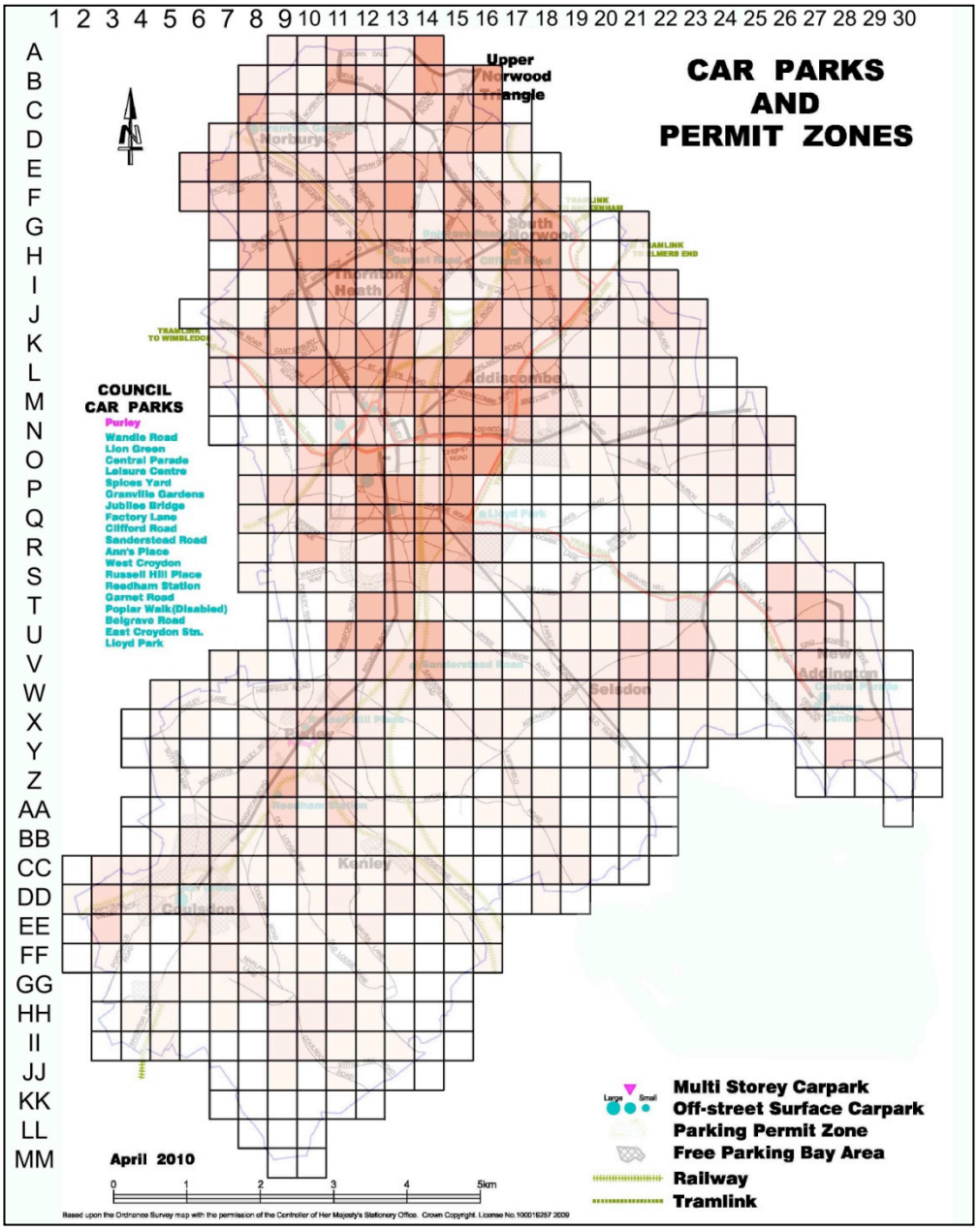


Figure 11 - Site Selection Demographic Analysis (Data from TfL Analysis)

3.2.4 Car Density Analysis

One of the key factors missing from the demographic analysis done by TfL was vehicle density in the Borough. Working with PBA, the group established areas with high vehicle density meaning that the areas would have lots of potential car club members. During the phone interview with TfL, the group confirmed that TfL agreed with this assumption. PBA had already started working on the car density analysis

before meeting with the group, and was able to provide a map of the Borough with the car densities identified. The group then took this data and mapped out the different density levels on top of the map of council owned locations, in the same way as the demographic data. Figure 12 shows the data mapped out. The darker regions on the figure identify locations with potentially high demand for car clubs. The group decided that the demographic data was roughly twice as influential on the likelihood of car club membership, thus shaded the car density data at 50% of the demographic data. This was reasoned because the demographic data takes into account 70 classifications based on much research, whereas the car density analysis generates an overview of potential members.

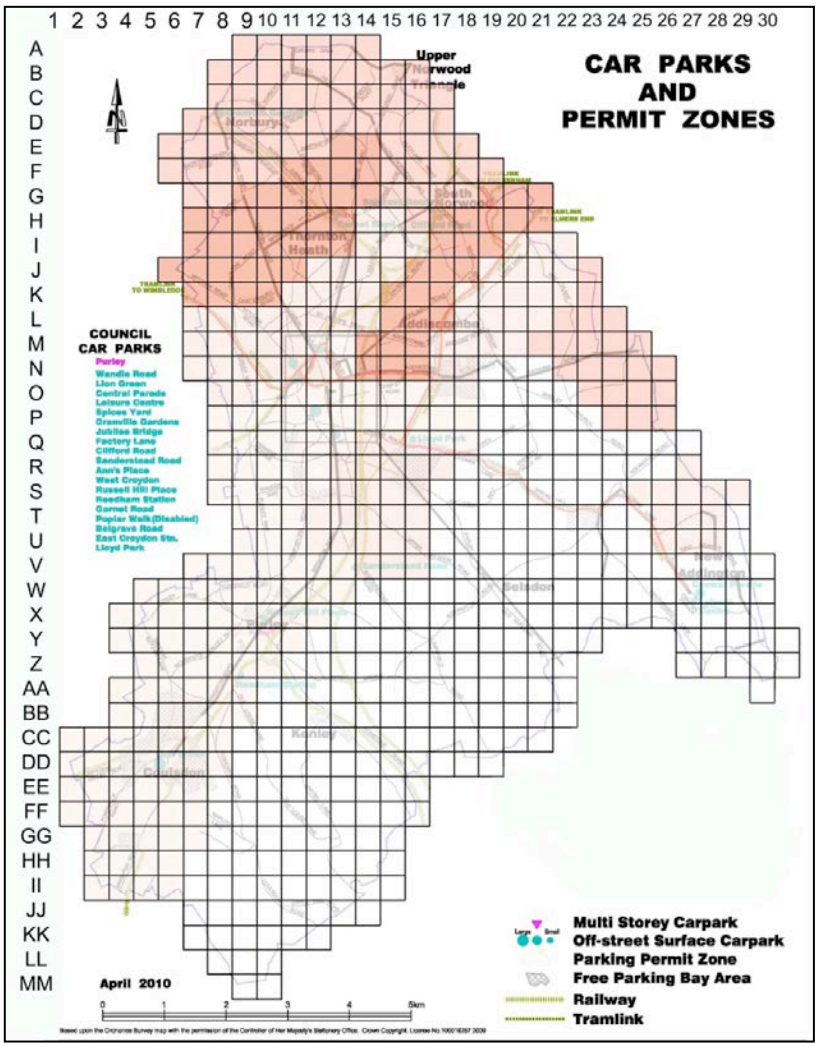


Figure 12 - Site Selection Car Density (Data from PBA Consultants)

3.2.5 Transportation Hub Proximity and Logistic Analysis

Once both demographic and car density data was overlaid onto the inventory of locations, the group was able to visually see the hot spot areas for car club bay locations. To numerically analyze the data, the group replicated the maps in Microsoft Excel using numbers. This allowed the groups to easily select the top locations. Each color was assigned a number in the file for both the demographic and the car density maps. The numbers were then added for the two maps, and the locations were ranked on a scale from 1-14. The group chose the locations with a 12 or higher ranking. Figure 13 shows the excel file of the combined data sets with the top 28 locations highlighted in red.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A	0	0	0	0	0	0	0	7	7	9	7	7	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	7	7	5	11	9	7	13	9	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	11	7	7	7	7	9	9	11	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	7	9	7	7	9	7	7	7	11	11	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	9	11	9	9	9	9	9	12	12	9	5	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	9	9	11	9	11	10	12	14	8	11	11	9	11	3	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	9	9	12	12	10	12	12	8	13	11	7	13	6	4	8	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	4	12	12	14	14	12	12	10	10	9	14	14	6	4	6	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	8	6	12	12	14	10	12	10	6	6	12	14	8	4	6	6	0	0	0	0	0	0	0	0	0
J	0	0	0	0	4	8	6	12	8	12	6	6	8	2	12	10	12	10	6	6	8	7	0	0	0	0	0	0	0	0
K	0	0	0	0	0	8	12	12	12	10	12	10	6	10	12	12	6	6	4	6	6	7	0	0	0	0	0	0	0	0
L	0	0	0	0	0	6	6	8	12	12	12	12	10	14	10	12	10	6	4	6	7	5	3	0	0	0	0	0	0	0
M	0	0	0	0	0	2	2	6	6	8	7	9	12	14	14	12	8	6	4	7	7	7	3	5	0	0	0	0	0	0
N	0	0	0	0	0	2	2	2	2	6	8	3	12	14	14	8	6	2	4	4	7	7	7	7	7	0	0	0	0	0
O	0	0	0	0	0	0	4	4	7	9	11	5	5	11	11	3	3	2	2	4	4	7	7	7	7	0	0	0	0	0
P	0	0	0	0	0	0	5	7	7	5	11	11	7	11	3	1	1	0	2	2	2	2	7	7	5	0	0	0	0	0
Q	0	0	0	0	0	0	5	5	5	7	11	11	12	12	3	1	1	0	0	2	0	0	0	2	0	0	0	0	0	0
R	0	0	0	0	0	0	3	3	9	5	5	10	12	10	6	2	0	0	0	2	0	0	0	2	0	4	0	0	0	0
S	0	0	0	0	0	0	3	3	3	3	5	10	8	8	4	2	0	2	0	2	2	0	0	2	8	6	4	2	0	0
T	0	0	0	0	0	0	0	1	1	3	10	10	4	4	2	0	4	4	2	0	2	2	2	2	8	10	8	0	0	0
U	0	0	0	0	0	0	0	1	1	9	10	6	10	4	4	0	4	2	2	6	4	6	2	0	6	8	6	2	0	0
V	0	0	0	0	0	3	3	1	1	5	7	7	10	6	6	2	2	4	4	6	6	6	4	0	2	6	4	2	0	0
W	0	0	0	3	3	3	3	5	5	7	5	5	4	2	2	4	4	4	6	6	4	2	2	0	0	4	4	2	0	0
X	0	0	1	3	3	1	3	5	7	7	5	2	2	4	4	2	0	0	4	2	0	2	2	0	0	4	2	6	4	0
Y	0	0	1	3	1	3	5	7	3	5	4	0	2	4	2	2	0	0	2	0	0	0	0	0	0	0	6	2	2	0
Z	0	0	0	3	3	3	5	9	5	4	2	2	2	2	0	4	2	0	0	2	0	0	0	0	0	0	0	0	0	0
AA	0	0	1	1	3	5	5	7	2	6	4	2	2	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0
BB	0	0	1	3	5	5	3	5	4	4	2	2	2	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0
CC	1	5	5	5	5	5	3	2	2	2	2	4	4	2	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0
DD	3	7	5	5	3	5	5	0	2	4	2	4	2	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	1	7	3	1	5	3	4	0	2	2	4	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FF	1	3	1	1	3	5	2	2	2	0	2	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GG	0	1	1	3	3	3	4	2	4	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HH	0	1	3	3	1	2	0	4	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
II	0	1	1	3	1	0	0	4	4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JJ	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 13 - Site Selection Excel Compilation

The locations were then highlighted on the inventory of locations map of Croydon as seen in figure 14. The group determined which of these locations was in the CPZ zone, and which locations were not. The locations in the CPZ zone are shown in green, and the locations not in the CPZ zone are shown in red. Several locations were also added based on recommendations from members of Croydon Council. These locations are shown in orange. Any area with both CPZ and non-CPZ area was shown in green, and considerations were taken during the auditing to note whether the space was in the CPZ zone or not.

Next the group decided to address whether or not the locations were near transportation hubs. When discussing criteria for bay placement with TfL, Streetcar, and PBA, proximity to transport hubs was always stressed as a necessary criterion to consider. The reasoning behind this was that citizens would not utilize car clubs for every trip taken. This would simply cost too much and would mean a private vehicle was thus a better financial choice. People that have access to public transportation, yet occasionally utilize a motor vehicle, would be much more likely to join a car club. For these people, the convenience of a car is available, but public transportation can be utilized when possible. The group determined that most locations appeared to be near busy roads with bus routes, or near train stations. This will be followed up during the on site audits. The finalized map of car club locations to audit is shown in figure 14. The group then audited the locations shown below to further determine whether they are good locations for car club bays.

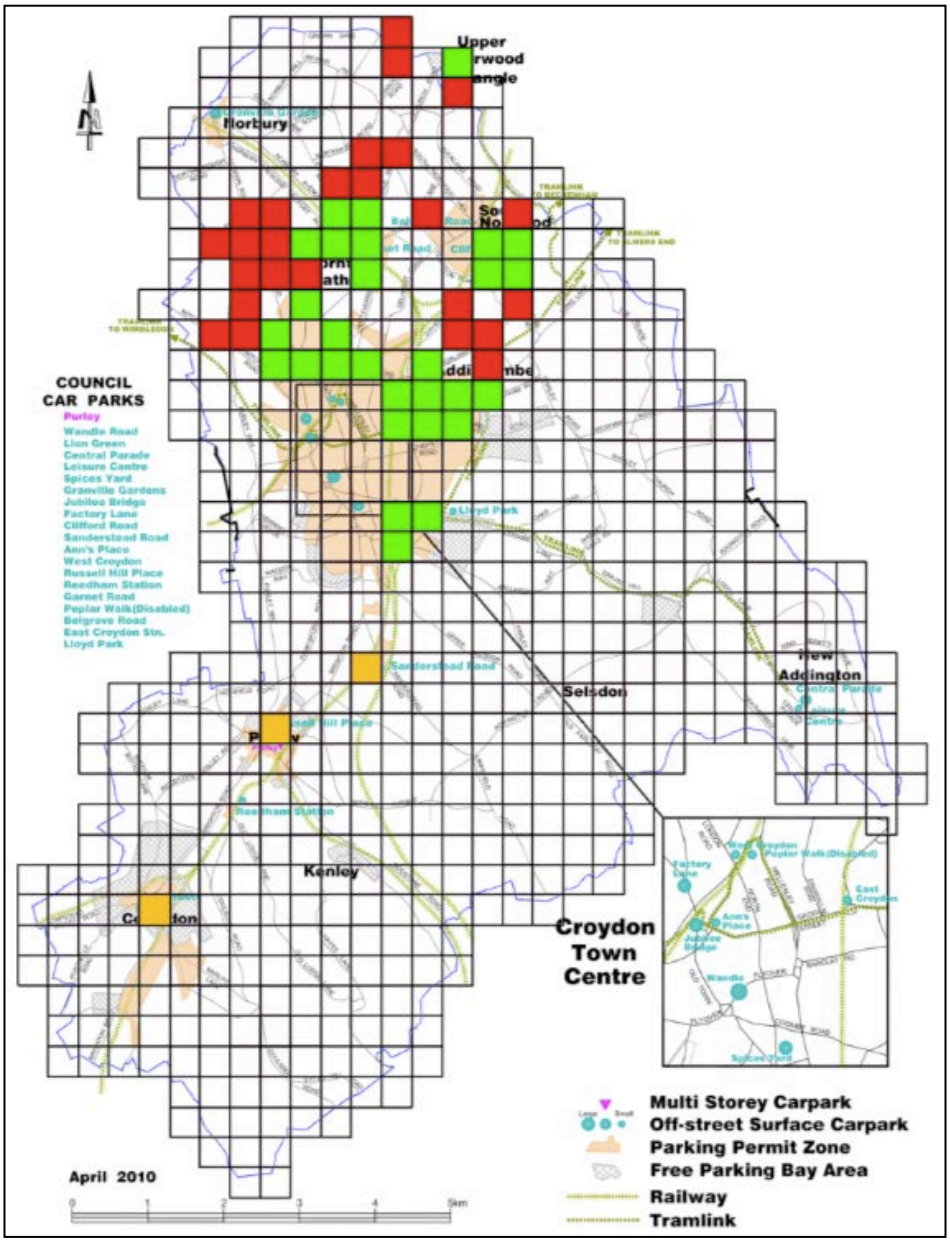


Figure 14 - Site Selection Choices

3.2.6 Potential Location Audits

After establishing which grids to look at, the group conducted comprehensive audits to determine specific locations in the grid where a car club bay could potentially be put, and to rank each location. A maximum of two locations per grid were chosen and audited. The group audited each location using a comprehensive audit sheet discussed below.

3.2.6.1 Audit Sheet Development

The group developed an audit sheet to use to evaluate each potential car club location. The audit sheet is based off of the criteria developed through the interviews with key informants, and through thorough research. The criteria needed for bay placement can be seen in the results section. The group first drafted up a detailed audit sheet including all of the criteria. Afterwards, the group conducted a test site audit to evaluate the effectiveness of the audit form, and to get a feel for the audit process. The group walked down to Spicer's Car Park and test audited a parking bay there. The group learned that certain portions of the audit form and criteria needed to be reworked, so audit form was revised again. Specifically, more questions were needed on the form to record and evaluate the surroundings. Also, a ranking system was developed for the top of the audit form to allow for each site to be ranked based on residential surrounding, business surrounding, safety, and overall ranking.

3.2.6.2 Car Park Audits

The group conducted 7 car park audits. To conduct the audits, the group visited each car park. To start the audit the group comprehensively reviewed the park and its surroundings. After walking around the entire area the group filled out the audit sheet. The sheets cover many key details about the area. Safety, cleanliness, accessibility, immediate surroundings, business/residential mix, is all covered in the audit sheets. At the end of the audit, the group walked to the close surroundings to locate businesses that could be potentially interested. These businesses were recorded on the sheet. At the end of the audit, the group ranked the bay for the different criteria. Then, pictures of the bay were taken and any final notes were recorded.

3.2.6.3 On-Street Parking Audits

The group conducted 50 on-street parking audits of 400m by 400m areas. The process for conducting these audits was slightly more complex and took more

time than the car park audits. Upon arrival at the site, the group walked around and reviewed the streets in the 400m by 400m area. The group then chose one or two locations in the grid to audit. These locations were optimal locations in the grid for car club bays. The group used the same audit sheet for the locations and followed the same procedures as the car parks.

3.2.7 Streetcar Audits

The group found that they needed something to compare the results of the audits to. Therefore, the group audited Streetcar locations that are already in the Borough. First, the locations were found on the Streetcar website. Then the group audited the locations the same exact way as the other bay locations. An average of the Streetcar locations was taken which gave the group a good relative overall rating to compare their potential bay locations to.

3.2.8 EVCP Identification

To identify EVCP locations the group did background research into what makes a viable EVCP locations. During the audits the group searched the potential bay sites for nearby feeder pillars, which were found to be the most viable options for EVCPs.

3.2.9 Generating Recommendations

In order to make the group's best possible recommendations for the Council the group created a map of all the potential bay locations and current Streetcar locations as well as pros and cons table for a single vs. multi operator strategy and for a fast vs. slow bay implementation strategy. These pros and cons tables were generated through interviews with members from Richmond and Islington. By analyzing both the map and pros and cons tables together the group was able to confidently generate recommendations for the Council.

3.3 Raise Awareness of Car Clubs

To raise awareness of car clubs in Croydon, the group worked to develop a comprehensive marketing strategy. This strategy can be seen in the Recommendations section. The group did thorough research and conducted numerous face-to-face interviews to develop the content and plan for the marketing strategy.

3.3.1 Review Documents

3.3.1.1 Innovation by Carlson and Wilmot

To develop a comprehensive marketing strategy for the promotion of car clubs, the group reviewed documents regarding how to develop marketing strategies and how to present a value proposition. The group reviewed a chapter from *Innovation* by Curtis R. Carlson and William W. Wilmot. The chapter discussed how to develop and present a value proposition. The group used the material to guide the development of the recommendation section.

3.3.1.2 The Flourishing Blog - AIDCA

The group reviewed The Flourishing Blog Website to gain insight into marketing techniques. This website looked into different marketing techniques, such as AIDCA (Attention, Interest, Desire, Conviction, and Action), a method of designing a leaflet or brochure. The idea behind AIDCA is that leaflets and brochures should mirror a sales pitch. The group formed the residential and business brochures around this idea.

3.3.2 Interview with Chas Ball – Chief Executive at Carplus

The group conducted a face-to-face interview with Chas Ball to gain insight into marketing strategies to use for promoting car clubs. Chas Ball is a chief executive at Carplus and has been highly involved with car clubs in England. Carplus is a national charity that works to promote accessible, affordable and low-carbon alternatives to private car ownership. The group asked Chas what types of marketing content is most successful, and for ways to market car clubs to residents and businesses.

3.3.3 Cost Analysis

To further understand the benefits of car clubs, and to work to develop promotional material content, the group did a cost analysis of leasing a vehicle, versus owning one in London. The cost analysis provided figures that could be used in a variety of materials developed for raising awareness in the Borough. The analysis was also done to verify figures already used in operator promotional material. The group felt that figures provided by car club operators had the potential to be exaggerated. Thus a cost analysis was done and compared to figures provided by the operators.

3.3.4 Developing Promotional Material

The group decided to develop a variety of promotional materials for the Borough. This included three posters, two brochures, and a Web site. The brochures and posters were developed using Publisher with the content found through research and interviews. The Web site layout was developed using Microsoft Word. The layout was given to the council to be used to make the actual webpage. The materials were then integrated into the marketing strategy.

4. Results

The group generated results for the project broken down into the following three sections:

- 4.1 Car Club Bay and EVCP Location Results
- 4.2 Location Recommendation Results
- 4.3 Marketing Strategy Results

4.1 Car Club Bay and EVCP Location Results

An objective of this project was to identify new locations in Croydon for both car club bays and EVCPs. These locations were identified by first establishing the criteria for identifying car club bays and then determining target areas of Croydon to find potential bays. Once the bays were found, they were audited using an evaluation form the group created. Write-ups were made for each bay, and all of the bays were ranked and compared to the current car club bay locations in Croydon.

4.1.1 Optimal Bay Location Criteria

The group worked to first identify the criteria for an optimal bay location. Through interviews the group compiled the following information detailing the criteria for optimal bay locations:

Appropriate demographics: The group established that certain demographic areas are more likely to join car clubs. The group utilized a demographic analysis map given to the Croydon Council by TfL. Demographic characteristics such as income, education level, age, and lifestyle information were used in this analysis. TfL conducted research to determine which demographics were most likely to join car clubs. They did this by surveying car club members in the borough of Islington. The group conducted a phone interview with a representative from TfL to learn more about the analysis. Specific details as to which demographics are more likely to join car clubs

were not given in the interview, only the results from the analysis. PBA and the Croydon Council agreed that the information was reliable and worth using in this report.

High density of car ownership: Through interviews with PBA Consultants and Carplus, the group found that in the outer boroughs of London, an area with a high vehicle density is optimal for a car club bay location. This is because there is an increase in potential car club members in these areas who would be able to sell their second or even primary vehicles and utilize car club vehicles.

A good mix and a high density of residential housing and businesses within the area of the bay: A car club bay that is surrounded by residents and businesses will allow the vehicles to be used during the workweek as well as on the weekends. It is likely that businesses will use the vehicles during the workweek, and the residents will use the vehicles at night and on the weekends. Having a high density of both businesses and households around the location means there would be more potential users of the car club vehicle. This information was gathered through an interview with Andrew Edgar from Streetcar.

Highly visible location: A car club bay location needs to be highly visible for a variety of reasons. Streetcar and Carplus both emphasized that car club bays are one of the most important marketing devices for car clubs, and that they need to be visible to the residents and businesses in an area. Both Streetcar and Carplus recommended considering locations on roads directly off main roads with high pedestrian and vehicle traffic flows. If the bay is visible from the road, then any car or pedestrian walking down the road will be able to see the bay, ultimately resulting in increased awareness of car clubs. Also, the bays need to be visible so car club members will be able to easily find the vehicles.

Clean and safe location: After an interview with Streetcar, the group found that car club operators are reluctant to put vehicles in places they do not deem safe. A safe location means the vehicles have less chance of being vandalized or damaged. More importantly, Streetcar emphasized that the car club user should not be put at risk when using the vehicle in any location, especially at night. This means that the location needs to be in a safe area, as well as have adequate lighting.

Close to public transportation: For a car club to be successful, the location must be near a public transportation hub, such as a bus stop, train station, or tram stop. Car clubs are not cost effective for the user if the user solely relies on them for every journey. Car clubs are designed to complement public transportation, to be used when the user needs the freedom of a motor vehicle. Also, in areas with limited public transportation, residents are likely to be more reliant on their private vehicles, and would thus be reluctant to join car clubs. These considerations were gathered during an interview with PBA Consultants.

Logistically appropriate location: Car clubs should be located on roads that are easily accessible and wide enough to maneuver. A location would not work if the user has difficulty accessing the vehicle, driving off with the vehicle, or parking the vehicle.

4.1.2 Grid Selection Results

To identify the optimal areas in Croydon for car clubs, the group determined the areas with optimal demographics and with a high density of vehicles. The decision to use these two criteria was made in collaboration with PBA consultants. Using a map from TfL detailing the optimal locations for car clubs based on demographics and a map from PBA Consultants detailing vehicle density, the group

identified the optimal areas in the Borough. Since the TfL demographic analysis divided the Borough into 400m by 400m grids, the group adopted that grid system. The 400m by 400m grids are representative of the distance a car club user would walk to use a vehicle. By overlaying the two maps the group identified 54 optimal grid locations.

To add to these grid locations, Peter McDonald recommended the group evaluate the Purley and Coulsdon district centers as well as a new housing development near Purley for car club bays. The recommendations were based on providing a better distribution of car clubs throughout the Borough, since the 54 locations generated through the demographic analysis and vehicle density covered only the northern portion of Croydon. The group identified the following optimal grid areas for car clubs in Croydon:

- 29 Controlled Parking Zone Locations (*Shown in Green*)
- 25 Non-Controlled Parking Zone Locations (*Shown in Red*)
- 3 Recommended Locations (*Shown in Orange*)

These locations are shown in figure 15 below.

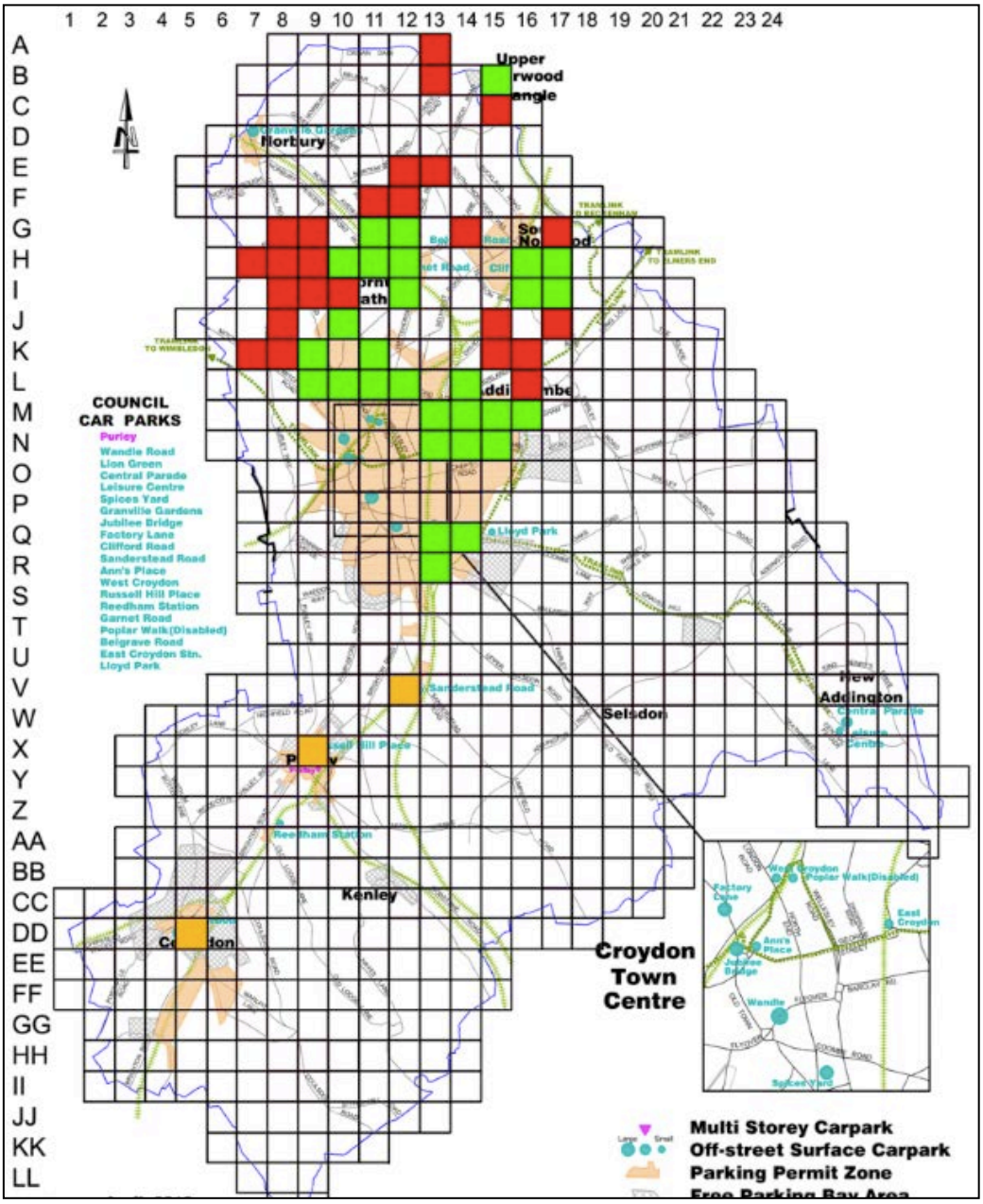
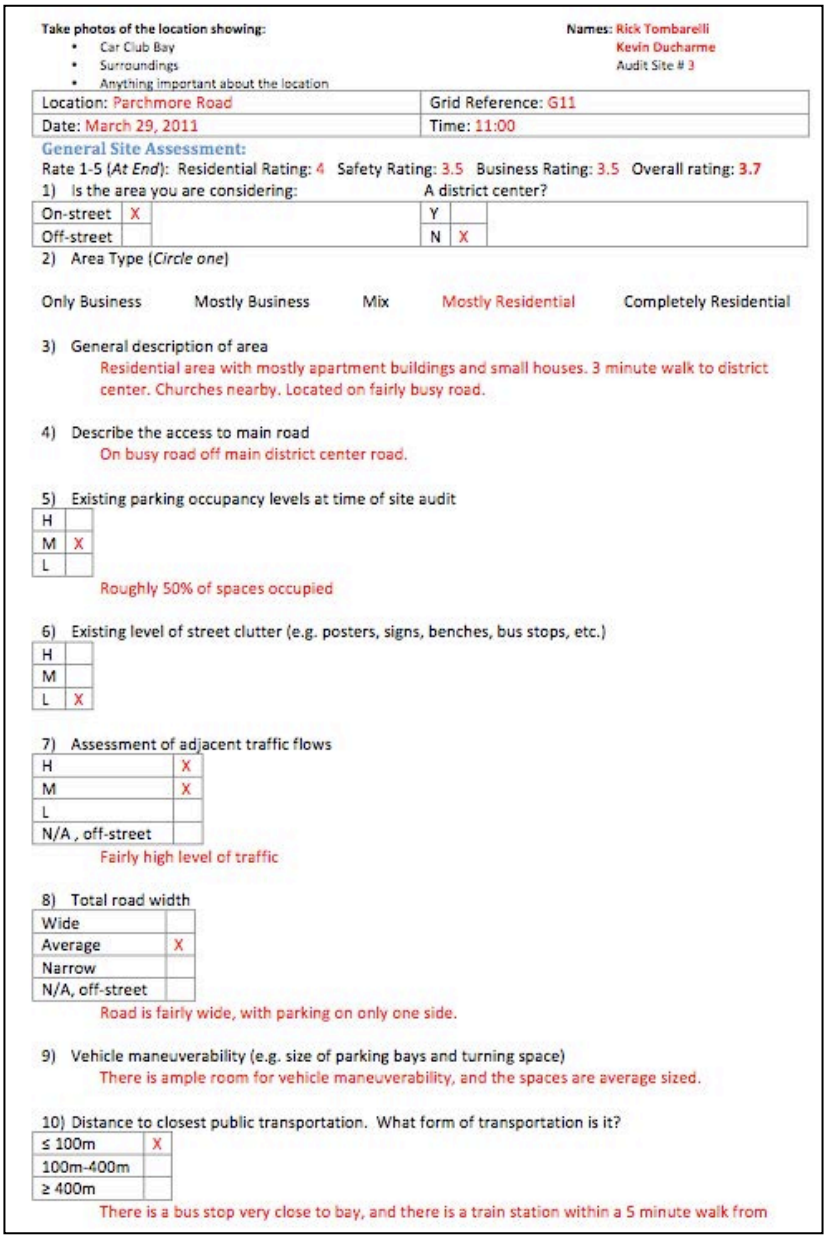


Figure 15 - Finalized Grids for Auditing

4.1.3 Audit Sheet

The group conducted on-site audits of all 57 grids to identify locations for car club bays. The group visited each grid location, and identified the best location in the grid for a car club vehicle. After the location was chosen, the group audited the location using an on-site audit evaluation form. The form evaluates the location for all of the criteria needed for an optimal bay location described earlier in chapter 4. Figures 16 and 17 below show the evaluation form.



Take photos of the location showing:
- Car Club Bay
- Surroundings
- Anything important about the location

Names: Rick Tombarelli, Kevin Ducharme
Audit Site # 3

Location: Parchmore Road	Grid Reference: G11
Date: March 29, 2011	Time: 11:00

General Site Assessment:

Rate 1-5 (*At End*): Residential Rating: 4 Safety Rating: 3.5 Business Rating: 3.5 Overall rating: 3.7

1) Is the area you are considering: A district center?

On-street	X		Y	
Off-street			N	X

2) Area Type (*Circle one*)

Only Business Mostly Business Mix Mostly Residential Completely Residential

3) General description of area
Residential area with mostly apartment buildings and small houses. 3 minute walk to district center. Churches nearby. Located on fairly busy road.

4) Describe the access to main road
On busy road off main district center road.

5) Existing parking occupancy levels at time of site audit

H	
M	X
L	

Roughly 50% of spaces occupied

6) Existing level of street clutter (e.g. posters, signs, benches, bus stops, etc.)

H	
M	
L	X

7) Assessment of adjacent traffic flows

H	X
M	X
L	
N/A , off-street	

Fairly high level of traffic

8) Total road width

Wide	
Average	X
Narrow	
N/A, off-street	

Road is fairly wide, with parking on only one side.

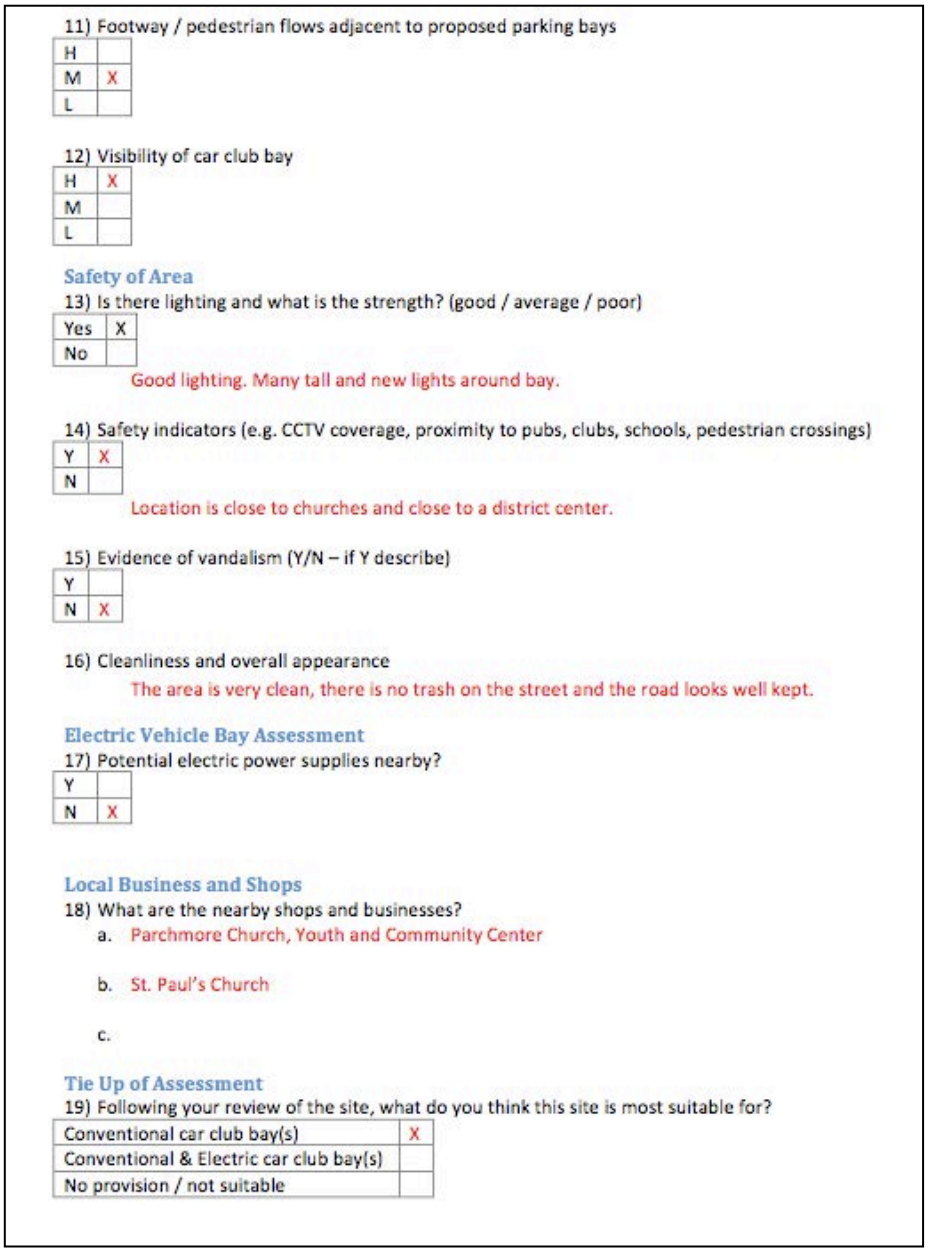
9) Vehicle maneuverability (e.g. size of parking bays and turning space)
There is ample room for vehicle maneuverability, and the spaces are average sized.

10) Distance to closest public transportation. What form of transportation is it?

≤ 100m	X
100m-400m	
≥ 400m	

There is a bus stop very close to bay, and there is a train station within a 5 minute walk from

Figure 16 - On-Site Audit Form Page 1



11) Footway / pedestrian flows adjacent to proposed parking bays

H	
M	X
L	

12) Visibility of car club bay

H	X
M	
L	

Safety of Area

13) Is there lighting and what is the strength? (good / average / poor)

Yes	X
No	

Good lighting. Many tall and new lights around bay.

14) Safety indicators (e.g. CCTV coverage, proximity to pubs, clubs, schools, pedestrian crossings)

Y	X
N	

Location is close to churches and close to a district center.

15) Evidence of vandalism (Y/N – if Y describe)

Y	
N	X

16) Cleanliness and overall appearance

The area is very clean, there is no trash on the street and the road looks well kept.

Electric Vehicle Bay Assessment

17) Potential electric power supplies nearby?

Y	
N	X

Local Business and Shops

18) What are the nearby shops and businesses?

a. Parchmore Church, Youth and Community Center

b. St. Paul's Church

c.

Tie Up of Assessment

19) Following your review of the site, what do you think this site is most suitable for?

Conventional car club bay(s)	X
Conventional & Electric car club bay(s)	
No provision / not suitable	

Figure 17 - On-Site Audit Form Page 2

The on-site audit form is broken down into the following six sections:

Site Information: This section was primarily used for record keeping. Included is the location road name, the grid location, the date the site was audited, the time of the audit, and the names of who audited the location. This helped the group keep track of the bay locations as they were audited.

General Site Assessment: This section includes a general assessment of the surroundings, accessibility, occupancy levels, road-width, proximity to public transportation, traffic flow, pedestrian flow, and visibility of the bay location. This section contains the bulk of the logistic criteria regarding the site, and contains information regarding whether the site would work logistically. Each of the issues was assessed using a primarily subjective measure, with the exception of proximity to public transportation. The group audited a site together, worked in teams of two, and changed teams to assure that there were consistent evaluations even with the considerably subjective assessments. Proximity to public transportation was evaluated based on a distance range. The range was verified using Google Maps.

Safety Assessment: This section covers the safety of the location. This includes whether or not the area has ample street lighting, has CCTV, the levels of graffiti around the location, and the proximity to district centers, churches and other community buildings. The safety assessment covers how safe a vehicle would be in the location, and how safe a car club user would be in the location, particularly at night.

EVCP Assessment: This section covers the availability of a feeder pillar directly next to or close to the location. A feeder pillar next to a location means it will be suitable as an EVCP.

Local Business and Shops: This section includes a list of all of the potentially interested businesses around the bay location. The group looked for businesses within a 200m radius of the location. The group only recorded businesses believed to be potentially interested in car clubs. The profile for a potentially interested business is described later in the report.

Ratings: This section is at the top of the audit sheet, but is done last. The group used all of the information in the other sections to give the location a rating while still on site. Ratings were given for the residential surroundings, business surroundings and safety. These were then averaged together to generate an overall rating. The overall rating is an indicator of how well the group believes a car club vehicle would do in the location.

4.1.4 Audit Write-Ups

After the audits were finished, the group used the completed on-site audit evaluation forms to create a write-up of each location. The write-ups were done to compile all of the information from the audit forms into a 2-3 page summary of the location. The write-ups can be used to gather an understanding for the location and its surroundings, understand the reasoning behind the rating of the location, and to see images of the location and its surroundings.

An example of one of the 57 write-ups can be seen below. All of the write-ups can be viewed in Appendix B.

Havelock Road – N15

On street
Done By: Adeola Otuyelu and Rick Tombarelli
Overall Rating (1-5): 3
CPZ: Yes

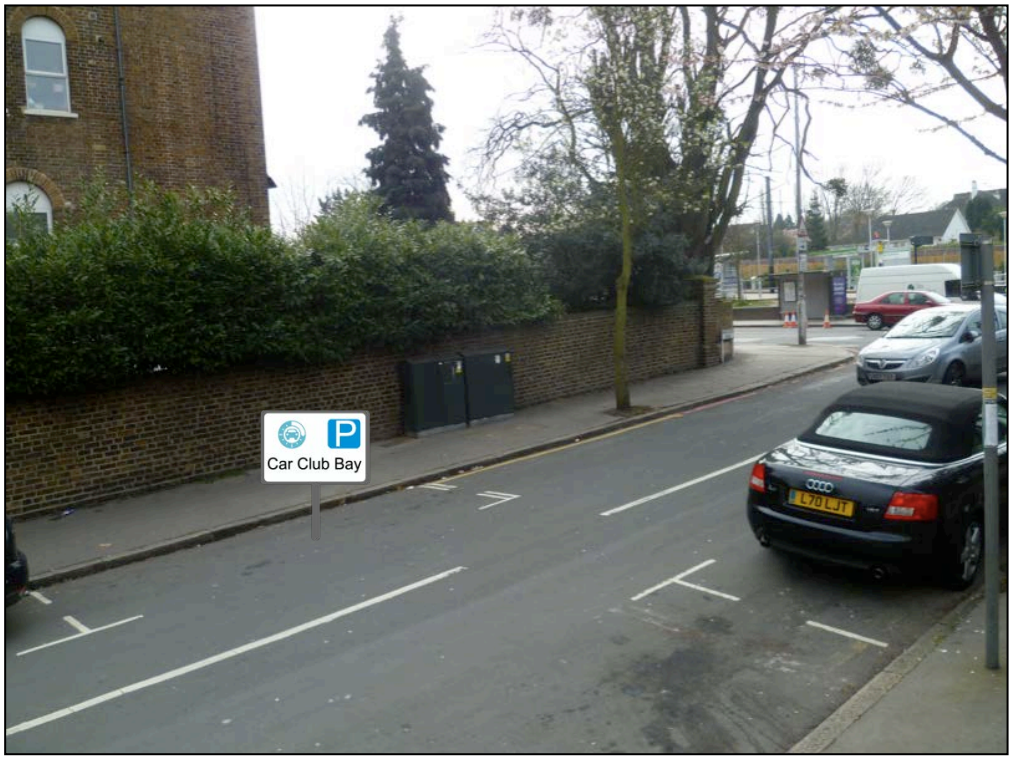


Figure 18 - Havelock Road

General Information:

The bay location on Havelock Road is located directly off a main road in a predominantly residential area consisting of a lot of apartment buildings and small houses. It is within a considerably nice neighborhood (medium income class). There is a busy bus stop within 100m of the bay and a busy tram station right opposite it. There is average pedestrian activity as well as a medium to high level of traffic flow in the area although the street itself is very quiet. It was noted at the time of audit that there was a very low parking occupancy level in the area – about 20%. Havelock road has an average width and double parking leaves a single lane for traffic flow.

Safety of Location:

There are streetlights all the way down the road so the lighting is very good. The bay location is very close to a busy street as well. There are some safety indicators in the area such as expensive cars parked on the road, street signs stating surveillance in the area, safe apartment buildings and close proximity

to the tram station. Evidence of vandalism is very low besides a small amount of graffiti. The area appeared very clean and the overall appearance is good. Overall safety is high.

Surrounding Businesses:

1. Beckett Solicitors
2. Herbalife Distributor
3. Helen O'Grady Drama Academy

Pros	Cons
• Next to public transport hubs • Good visibility from busy road • Clean and safe	• Lack of businesses

EVCP Compatible?

Yes. There is a feeder pillar next to the bay location.

Additional Pictures:

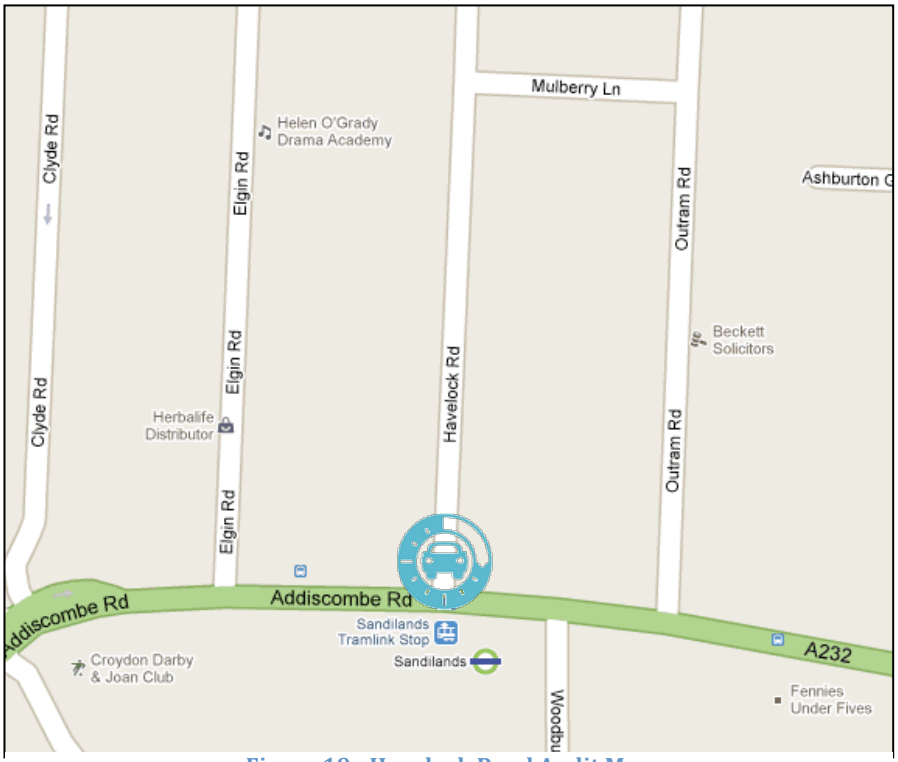


Figure 19 - Havelock Road Audit Map

4.1.4.1 Write-Up Discussion

As seen above, the write-up covers:

Heading information: The heading information helps to identify the bay. This includes the grid location of the bay, the on- or off-street identification, the names of who completed the audit, the overall rating, and the CPZ or non-CPZ identification.

A picture of the site: Each write-up includes a picture at the beginning that shows the location. A car club bay sign identifies the exact location for a car club bay.

General information: Each write-up includes a general information section that gives a general description of the location and surroundings. The section covers the general site assessment from the on-site audit form. This includes a description of the business and residential surroundings, explicitly stating what type of buildings or houses surround the location. It also includes a description of the accessibility of the location, layout of the location, road width, proximity to public transportation and visibility.

Safety of location: Each write-up includes a section that covers the safety of the location. This section covers the safety assessment from the on-site audit form. The section includes information covering the level of street lighting around the location, information on the levels of graffiti or vandalism and information regarding the safety of the surrounding area.

Surrounding businesses: The surrounding businesses were taken from the on-site audit form and included in the write-up in this section. For areas with lots of businesses, a general description of the types of businesses is included.

Pros and Cons: The pros and cons section of the write-up is a summary of the major benefits and drawbacks of each location. Not all aspects of the location are included in this section; only the key benefits and key drawbacks that help summarize the location. Most pros and cons are described in the other sections of the write-up.

Additional Pictures: This section includes a Google-map image showing the exact location of the potential bay. The generic car club logo was used to identify the location. This image gives the viewer a sense of where the location is and what streets the location is near. Some audits required additional photographs to further show the location. These photographs are included here.

4.1.5 Completed Audit Results

Audit Results			
Total Grids Audited	Grids Found Inadequate for Car Clubs	Grids with Multiple Locations for Car Clubs	Total Locations Found
57	**7**	**7**	**57**

Table 1 - Audit Results

Once the group finished the 57 audits and audit write-ups, the information was compiled and analyzed. The group found 7 grid locations to be inadequate for car clubs, and 7 grid locations having multiple locations for car clubs. This resulted in 57 total potential locations for car club vehicles.

Grids found inadequate for car clubs	H10	L9	L10	L12	Q14	E13	J15
Grids with multiple locations for car clubs	H11	H16	H17	M14	M16	X9	DD5

Table 2 - Inadequate and Multiple Grid Locations

Grids found inadequate for car clubs: The group found seven grids to be inadequate for car clubs. These seven grids had no council owned car parks, and no on street parking that was suitable for a car club bay. The main reasons why the on street parking was not suitable in these grids was that the parking was unsafe. In some grids, the only parking available was on busy roads with vehicles traveling by at high rates of speed, and some grids appeared unsafe, with poor to no street lighting. A full explanation of each of these locations can be seen in Appendix D. These locations can be seen in yellow on the map below in figure 21.

Grids with multiple locations for car clubs: The group found seven grids that had many potential places for car club bays being: H11, H16, H17, M14, M16, X9 and DD5. The group felt that these grids would be able to have two well performing car club bays in them. Many of the grids with multiple locations had a council owned car park location, and an on-street location. These locations can be seen in blue on the map below in figure 20.

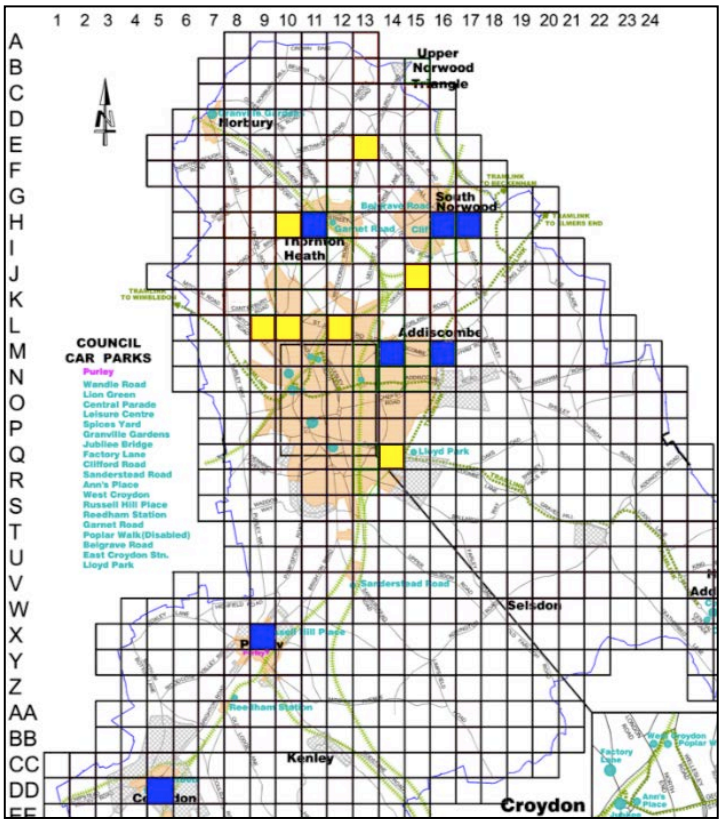


Figure 20 - Multiple Bay and Inadequate Locations

4.1.6 Audit Rating Results

The group took all of the ratings from the write-ups and compiled them into ranked tables. Figure 21 below shows the rating breakdown from the audit results.

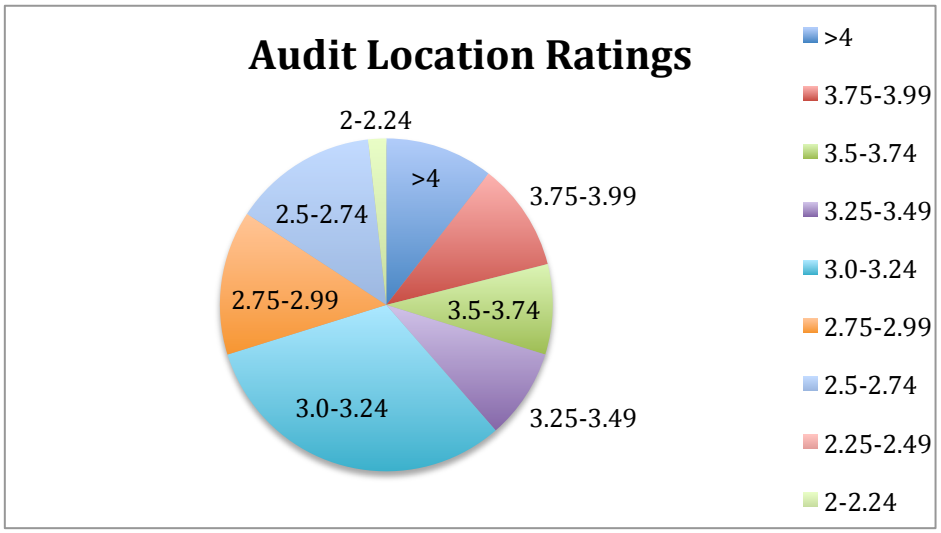


Figure 21 - Audit Location Ratings

The figure details the breakdown of the ratings. Each color represents a range of ratings, for example, the red section represents the portion of audits that had ratings of 3.75-3.99. The figure shows that there is a relatively even distribution of ratings from 2.5 to above 4. The figure also shows that only a few locations had ratings below 2.5, and that roughly 1/3 of the locations had a rating of 3-3.24.

Below is a table that ranks all of the write-ups by overall ranking. The table includes the grid location, the street name, type of parking, business rating, residential rating, safety rating and overall rating.

Grid	Location	Type of Parking	Business Rating	Residential Rating	Safety Rating	Overall Rating
N13	Fairfield	Car Park	5	3.5	5	**4.50**
X9	High Street	On-Street	4	4.5	4.5	**4.30**
F11	Beulah Road	On-Street	3	4	5	**4.00**
K7	Canterbury Road	On-Street	4	4	4	**4.00**
I17	Denmark Road	On-Street	4	5	3	**4.00**
B15	St. Aubyn's	On-Street	4	4	4	**4.00**
H16	Belgrave	Car Park	4	4	3.5	**3.80**
L14	Moreland Ave	On-Street	3	3.5	5	**3.80**
X9	Purley	Car Park	4.5	3	4	**3.80**
U12	Sanderstead Road	Car Park	4.5	4	3	**3.80**
DD5	Victoria Road	On-Street	4	3.5	4	**3.80**
H12	Garnet Road	Car Park	3	4.5	3.75	**3.75**
J10	Woodcroft Road	On-Street	2.5	4.5	4.25	**3.75**
G11	Parchmore Road	On-Street	2.5	4	4.5	**3.70**
H17	Pembury Road	On-Street	3	4	4	**3.70**
DD5	Lion Green Road	Car Park	4	3	3.8	**3.60**
Q13	Birdhurst Gardens	On-Street	2	4.5	4	**3.50**
L16	Sissinghurst Road	On-Street	2	5	3.5	**3.50**
C15	Braybrooke Gardens	On-Street	3.5	3.5	3	**3.30**
H16	Clifford Road	Car Park	2	3.5	4.4	**3.30**
H8	Goldwell Road	On-Street	2	4	4	**3.30**
B13	Harold Road	On-Street	1	4.5	4.5	**3.30**
N14	Lebanon Road	On-Street	1	5	3.75	**3.25**
I8	Gonville Road	On-Street	2.5	4	3	**3.20**
J8	Harcourt Road	On-Street	3	3.5	3	**3.20**
A13	Oxford Road	On-Street	1	4.5	3.75	**3.10**
K7	Aurelia Road	On-Street	2	4	3	**3.00**
M16	Barring Road	On-Street	3	3	3	**3.00**
J17	Belmont Road	On-Street	2	3.5	3.5	**3.00**
H11	Bensham Manor Road	On-Street	2.5	3.5	3	**3.00**
N15	Havelock Road	On-Street	1	5	3	**3.00**
I10	Lakehall Road	On-Street	2	4	3	**3.00**
M13	Leslie Grove	On-Street	2	4	3	**3.00**
H9	Malvern Road	On-Street	1	4.5	3.5	**3.00**
M15	Outram Road	On-Street	1	3.5	4.5	**3.00**
G12	Woodsville Road	On-Street	2	3.5	3.5	**3.00**
K16	Malcolm Road	On-Street	3	3	2.75	**2.90**
G14	St. Mary's Road	On-Street	1	4	3.75	**2.90**
M16	Ashburton Road	On-Street	2	3	3.5	**2.80**

K15	Beckford Road	On-Street	1	5	2.5	**2.80**
E12	Burlington Road	On-Street	2	3.5	3	**2.80**
F12	Buller Road	On-Street	1	5	2.25	**2.75**
G17	Lonesdale Road	On-Street	1	4	3.25	**2.75**
H11	Stuart Road	On-Street	2	3.5	2.75	**2.75**
I9	Frant Road	On-Street	1.5	3.5	3	**2.70**
H17	Harrington Road	On-Street	2	3	3	**2.70**
K11	Hartley Road	On-Street	1	5	2	**2.70**
G9	Wiltshire Road	On-Street	1	3.5	3.5	**2.70**
M14	Lebanon Road	On-Street	1	4	2.8	**2.60**
K9	Cambell Road	On-Street	1	4	2.5	**2.50**
M14	Canning Street	On-Street	1.5	3	3	**2.50**
R13	Dornton Road	On-Street	1	5	1.5	**2.50**
H7	Lonsdale Gardens	On-Street	1	2.5	4	**2.50**
I12	Saxon Road	On-Street	1.5	3.5	2.5	**2.50**
L11	Thronhill Road	On-Street	1	5	1.5	**2.50**
G8	Warwick Road	On-Street	2	3	2.5	**2.50**
I16	Morton Road	On-Street	3	2.5	0.5	**2.00**

Table 3 - Audit Result Ratings

4.1.6.1 Discussion of Tables

The group found that the rankings ranged from 2.0-4.5. The Fairfield car park, in grid N13, got the highest overall ranking of a 4.5 and the bay location on Merton Road, in grid I16, got the lowest overall ranking of a 2.0. The group found that any bay location that got a ranking of 3.80 or higher was within the top ten locations. Whereas, any location that got a 2.70 or lower was in the bottom ten. Generally, the group found that the council owned car parks are the best possible locations for car club bays. This is evident in the table, where 4 of the 7 car parks that were audited were ranked in the top ten, and all of the car parks were ranked in the top twenty. The group found that the car parks got high safety ratings because the car parks have CCTV coverage, are well maintained, and are well monitored. The car parks also have good residential and business surrounding ratings because they are put in areas that have lots of use from both residents and business customers.

Additional tables can be seen in Appendix G. The tables are ranked by business and residential ratings. These will be valuable for identifying the best bays

for residential or business surroundings if the need arises. These tables were requested, as trials may be done for car clubs in areas based on residential and business ratings.

4.1.7 Streetcar Location Audits

To compare the potential locations to the current locations in Croydon, the group audited 5 of the 12 current Streetcar locations already in Croydon. Had the group had more time to complete this project, the remaining 7 locations would have been audited. Table 4 below shows the audit rating results.

Grid	Location	Type of Parking	CPZ? Yes or No	Overall Rating
O12	Taberner House	Car Park	Yes	3.5
O11	Wandle Road	Car Park	Yes	3.3
L14	Moreland Road	Car Park	Yes	3.2
K9	Mayday Road	Car Park	Yes	3.1
P12	Spice's Yard	Car Park	Yes	3.0
		Average Streetcar Rating		**3.22**

Table 4 - Streetcar Audit Location Results

All of the Streetcar locations were relatively close to each other in terms of overall ranking. The highest-ranking Streetcar location was the Taberner House car park, which got a 3.5, whereas the lowest ranking Streetcar location was Spice's Yard car park, which got a 3.0.

Out of the 57 locations that were audited, 23 of the locations had a higher overall rating than the average Streetcar rating. Generally, the current Streetcar locations were similar to those locations chosen for new car club bays. For the most part the Streetcar locations scored high rankings. It was determined through the interview with Streetcar that they decided their locations based on the optimal business case and to support the trial program. It is apparent that Streetcar carefully considered where to put their vehicles, and chose locations to support the council car club trial.

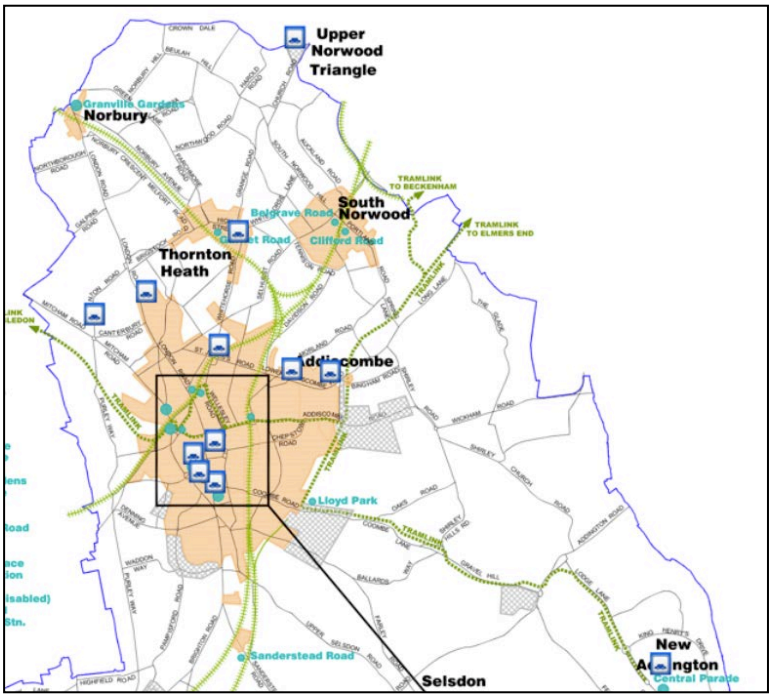


Figure 22 - Current Streetcar Locations

Figure 22 above shows the current Streetcar locations in Croydon. Most of the Streetcar locations in the Borough are placed in areas near council buildings for council member use, but there are some locations in other areas such as New Addington, and Crystal Palace. There is a noticeable lack of Streetcar bays in southern Croydon.

4.1.8 Finalized Map of Locations

Below are two maps that show the entire borough of Croydon with all of the potential bay locations. The first map is Northern Croydon and the second map is Southern Croydon. On the maps, the symbol with the thin, red boarder indicates the bay locations audited by the group and the symbol with the thick, blue boarder indicates the current Streetcar bay locations.

4.1.8.1 Northern Croydon

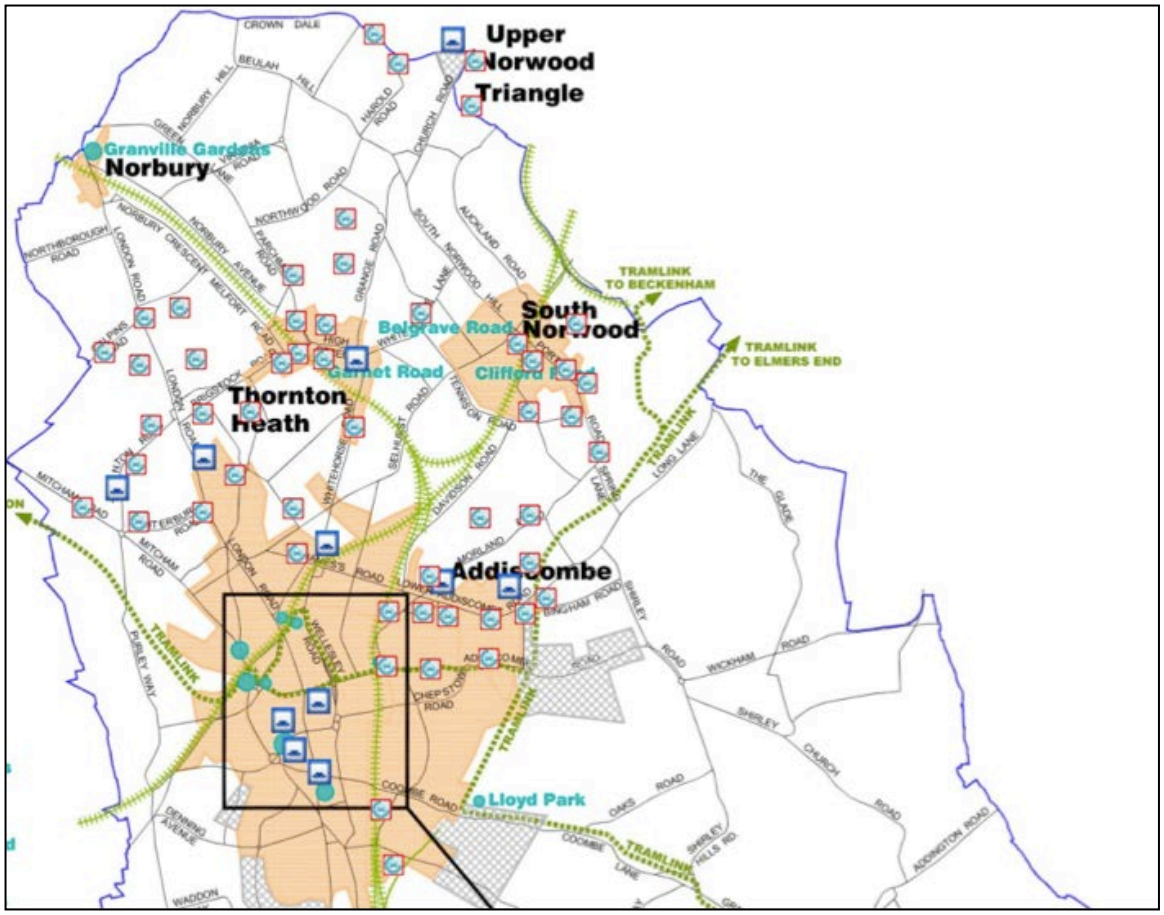


Figure 23 - Map of Northern Croydon with Audited Locations

4.1.8.2 Southern Croydon

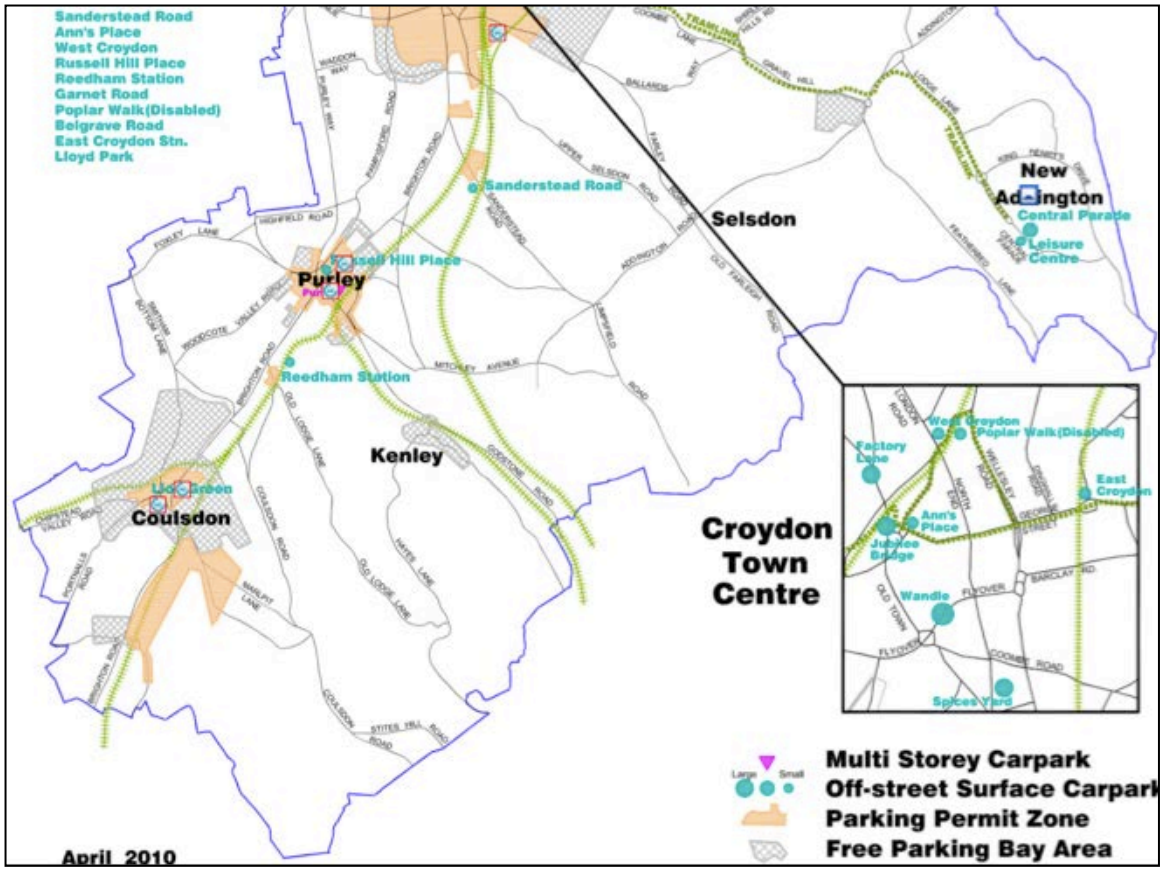


Figure 24 - Map of Southern Croydon with Audited Locations

These two maps show a generally well-distributed spread of car club vehicles throughout the Borough. There is a high concentration of bays in the Thornton Heath, South Norwood, Upper Norwood Triangle, and Addiscombe areas. There is however a noticeable lack of bays in the Selsdon and Norbury areas. Had the group had more time, these areas would have been considered.

4.1.9 ECVP Analysis

Using the on-site audit forms, the group determined the locations that would be appropriate for EVCPs. A total of 16 out of the 57 bay locations found had feeder pillars directly near the bays, meaning they would be adequate for EVCPs. Table 5 lists the locations adequate for EVCPs.

Grid	Location
X9	High Street
F11	Beulah Road
L14	Moreland Ave
DD5	Victoria Road
H17	Pembury Road
H16	Clifford Road
N14	Lebanon Road
I8	Gonville Road
N15	Havelock Road
M15	Outram Road
K15	Beckford Road
F12	Buller Road
H17	Harrington Road
G9	Wiltshire Road
K9	Campbell Road
R13	Dornton Road

Table 5 - EVCP Compatible Audit Locations

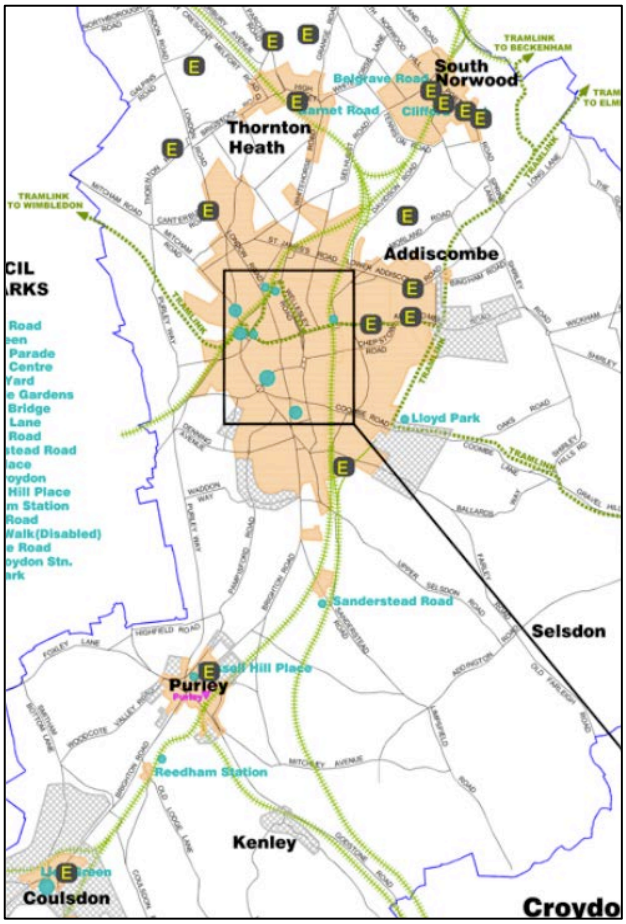


Figure 25 - EVCP Locations

Figure 25 above shows that there is an even spread of potential EVCPs throughout Croydon. The only areas that have a noticeable lack of EVCP locations are in the center of Croydon, and in the eastern parts of the Borough.

The 16 locations are based on an assumption made that a good car club site with a feeder pillar would be optimal for an EVCP. All 57 locations however could be used as EVCPs. Locations without feeder pillars could have a feeder pillar installed for £1000 to support the EVCP (TfL, 2011).

4.2 Location Recommendation Results

To generate recommendations for car club bay placement, the group investigated how quickly bays should be implemented, and whether a single or multiple operator system would work the best for Croydon. The group created a pros and cons table for each of these investigations and the results are shown below.

4.2.1 Car Club Bay Implementation Rate Pros and Cons

The group compiled information from interviews to create a pros and cons table to make recommendations for the car club bay implementation rate over the next five years.

This general pros and cons table was created in order for the group to get a good look at the Borough as a whole so that the best possible recommendations could be made for Croydon. A lot of the information that was incorporated into this pros and cons table was determined by the interview with Mary Toffi from Richmond. Mary explained to the group both the benefits and drawbacks of introducing lots of vehicles at once. This was contrasted by an interview with Barry Francis, Head of Infrastructure at the Croydon Council. He explained that if there were an escalated increase in the number of car club bays, there would also be an increase in the complaints from residents and businesses.

Table 6 is the summary pros and cons table for rapid introduction of vehicles into the Borough. The table is based on a rapid implementation, meaning greater than 10 bays per year. A table for slow implementation is not shown because it would be the exact opposite of the fast implementation table, meaning the pros and cons would be reversed.

Rapid Yearly Introduction of Car Club Vehicles (>10 per year)	
Pros	Cons
• Increased awareness of car clubs • Sudden awareness of car clubs • Residents gain access to cars immediately • More "fair" distribution of car club vehicles	• Potential to need to remove vehicles • Council has to deal with resident and business complaints all at once • More funding

Table 6 - Rapid Yearly Implementation Pros and Cons

Pros: Introduction of car club vehicles at a fast rate will bring about a sudden and increased awareness in the Borough. This is due to the fact that the citizens will see a sudden increase in the number of car club bays in the Borough. Also, residents can gain access to more vehicles and locations within shorter periods of time. Furthermore, there is a fair distribution of vehicles throughout the entire borough, since certain areas do not have to be prioritized by year.

Cons: Introducing lots of vehicles at once may result in bays needing to be taken away. This is because some of the initially selected areas may not work well, and may have to be removed. There will also be a lot of complaints from businesses and residents all at once with a fast introduction. Furthermore, the introduction of bays at a fast pace would require a large amount of immediate funding for both the operator and council.

4.2.2 Single vs. Multi Operator Pros and Cons

When making recommendations, the group will recommend that the Borough use either a multi or single operator system. In order to help the group make this recommendation the group developed a pros and cons table to compare the two options. Below is a table showing the pros and cons of having a single operator borough. There is no table showing the pros and cons for a multi operator

borough because it would be the exact opposite of the single operator borough table. The table is a summary of the findings from the interviews with representatives from Richmond and Islington. Richmond is a multiple operator borough, while Islington is a single operator borough. This gave the group insight into the benefits and drawbacks of each.

Single Operator Borough	
Pros	Cons
• Residents have access to more cars • Easier for Borough to manage • Borough can develop a strong relationship with one operator • Avoid possible conflict about bay locations	• Lack of competition • Favor one operator

Table 7 - Single Operator Pros and Cons

The benefits of a single operator borough include:

Residents have access to more cars: When many car club vehicles are introduced, residents have immediate access to more vehicles. The members do not have to worry about finding a vehicle that is part of the right car club. If there are multiple car clubs within the Borough car club users will only have access to the vehicles under their membership, or be forced to join multiple car clubs, which results in multiple yearly membership payments.

Easier for borough to manage: The Borough would be able to give all of the spaces desired for car clubs to one operator, and would only have to work with one operator.

Borough can develop a strong relationship with one operator: The Borough would be able to build a strong and long lasting relationship with the single operator. Rather than building relationships and dealing with more than one operator, the Borough would be able to only deal with one operator and build a much stronger relationship.

Some of the downsides include:

Lack of competition: This is not a major downside, as all of the operators have fixed pricing. The only type of competition that may occur involves specific arrangements that are made with the operators, such as a trial program.

Favoring one operator: The Borough may seem as though they favor one operator over the rest.

These pros and cons were used to develop recommendations discussed in the next section of this report.

4.3 Marketing Strategy Results

"For a car club scheme to be successful, citizens need to be aware of how car clubs work, and the benefits the clubs provide to the user,"

Chas Ball - Chief Executive, Carplus

In order to raise awareness of car clubs in the Borough, the group worked to develop a marketing strategy to be used by Croydon Council. As Chas Ball explained to the group, it is important for the citizens and businesses in the Borough to be aware of what car clubs are, how they work, and the many benefits car clubs can provide. Developing a marketing strategy was done by first compiling information to understand the customers and their needs, developing promotional material to be used, and then promotional methods to be followed.

4.3.1 Understanding the Customer: Residential

In order to promote car clubs to residents, the group needed to understand the needs of the residents, reasons why they would resist adopting car clubs, and the alternative forms of transportations. Using this information, the group then developed brochures, posters and a Web site to inform residents to raise awareness of car clubs.

4.3.1.1 Residential Needs

Residents of Croydon need to have a means to travel from their home to other places. Their transportation means need to be affordable, convenient, comfortable, safe, and close to their homes. Citizens will not be willing to use a form of transportation if it is too expensive, a hassle, or too far away. The group concluded this through interviews with other boroughs, and through generating reasonable assumptions.

4.3.1.2 Barriers to Adoption

In order to understand what will help convince citizens to join a car club, the group needed to understand why citizens would resist adopting car clubs. Through interviews with executives from Carplus and Streetcar the group concluded that the barriers to adoption are primarily people's attachment to their private car. Private vehicles offer a number of luxuries that are not available with car clubs, such as not having to share a car, having a car always available, and being able to drive a car nicer than those offered by car clubs. Other barriers might include a lack of knowledge, such as not being completely informed on the benefits of car clubs or not understanding how car clubs work. It is also likely that many residents may put an emphasis on the potential problems of car clubs such as not being to rent a car when needed, having a car show up late, and having to use a vehicle that is not clean.

4.3.1.3 Alternative Methods of Transportation

The group needed to understand how to best promote car clubs to citizens by understanding the alterative options citizens have. These alternative methods of transportations are:

> **Privately Owned Vehicles**: Exclusively using a privately owned vehicle is an alternative to utilizing a car club. Both forms of transportation allow the same level of mobility, since they could be the same vehicle. One of the major differences between privately owned vehicles and car clubs is that the responsibility of the car falls to the car owner with a private vehicle, whereas the car club operator takes the responsibility of the car with a car club. Responsibilities include maintenance of the vehicle, providing parking for the vehicle, and cleaning the vehicle. Another major difference is that vehicle owners have the luxury of having their own vehicle to drive. The vehicle is not shared, and is always available to use, whereas car club vehicles are shared, and sometimes not available.

Public Transportation: Exclusive use of public transportation is an alternative to car club use. Public transportation includes buses, trains and trams. The user must walk to a public transportation hub to travel to different places. Public transportation is limited by only being able to go to certain places at certain times. This however is an even more carbon friendly alternative to car clubs.

4.3.2 Understanding the Customer: Business

In order to promote car clubs to businesses, the group needed to understand the needs of the businesses, reasons why they would resist adopting car clubs, and the alternative forms of transportations that businesses use now.

4.3.2.1 Business Needs

Businesses with work-related transportation need to be able to transport employees and products to different destinations. Bigger businesses such as Croydon Council need a cheap and safe method of letting their employees travel around for work. Small businesses such as bakery stores and flower shops need to be able to deliver cakes, flowers and other products to customers. These businesses need their transportation to be affordable, convenient, comfortable, easily manageable, clean and safe. This information was developed based on reasonable assumptions.

4.3.2.2 Barriers to Adoption

In order to understand what will help convince businesses to join car clubs, the group needed to understand why businesses would resist adopting car clubs. Through interviews with executives from Carplus and Streetcar, the group concluded that one of the main barriers to adoption is a business being accustomed to using their previous transportation means. The other barriers include not being completely informed on the benefits of car clubs, and businesses putting an emphasis on the potential problems with car clubs such as not being able to rent a car when needed, having a car show up late, or having to use a vehicle that is not clean.

4.3.2.3 Alternative Solutions to Car Clubs

To be able to market car clubs to businesses, the group worked to establish the alternatives businesses have to using car clubs. The 3 alternative methods of transportation are:

Fleet Vehicles: Utilizing fleet vehicles involves businesses personally owning a number of cars that are stored at the business location. The business is responsible for paying for the vehicles and maintenance, having the maintenance done and cleaning the vehicles.

Reimbursing Private Vehicle: The second method is reimbursing private vehicle usage. This involves paying an employee for the miles that they drive with their private vehicle. This sometimes includes paying the employee additional money per year for them to use their own vehicles. This was the transportation method used by Croydon Council before the car club trial.

Public Transportation: Exclusive use of public transportation is an alternative to car club use for businesses. Public transportation includes

buses, trains and trams. The employees must walk to a public transportation hub to travel to different places. Public transportation is limited by only being able to go to certain places at certain times. This, however, is an even more carbon friendly alternative to car clubs.

4.3.2.4 Profiles of Businesses Likely to use Car Clubs

The group worked to develop profiles and characteristics of businesses that use car clubs. These profiles and characteristics were used to identify businesses that would be potentially able to use car clubs. To develop the profiles and characteristics the group worked to develop a list of companies already using car clubs. The full list can be seen in Appendix K. From the list and from interviews with Streetcar and PBA Consultants, the group gathered the following profiles and characteristics.

Any kind of business that requires transportation can employ the use of car clubs. Car clubs can be useful to a business that:

- Occasionally needs a vehicle
- Has fleet vehicles that are under utilized
- Lacks parking bays in the area for company owned fleet vehicles
- Is trying to cut down on their carbon footprint
- Is trying to reduce the cost of work-related transportation
- Is trying to reduce administration and risks associated with in-house fleet maintenance and safety

Some example types of companies that use car clubs include construction companies, engineering companies and small retail businesses with transportation needs, such as florists and bakers.

4.3.3 Marketing Content: Car Club Definition

An important aspect of car club marketing is to quickly inform the reader of what car clubs are, and how car clubs work. Through research about car clubs and the different operators in London, the group developed the following definitions:

> **What is a car club?** A car club offers pay-as-you-drive cars and vans that are readily available to all members. With a small membership fee and hourly rate for the time the vehicle is driven, a car club is exactly what every person or business looking to save money, travel easier, and be more environmentally friendly needs.
>
> **How do car clubs work?** People first start by joining the car club of their choice. Typically, people can visit the operator's website to sign up. The applicant fills out an application and submits it. The operator will then run a license background check on the applicant and, pending on a positive license check, will approve the applicant. The applicant will then have to set up his pin number and the operator will send the new member his or her membership card. The membership card and pin number are required to book any vehicle and to access said booked vehicle. After booking a vehicle either online or by phone, the member will be sent directions, via email and text regarding the location of the car and how to get there. The member can then simply swipe into the car with their membership card as it has a RFID chip and the car has an RFID reader, and then enter their pin number into the engine lock inside the car to get the car keys and to start the engine. Afterwards, the user can use the car for as long as he or she booked the car for, and then return the car to the same spot when finished.

4.3.4 Marketing Content: Benefits of Car Clubs

Through interviews with Streetcar, Carplus, other boroughs, and various Croydon Council employees as well as through research of TfL publications and Croydon Council documents, the group developed a list of benefits for car clubs to use in the promotional material. These benefits include:

Convenience: Car Clubs are convenient to use as they have dedicated parking bays so the user never has to drive around to find an open spot to park. Car clubs also provide a variety of vehicles, from BMW 1 & 3 series, to the VW Golf, to transport vans. This allows for the use of car club vehicles for a variety of events and occasions. Finally, car clubs take care of most of the hassles of owning a vehicle such as cleaning, repairs and maintenance.

Environmental Friendliness: Car club vehicles are much less carbon emissive than typical private cars, making them much more environmentally friendly. Car club vehicles also reduce traffic congestion and parking pressure on local parking. A TfL study found that for every single car club vehicle put on the road, 4 private vehicles are removed from the road and another further 6 are deferred from being purchased. In addition, due to the nature of car clubs, it encourages users to adopt healthier habits such as walking and cycling.

Accessibility: Car clubs provide accessibility to the user. They allow the user to easily bring home groceries or moving furniture from one place to another. Car clubs even allow people to get to destinations that are normally unreachable by public transportation.

Affordability: Owning a private vehicle has a lot of costs associated with it, such as insurance, maintenance, congestion charge, etc. In addition, any time

a private vehicle sits in a parking bay unused is money being wasted. With a car club, the user only pays for the amount of time used and driving done, so money is never wasted. To quantify the actual cost savings of car clubs the group performed a cost analysis as seen in the cost analysis section.

4.3.5 Marketing Content: Cost Analysis

To quantify the cost savings that car clubs could provide, the group performed a comprehensive cost analysis. This was done to develop content such that emphasized the affordability aspect of car clubs for the promotional material. The group worked to use average costs from all four operators in London so that the cost analysis was not biased to one operator.

The group found that the actual cost of leasing and operating a vehicle, and even the costs of being in a car club, is very complicated and varies based on a number of factors. The group decided to work to establish figures that best represented the average London driver. Averages were found for all of the figures used in table 8 below. This chart outlines the cost and the cost per mile of using a private vehicle versus being a car club member driving the same mileage.

Cost Analysis - VW Golf		
	Owning a Private Vehicle	**Being a car club member**
Insurance	£792	£0
Yearly Parking Permit	£510	£0
Down Payment for Vehicle Lease	£666	£0
Lease Cost per Year	£1,464	£0
Maintenance (Oil Changes/Cleaning/Tires)	£100	£0
Gas Cost	£470	£317
Car Club Rental Fees	£0	£1,197
Car Club Yearly Membership	£0	£53.17
Total	**£4,002**	**£1,567**
Cost Per Mile	**£1.67**	**£0.65**
Data from VW.com, Streetcar.co.uk, Zipcar.co.uk, CityCarClub.co.uk, Carplus,		

Table 8 - Cost Analysis: VW Golf

The data used is based off a UK resident driving 2,400 miles a year, which is the average mileage per year for UK drivers. The operator data is based on average

costs from Streetcar, Zipcar, and City Car Club. The data is also based on the average price paid for auto insurance in London, a car park parking permit in Croydon, the cost of leasing a 2011 VW Golf, and the cost to maintain the vehicle. More data used to compile the numbers is shown in charts L1 and L2 in Appendix L.

The data shows that for the average mileage driven, car club membership is significantly cheaper than leasing the car. Members can save more than £2250 compared to leasing the vehicle themselves.

The group worked to establish at what point a car club vehicle becomes less cost effective. The group used the data in Table 8 for a range of yearly miles driven to generate the figures below. The figure shows the crossover point at which car club membership becomes more expensive. This is roughly 11,000 miles per year for the VW Golf and 7,000 miles per year for the BMW 318. This solidifies the fact that car clubs are only cost effective at relatively low yearly mileages. This means that car clubs should be marketed as a complement to public transportation, not as a stand-alone form of public transportation that should be used for every journey. The more miles driven per year with a car club vehicle results in less cost efficiency compared to private car ownership, and is cost effective until 11,000 miles with a VW Golf. Figures 26 and 27 show the average yearly costs of two different car club vehicles for different yearly mileages.

Figure 26 - Cost Comparison: VW Golf

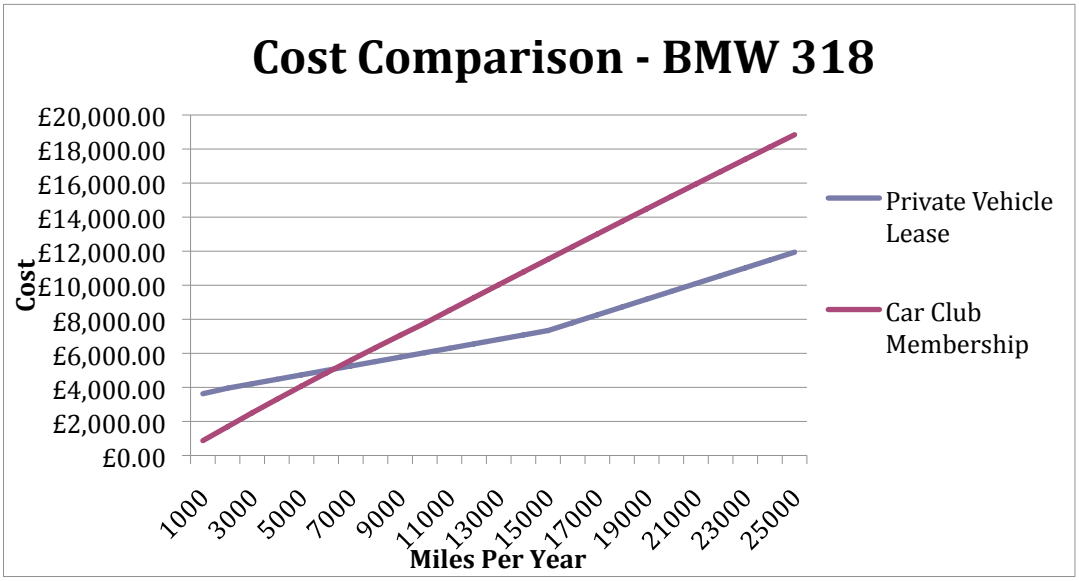


Figure 27 - Cost Comparison: BMW 318

A number of considerations were taken into account when making the graphs. The upward increase in the private vehicle cost at around 15,000 miles is due to a mileage limit on leased vehicles. After the mileage is hit, an additional cost per mile is added. There was also a usage factor compounded into the data. This factor helped to account for the fact that as the car club members drive more miles, they are likely driving on longer journeys. This means that there is not a proportional increase with mileage to hours rented.

4.3.5 Residential Marketing Material: Brochure

The group developed a brochure to raise awareness of car clubs among residents in the Borough. The group chose to use a brochure as a means of informing the public about car clubs as it is a lightweight and portable way of conveying a large amount of pertinent information. The brochure follows a traditional tri-fold layout to accommodate all the necessary data. Figure 28 shows the outside and inside of the brochure.

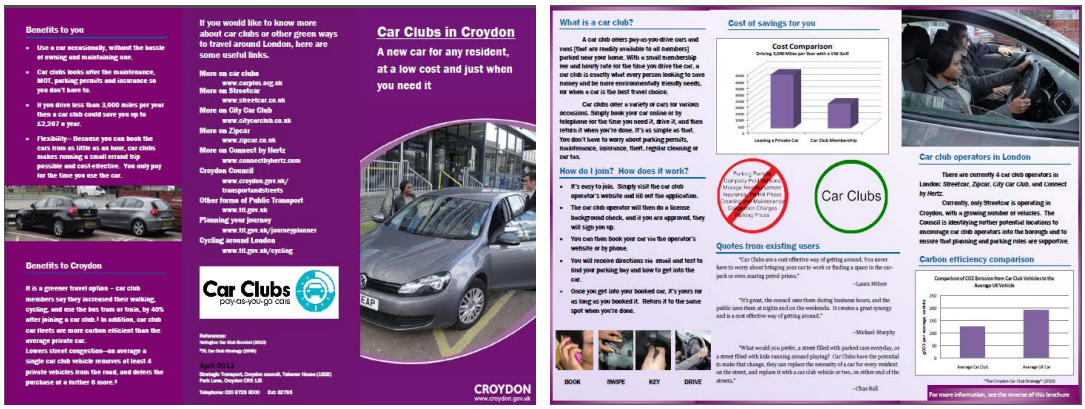


Figure 28 - Residential Brochure

On the first flap of the brochure, there is an explanation of what a car club is, how it works, and how to join which instantly gives the reader a basic understanding of the nature and operation of car clubs. The list of benefits on the opposite side quickly summarizes the main benefits car clubs offer. The inside of the brochure includes figures and quotes. The center graph conveys the cost savings of joining a car club and the right-side graph conveys the carbon emission reduction of car club vehicles compared to the average privately owned UK vehicle. In addition to these graphs, there is a figure in the center of the brochure that highlights the ease of use benefit of car clubs. There are quotes in the middle of the brochure from car club users. On the reverse side of the brochure, there is a list of Web sites to be used to learn more about car clubs.

4.3.6 Residential Marketing Materials: Posters

The group designed three posters, each aimed at emphasizing a particular benefit of car clubs.

Figure 29 - Car Club Posters

The posters list all of the four main benefits of car clubs as discussed earlier, and then particularly emphasize one of the benefits through a phrase and image. They are designed to quickly grab the reader's attention and highlight a benefit about car clubs, and then direct them to a website where they can learn more.

4.3.7 Marketing Materials: Web Site

Based on a request from Peter McDonald, the group developed content for a Web page to be used on the Croydon Council Web page. Other boroughs, such as Kingston, Richmond and Islington have council Web pages for promoting car club use.

The group developed the layout and content for the website. The council will use the content to develop the actual Web page. The Web site content can be seen in Appendix J. The link to the website can be put on all of the marketing material that the group developed for the Council. The Web page covers: what a car club is, car club benefits, how car clubs work, how to join a car club, current car club operators in Croydon. The page includes a figure from the cost analysis emphasizing the

affordability of car clubs. There are also a number of links on the Web page for the reader to learn more about car clubs, and the current car club locations in Croydon.

4.3.8 Marketing Materials: Sign

Through interviews with Carplus, and Streetcar, the group determined that the car club bay sign is one of the most useful marketing tools. A sign can be used to identify where a car club vehicle is, and to quickly cover what a car club is to someone who reads the sign.

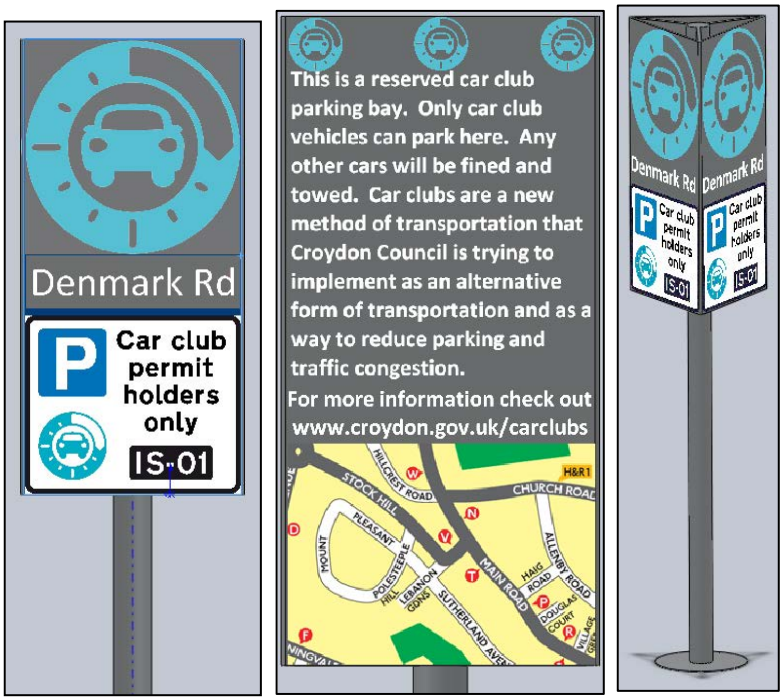


Figure 30 - Car Club Sign

The sign stands 7 feet tall. The sign itself is 3 feet tall by 1.5 feet wide. It is three sided, with two sides facing the street and one side facing the sidewalk. On the sides facing the street, there is a car club generic logo, the permit holder only label, and street name. These labels are large enough to be visible from at least 25 feet away. On the side facing the sidewalk there is a short summary of what a car club is and where to find more information, as well as a map showing car club bays and public transportation hubs nearby. This sign can be seen in more detail in Appendix I.

4.3.9 Business Marketing Material: Brochure

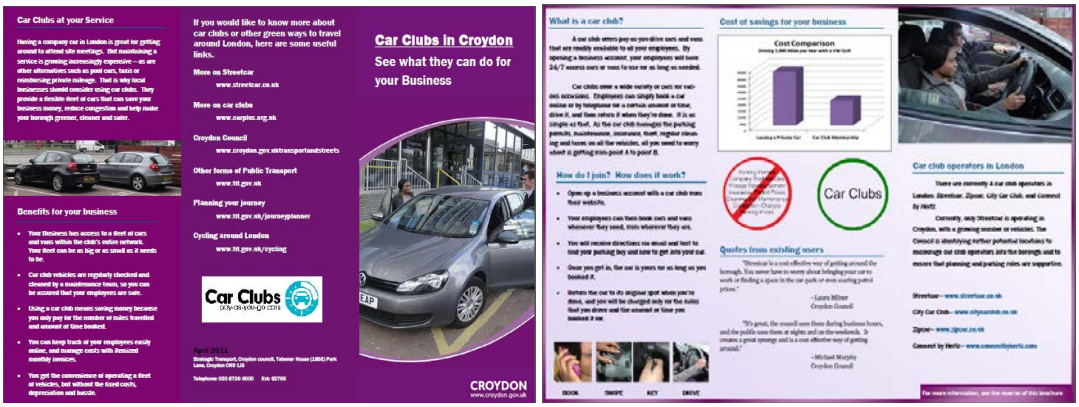


Figure 31 - Business Brochures

The group designed a brochure for businesses that can be viewed seen in figure 31 above. This brochure is specifically tailored towards businesses. The description of car clubs and the benefits content is specific to businesses. This brochure also follows the tri-fold format as the residential brochure. The brochure includes a description of how car clubs work, how to join, and the benefits of car clubs. There are two graphics on the inside of the brochure. One details the cost savings from car clubs, and the other outlines the hassles of owning a private vehicle fleet versus car clubs. On the reverse side, there is a list of contact information and websites to view in order to learn more.

4.3.10 Business Promotional Method: Business Consultations

The group worked to develop a strategy to raise business awareness by visiting the businesses. This strategy is discussed in depth in the next chapter. During the audits, the group worked to identify businesses around the potential locations that fit the profile of businesses likely to use car clubs. This list can be seen in Appendix K. This list can be used identify the target companies to consult.

4.3.10.1 Trial Business Consultations

The group did trial business consultations to gain insight into the effectiveness of doing business consultations to raise awareness of car clubs. During the on-site audits the group tracked potential car club bays using businesses around each potential bay. The list of all of these businesses can be seen in Appendix K. When all of the audits were complete the group chose three of the business to interview about car clubs in order to assess their level of knowledge and willingness to use a car club. The three businesses that the group chose to interview were Edward James Florist, Abode Estate Agents, and Betty's Bakery. These three businesses were chosen because they were in areas that had high overall ratings, and very dense parking. The results and take away from each interview are below:

Abode Estate Agents: The representative of the office was very knowledgeable about car clubs, but was not interested in car clubs because the company felt they traveled too much to make car club membership beneficial. The representative did know of the closest car club location.

Edward James Florist: The shop owner was knowledgeable of car clubs but did not have an interest because he did not find them economical. The flower shop conducted too many deliveries per day, and already owned 6 vans.

Betty's Bakery: The shop owner was not knowledgeable of car clubs and did not have an interest in them because the owner felt they did not have the revenue backing or customer base as they are a new company. The shop owner was not interested in learning the benefits of car clubs and did not believe they would be utilized.

Overall the group found that estate agents would potentially not use a car club because they travel too many miles for car clubs to be cost effective. A smaller

company, such as Betty's Bakery, may use a car club but the company needs to have a reason to use one and must be well established instead of just starting up. The group found that some companies are already aware of what car clubs are.

The results were used to generate recommendations described in chapter 5.

5. Recommendations

To aid in the development of a comprehensive strategy for car clubs in Croydon, the group developed the following sets of recommendations:

- Recommendations for Additional Car Club Bays
- Single vs. Multiple Operator Recommendations
- EVCP Recommendations
- Residential Marketing Recommendations
- Business Marketing Recommendations

5.1 Recommendations for Car Club Bay Locations

Based on the findings from interviews and research, the group recommends that Croydon should consider implementing **10-20** car club bays per year for the next five years. By implementing 10-20 bays per year there should be enough bays to increase awareness of car club vehicles. That number is also a reasonable amount of bays that will help to reduce the impact of negative feedback from bay installation. Negative feedback could come from residents and businesses being upset that the bays are taking up spaces in the Borough, especially in areas with high parking pressure. The group also recommends that the bays be evenly spaced throughout the Borough. Based on the interview with Carplus and Streetcar, the group found that it is highly important for citizens to frequently view car club bays to increase awareness. Having visible bays is part of the criteria for selecting each bay location. Having bays evenly spread through the Borough would mean more people would see them, and more people would become aware of their locations.

5.1.1 Potential 5 Year Strategy

Using the overall rating table from the results section, and the recommendations described above, the group developed a potential 5-year strategy for implementing additional car club bays. The strategy is broken down into:

- Year One: 11 Bays
- Year Two: 14 Bays
- Year Three: 17 Bays
- Years Four and Five: 14 Bays

5.1.1.1 Year 1

Based on the group's results, the group recommends that the Council put in the following bays in the first year of the strategy. These bays are ranked amongst the highest of all of the audited bays. They were chosen so that they would be spread throughout the Borough. This will help to increase public awareness of car club bays, and will help establish a more evenly spread car club infrastructure. The group made sure to not include any bays that are too close together in the first year plan or any bays that are close to current Streetcar locations. The bays included in year one's plan are:

- Fairfield Car Park – N13
- Denmark Road – I17
- Beulah Road – F11
- Belgrave Car Park – H16
- Garnet Road Car Park – H12
- Woodcroft Road – J10
- Canterbury Road – K8
- Birdhurst Gardens – Q13
- High Street – X9
- Victoria Road – DD5
- Sanderstead Road – U12
  (*Not displayed in figure 32*)

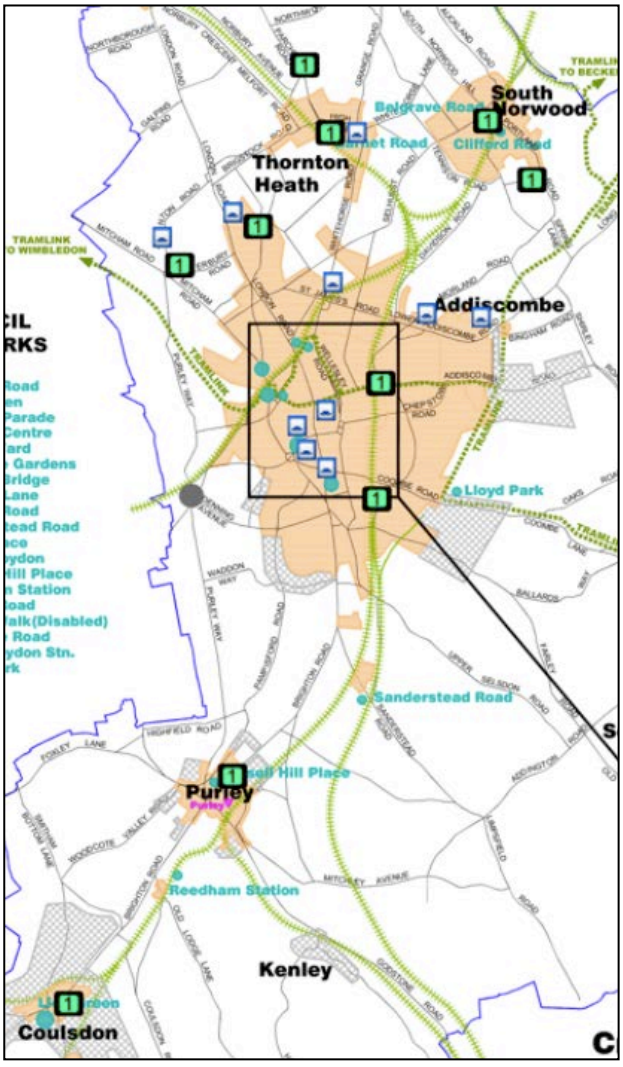


Figure 32 - Year 1 Bay Location Recommendations

5.1.1.2 Year 2

Based on the group's results, the group recommends that the Council put in the following bays during year two of the implementation. These bays ranked very high during the audits. The bays were chosen to be as evenly spread out as the bays from year one. Some high-ranking bays, such as Moreland Avenue, were included in year two even though they are relatively close to current Streetcar bays. The group predicts that these bays will still perform well due to having a high overall rating, even though they are close to other bays. The bays included in this year's plan are:

- St. Aubey's Road – B15
- Harold Road – B13
- Braybrooke Gardens – C15
- Parchmore Road – G11
- St. Mary's Road – G14
- Goldwell Road – H8
- Pembury Road – H17
- Gonville Road – I8
- Lakehall Road – I10
- Moreland Avenue – L14
- Sissinghurst Road – L16
- Lebanon Road – N14
- Purley Car Park – X9
- Lion Green Car Park – DD5

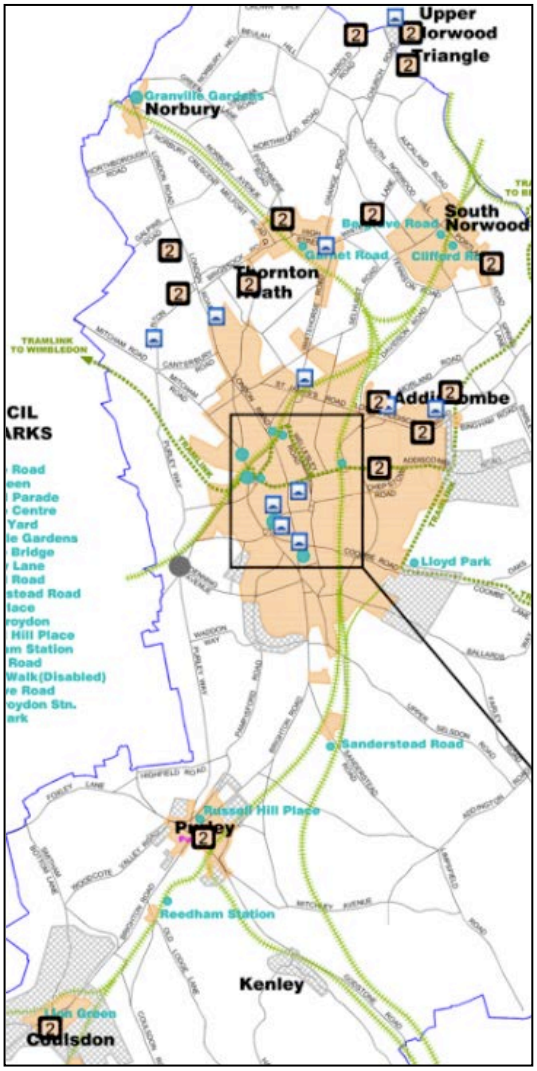


Figure 33 - Year 2 Bay Location Recommendations

5.1.1.3 Year 3

Based on the group's results, the group recommends that the Council put in the following bays during year three of the implementation. The same distribution considerations were taken as year one and two, but these bays ranked lower. The bays included in this year's plan are:

- Oxford Road – A13
- Burlington Road – E12
- Woodsville Road – G12
- Wiltshire Road – G9
- Lonesdale Road – G17
- Malvern Road – H9
- Bensham Manor Road – H11
- Barring Road – M16
- Harcourt Road – J8
- Belmont Road – J17
- Aurelia Road – K7
- Hartley Road – K11
- Beckford Road – K15
- Malcolm Road – K16
- Ashburton Road – M16
- Havelock Road – N15
- Dornton Road – R13

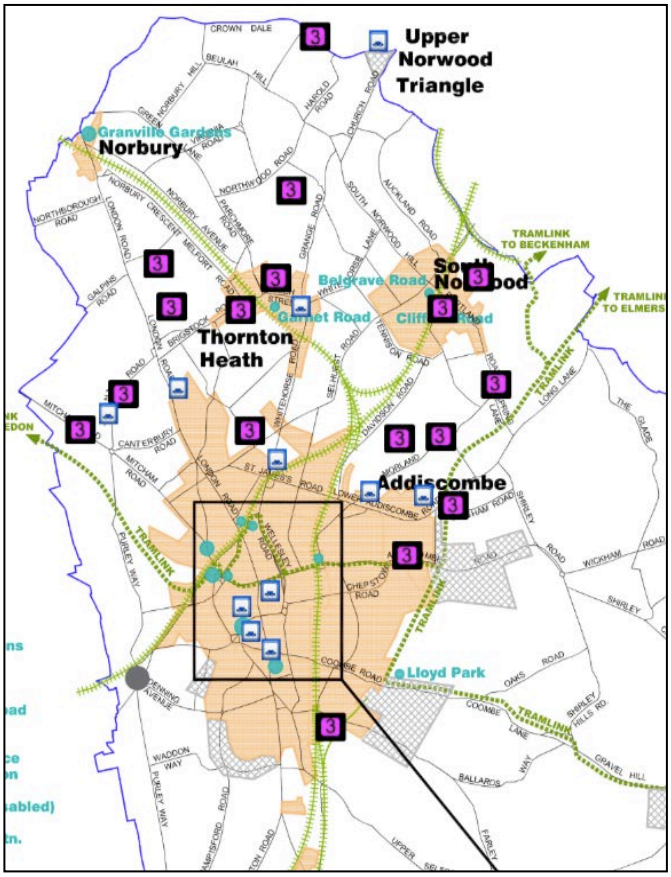


Figure 34 - Year 3 Bay Location Recommendations

5.1.1.4 Years 4 and 5

Based on the group's results, the group recommends that the Council put in the following bays during years four and five of the implementation. These are the remaining locations that were audited for car clubs:

- Buller Road – F12
- Warwick Road – G8
- Lonsdale Gardens – H7
- Stuart Road – H11
- Harrington Road – H17
- Morton Road - I16
- Saxon Road – I12
- Frant Road – I9
- Cambell Road – K9
- Thornhill Road – L11
- Lebanon Road – M14
- Leslie Grove - M13
- Canning Road - M14
- Outram Road - M15

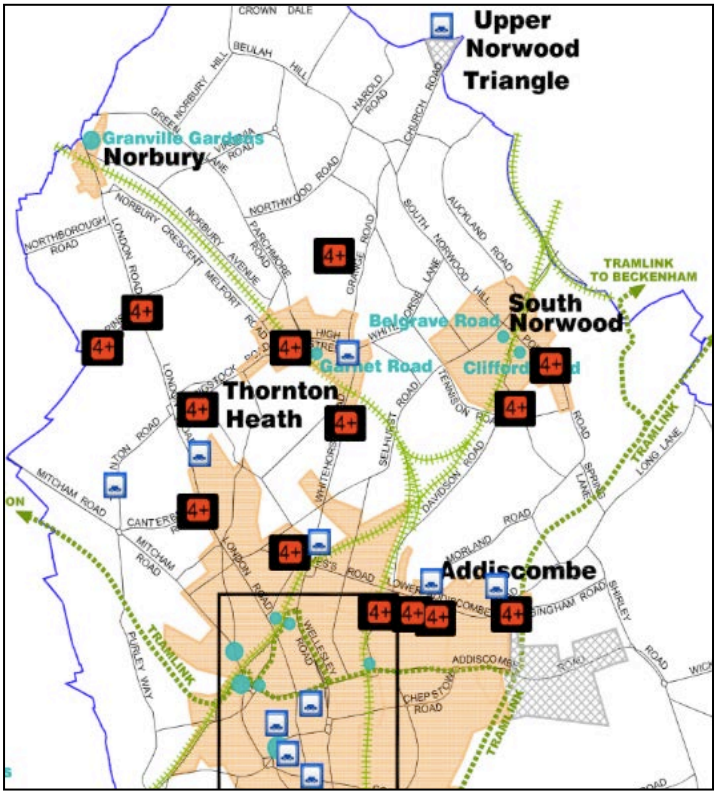


Figure 35 - Years 4 and 5 Bay Location Recommendations

5.1.2 Future Implementation – Additional Bay Recommendations

As described in previous sections of this report, the group used a combination of excel sheets and maps to determine which grids are best suitable for a car club bay. If the Council decides to implement additional bays beyond the 57 that the group recommends, the Council can follow the procedure below.

5.1.2.1 Choosing Additional Grid Locations

The group recommends that, in order to find further car club bay locations, the Council use the excel sheet developed in the methodology to identify grid locations. The overall grid ranking on the excel sheet could be dropped to a ten. Using grids with a ten ranking or higher will give the Council 43 new grids to look at. Those grids can then be audited for good bay locations. The 43 new grids will give the Council a wider range of areas to look at that are more spread out throughout the Borough. Also, since car clubs will already have been in the Borough for a few years, the residents in the new grids should already know about car clubs, making them more receptive to having a bay in their community and making it easier on the Council. The group also recommends that this be done for years beyond year five of the strategy.

Even after dropping the ranking down to a ten, there will only be one grid in the New Addington area and no grids in Selsdon. The group recommends that the Council look at those areas for new bay locations during and after years four and five. Nearly all of the possible locations from the 5-year strategy are in the northern and central areas of Croydon, with the exception of the four bays in Purley and Coulsdon. By putting bays in New Addington and Selsdon there will be more bays spread throughout the entire borough. There is also a Streetcar bay already in New Addington, therefore, the residents should already be aware of car clubs so they will be more receptive to the Council putting in more bays in their area.

The group also recommends that, if the overall strategy is doing well and the vehicles are being used often, that the Council should look at all of the council owned car parks. During the group's analysis of the results, the group found that car parks are generally the best locations for car club bays. Even if a car park is not in a grid with a ten or higher ranking, it may still do well if it is audited and concluded to have a high overall ranking. The group recommends the Council start looking at some of the other car parks in the Borough during years two and three, and decide on whether or not to put a bay in the car parks during years four, five, and beyond. All of the car parks owned by the Council, but not audited by the group, are listed below:

- Leisure Centre
- Granville Gardens
- Jubilee Bridge
- Factory Lane
- Ann's Place
- West Croydon
- Russell Hill Place
- Reddham Station
- Lloyd Park

The Wandle Road and Spices Yard car parks were not provided in the list above because there are already Streetcar bays in these locations. The council may look to re-instate the Poplar Walk car park in order to put a car club bay in it.

5.1.2.2 Auditing Additional Locations

After the additional locations have been chosen, the Council can work to audit them in the same way the group did. By using the audit sheet, and the methods described in this report, the Council can audit and rank the additional locations to determine which locations should be implemented and in what order.

5.2 Single or Multiple Operator Recommendations

As discussed in the results, the group created a pros and cons table in order to determine whether the Council should use a single operator or a multi operator strategy. Based on the group's background research, the pros and cons table in the results section and the interviews with Richmond and Islington, the group recommends the Council use a single operator strategy. The group determined that a **single operator** car club system would be most beneficial to the Borough and it would allow the Borough's goal of expanding car clubs to be most successful. This is because a single operator would allow the residents and businesses to have more access to more vehicles in the Borough. A single operator would also allow for easier distribution of spaces in the Borough, and contract management with the Council. Since the prices for each operator are fixed, there is no issue with one operator having a monopoly in the Borough. As far as which operator to go with, most operators have the same pricing and the same conditions of operation, as seen in the literature review section.

A consideration to take however if the council chooses to have a multiple-operator setup is that some operators, such as City Car Club offer free membership for members of other car clubs. This would mean that residents could use City Car vehicles and vehicles of another car club for one annual membership fee. The group recommends using City Car Club as one of the clubs if the decision is made to host multi-operators in the Borough.

5.3 EVCP Recommendations

In April 2011, Croydon was in the process of implementing 11 public EVCPs in the Borough. The group has identified 16 new locations that would be suitable for EVCPs. This is based on an assumption that a car club vehicle bay with an electric power supply, such as a feeder pillar, would be suitable for an EVCP. The group recommends that these locations be considered for EVCPs.

Through research, the group found that almost all locations could be used for EVCPs with an increased cost. The group recommends that the council starts by targeting the 16 locations, but has the option to use more locations if desired.

After talking to Andrew Edgar of Streetcar, the group found out that electric car club vehicles simply are not economical enough to be utilized. The technology is not developed enough to make EV's a viable option for car clubs at the present time. However, the technology is growing and in a few years EV's may be a viable option. If this is the case, then there will be an increased demand for EVCPs since car club bays at that point may require them. Considerations when and if this happens will have to be made, but as of now, the demand is generated from private electric vehicle ownership.

5.4 Residential Marketing Recommendations

The group developed a number of recommendations for raising the awareness of car clubs with residents in Croydon. The recommendations consist of:

- Distributing brochures to residents
- Displaying posters around the Borough
- Conducting residential consultations

5.4.1 Brochures

The group designed a brochure that is tailored towards potential residential users. The group recommends the brochure should be placed in public locations such as a kiosk, public libraries, train stations and bus terminals so people can pick them up.

5.4.2 Posters

The group recommends that the posters, as seen in the results section, should be placed at bus stops, train stations and other highly visible public areas. They are designed to quickly grab the reader's attention and quickly show them a benefit or two about car clubs, and then direct them to a website where they can learn more.

5.4.3 Resident Consultations

The council should visit households within a 400m radius around every proposed car club bay location. Informational brochures should be brought along with every consultation and handed out to the residents. The brochure should be mailed out to any households that are not visited. It should be mentioned that the council is trying to encourage car club growth in the Borough to help alleviate parking and traffic congestion in addition to the other benefits for the council, the Borough and the residents. It is important to explain the concept of car clubs to the residents and of the closest car club bay placement in the area.

5.5 Business Marketing Recommendations

Car clubs will not be successful unless the vehicles are utilized during the workweek and weekends. Businesses can potentially provide use of the car club vehicles during the week and thus need to be informed about the benefits of car clubs. The group developed a set of recommendations to raise the awareness of car clubs with businesses in the Borough including:

- Distributing brochures to the businesses
- Conducting consultations with the businesses

5.5.1 Brochures

The group designed a brochure tailored towards businesses. They should be handed out to businesses during consultations, mailed directly to businesses are likely to join car clubs that are nearby potential bays, and placed in public locations such as a train stations and bus terminals so people can pick them up.

5.5.2 Business Consultations

The group recommends that the council should contact businesses around potential locations before the actual bays are put in. This will help to inform businesses of what car clubs are and how they work, as well as the specific benefits for the businesses. The Council can use the list of potential businesses around the car club locations identified in this report as seen in Appendix K. The group recommends the procedure for consulting the businesses be as follows:

- Email the company to inform them of the consultation and potentially arrange a time and person to talk to
- Visit the company with the business brochure, and discuss how a car club bay may be put in nearby. Also discuss what a car club is, and what the benefits are

As an alternative to this plan, the group recommends that at the very least the business brochure be sent out with a cover letter stating a bay will be placed nearby.

The group recommends that for consultations with real estate agents, benefits other than cost-savings should be emphasized. Many real estate agents travel many miles, making car clubs less cost-effective; therefore benefits such as accessibility, convenience, and carbon efficiency should be stressed.

5.5.2.1 Hotel Car Club Use

The group recommends that the Council investigate hotels as potential users of car club vehicles. The group speculated that hotels may be able to set up some type of arrangement with car club operators so they can offer their tenants use of vehicles during their stay. This would generate usage during the workweek because use of a car club for travelers staying in the hotel would be cheaper than renting a vehicle. The group recorded any hotels close to potential bay locations, and would recommend for future locations, the Council do the same.

5.6 Parking Bays as Marketing Devices

In order to spread the knowledge of car clubs, not only do citizens need to be informed about car clubs, but they need to see where the car club bays and car club vehicles are located. In order to increase visibility of the bays and vehicles, bay identification signs should be placed adjacent to car club bays. These signs will inform citizens walking by about what a car club is, why the bay is reserved, and where they can go online to find more information. The sign also serves as a beacon for car club members looking for the car club bay. The parking bay sign is described in detail in the results section.

The group recommends considering the company fw.design for further design and fabrication of the bay signs. This company has been working with the borough of Islington to make bay identification signs.

6. Conclusion

This project aimed to aid in the development of a comprehensive car club strategy for the borough of Croydon. The group identified 57 potential locations for car club bays throughout the Borough, and provided recommendations for a course of action to utilize these locations. The group also developed a marketing strategy, comprised of promotional materials and methods.

The group concludes that car clubs will be able to successfully alleviate parking pressures and traffic problems and will reduce carbon emissions in the Borough. The benefits of car clubs will be realized in Croydon so long as action is taken to continue implementing bays that strategically span the entire borough, and the Borough proactively markets car clubs to both residents and businesses to raise awareness.

This project was done in only seven weeks, and at completion, leaves future work to be done. Work left to do that is directly related to the material in this report includes:

- Taking action to introduce car club vehicles at proposed locations. The group would have taken the necessary steps into actually putting in some car club bays that were found for the Council.

- Conducting additional business consultations. As discussed in the report, the group conducted three business consultations. If the group had more time, more business consultations would have been conducted. Through the consultations, the group potentially would have found businesses that would definitely use a car club if they are implemented further in the Borough.

- Mailing and distributing residential brochures. In the marketing strategy, the group explained that brochures are a great way to inform the public about what a car club is and the benefits of joining. The group also explained that these brochures should be distributed by mailing them to residents. The group would have requested that the Council print off multiple copies which would be mailed out to residential homes around the area of potential bays.

- Setting up the Web page using content discussed in this report. As discussed in the marketing strategy, the group explained that the webpage was designed using the information developed for all the other marketing materials. If given more time, the group would have made sure that the website was up and running, and that the information and layout of the webpage is correct. The group would have also made sure that the link to this website would be found on all other forms of marketing material.

Had the group had more time, the following would have been done:

- Reviewed past building applications with planning for car clubs to determine whether the plan had been followed through. As Croydon has been pushing for contractors to include car club bays in their new building developments the group would have checked whether or not those plans had been followed through and if future plans are in progress.

- Audited remaining 7 Streetcar locations. As discussed in the report the group audited Streetcar locations in order to have a comparison to the group's potential bay locations. The group feels that auditing 5 of the Streetcar locations gave a good and accurate comparison; however, it would have been useful to finish auditing all of the Streetcar locations.

- Further added to list of potentially interested businesses. The group would have continued to add to the list of potential businesses within the Borough

that may use car clubs. Currently the group has a good list of businesses, which can be seen in Appendix K. However, an expanded list of every company in the Borough that may use car clubs would help the Council immensely. As discussed above the group would have also started interviewing each potential business. The group also would have started talking to companies who are looking to move into the Borough.

- Further developed profiles of businesses likely interested in car clubs. A detailed report of the exact types of businesses would have been created to go along side with the lists of potential businesses. This would help the Council when trying to find new businesses to come into the Borough or when a new business actually does come into the Borough. The Council will be able to tell right away if the business would be interested in using car clubs by comparing it to the developed profile.

- Looked into the Selsdon and New Addington areas for a potential car club bay Through the group's demographic analysis, grids in the New Addington and Selsdon areas did not come up and there is currently only one Streetcar location in New Addington. In order for car clubs to be a Borough wide strategy the group would have went and visited those areas in order to find potential bay locations. This would make the car club strategy very spread out and allow every citizen of Croydon to have access to the car club vehicles.

As a whole London is one of the most polluted cities in the World. Throughout this report the group has shown that car clubs can help the borough of Croydon to greatly reduce their carbon emissions and help to alleviant their traffic and parking problems. Croydon has the potential to have a strong car club infrastructure. However, this can only be accomplished if they use strategic car club bay locations, and actively work to increase business and residential awareness of car clubs. The materials provided in this report, if utilized, will help to establish locations and raise awareness The group found the work in this project both challenging and rewarding and hopes that the work will be utilized by the Council in the future.

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Appendices

Appendix A: On-Site Audit Form

Take photos at the site of the following:

- Car club bay location you are auditing
- Vehicle access points (for off street locations) – e.g. entrance & exit of car parks
- Constraints – e.g. narrow roads and sidewalks, proximity to bus stops

Names: _____
_____
Audit Site #_____

Location:	Grid Reference:
Date:	Time:

General Site Assessment:

Rate 1-5 (*At End*): Residential Rating ___ Safety Rating ___ Business Rating ___ Overall rating ___

1) Is the area you are considering: A district center?

On-street			Y		
Off-street			N		

2) Area Type (*Circle one*)

Only Business Mostly Business Mix Mostly Residential Completely Residential

3) General description of area

4) Describe the access to main road

5) Existing parking occupancy levels at time of site audit

H	
M	
L	

6) Existing level of street clutter (e.g. posters, signs, benches, bus stops, etc.)

H	
M	
L	

7) Assessment of adjacent traffic flows

H	
M	
L	
N/A , off-street	

8) Total road width

Wide	
Average	
Narrow	
N/A, off-street	

9) Vehicle maneuverability (e.g. size of parking bays and turning space)

10) Distance to closest public transportation. What form of transportation is it?

≤ 100m	
100m-400m	
≥ 400m	

Figure A1 - On-Site Audit Form Front

11) Distance to closest car club bay

≤ 100m	
100m-400m	
≥ 400m	

12) Footway / pedestrian flows adjacent to proposed parking bays

H	
M	
L	

13) Visibility of car club bay

H	
M	
L	

Safety of Area

14) Is there lighting and what is the strength? (good / average / poor)

Yes	
No	

15) Safety indicators (e.g. CCTV coverage, proximity to pubs, clubs, schools, pedestrian crossings)

Y	
N	

16) Evidence of vandalism (Y/N – if Y describe)

Y	
N	

17) Cleanliness and overall appearance

Electric Vehicle Bay Assessment

18) Potential electric power supplies nearby?

Y	
N	

Local Business and Shops

19) What are the nearby shops and businesses?

a.

b.

c.

Tie Up of Assessment

20) Following your review of the site, what do you think this site is most suitable for?

Conventional car club bay(s)	
Conventional & Electric car club bay(s)	
No provision / not suitable	

Figure A2 - On-Site Audit Form Back

Appendix B: Potential Bay Location Write Ups

Fairfield Car Park – N13
Off Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 4.5
CPZ: Yes

Figure B1 - Fairfield Car Park

General Information:
The Fairfield car park is a 6 level car park. There are two walk-in entrances, one from the 5th floor and one from the 3rd floor. The drive in entrance is on the 5th floor. In order the reach the car park, there is a bridge, which connects the 5th floor to Fairfield Rd, a bit south of the designated 400m x 400m N13 grid but relatively close. The car park is within 100m of tram and bus stops, and is close to the East Croydon Train Station.

The car park was audited at 9:20am during the week and the car park was relatively filled, with the concentration of cars near the two entrances. The only clutter around were a few directional signs. There is ample room for promotional materials to be displayed on walls that are visible by areas of high pedestrian flow. The parking bays are average sized, and the road is wide. There is plenty of room for cars to maneuver.

Safety of Location:
There is excellent lighting in the car park as there are lights every 4-5 meters on the roof of each level. In addition, there is CCTV coverage of every floor, and as it's close to a travel hub, it is one of Croydon's better-maintained car parks. There was some

evidence of vandalism in the form of small graffiti on one wall and on one window. Overall, the car park was very clean and well maintained.

Surrounding Businesses:

1. Croydon Park Hotel
2. Chartis
3. City Link
4. Tolley House
5. Metlife

Pros	Cons
• Large, highly visible building • Close to transportation hubs • Very Safe	• Some Signs of vandalism • Entrance is slightly hidden

EVCP Compatible?
No

Additional Pictures:

Figure B2 - Fairfield Car Park Audit Map

Figure B3 - Fairfield Car Park Image 2

Denmark Road- I17
On Street
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 4
CPZ: Yes

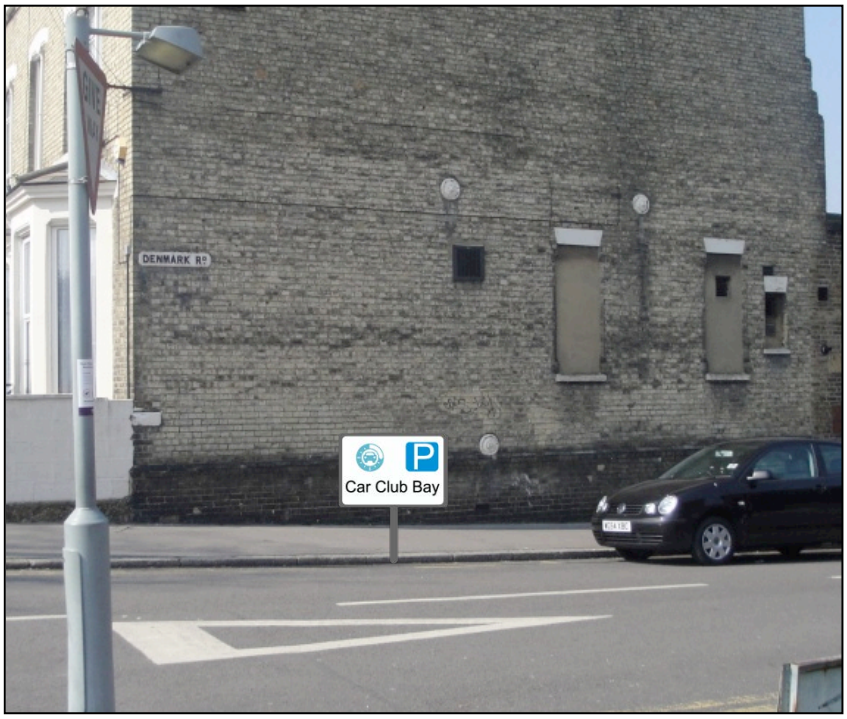


Figure B4 - Denmark Road

General Information:
The parking bays are located on Denmark Road at the intersection with Enmore Road. The bays are right behind the South Norwood Leisure Center. The surrounding area is a mix of residential and commercial; however, being a street away from the main road the bay location is primarily surrounded by houses. It would be easy to maneuver in and out of the parking spot because it is on a four way corner. The bay location is viewable from the main road, which is about 100 meters away, and the wall next to the location has ample space to put promotional posters. There are also several bus stops along Portland Road, the nearest to the location being roughly 200 meters away.

Safety of Location:
The overall safety is good. There is only one pub nearby, which is located on Portland Road, and there are no big clubs. There is CCTV coverage in the area of the bay location. There is very little vandalism evident, being only a small amount of graffiti. Lighting is very good having lights spaced out roughly 40 meters apart and one being directly over the proposed location. The area surrounding the proposed bay location is very clean with minimal trash and clutter.

Surrounding Businesses:

1. Mantells Plumbing and Central Heating Engineers (would probably use vans)
2. Delta Services Electrical Contracting Engineers
3. London Plumbing and Heating Merchants (would probably use vans)

Pros	Cons
• Close to main road • Well lit • Clean surroundings • Ample wall space for promotions • Lots of pedestrian flow	• Surrounding businesses are small

EVCP Compatible?
No

Additional Pictures:

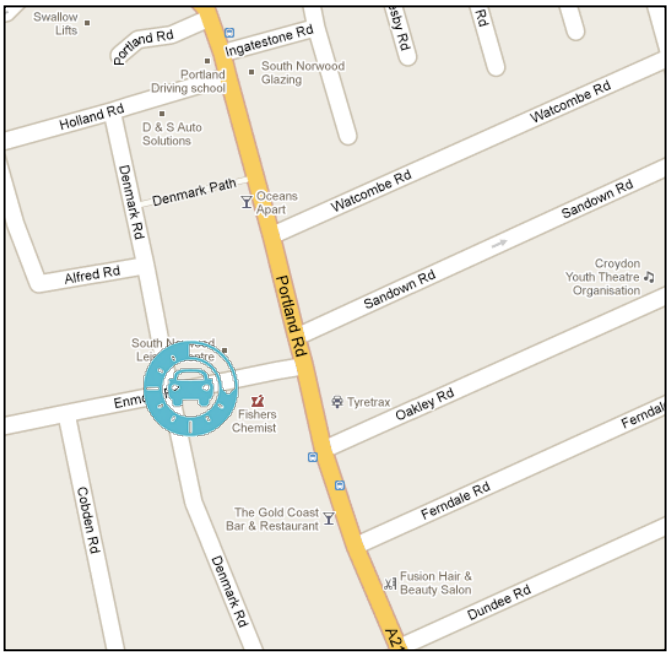


Figure B5 - Denmark Road Audit Map

St Aubyn's Road – B15
On street
Done By: Rick Tombarelli, Kevin Ducharme, Calvin Lam, Adeola Otuyelu
Overall Rating (1-5): 4
CPZ: Yes

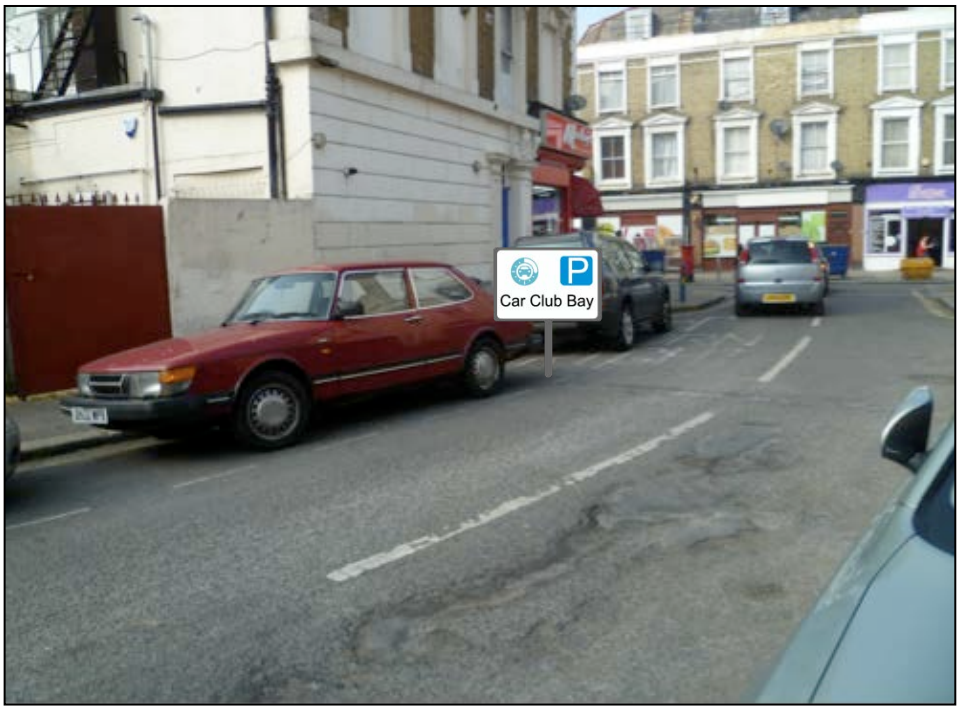


Figure B6 - St. Aubyn's Road

General Information:
The parking bay on St. Aubyn's road is located on a dead end residential road directly off a main road with small businesses. The residential surroundings consist of many densely packed houses, and some apartments. It is in a nice neighborhood (medium class). The bay is within 50 ft. of a bus stop. There is a lot of pedestrian activity as well as adjacent traffic flow in the area. It was noted at the time of audit that there was a very high parking occupancy level in the area.

Safety of Location:
The location is very safe. There are floodlights and many street lamps. The bay is also close to a busy street. There are some safety indicators in the area such as street signs. It is in proximity to a public area and also in a safe neighborhood. Evidence of vandalism is very low as there is very little graffiti. The area looks clean and overall appearance is good.

Surrounding Businesses:

1. DSP Estate Agents
2. Abode
3. Betty's Pastry Shop
4. Edward James Florist

Pros	Cons
• Good residential/commercial mix • Wide road • Close to public transportation • Lots of pedestrian flow • Very clean and safe	• Mostly realtor businesses nearby • On dead-end road • Parking bays in high demand

EVCP Compatible?

No

Additional Pictures:

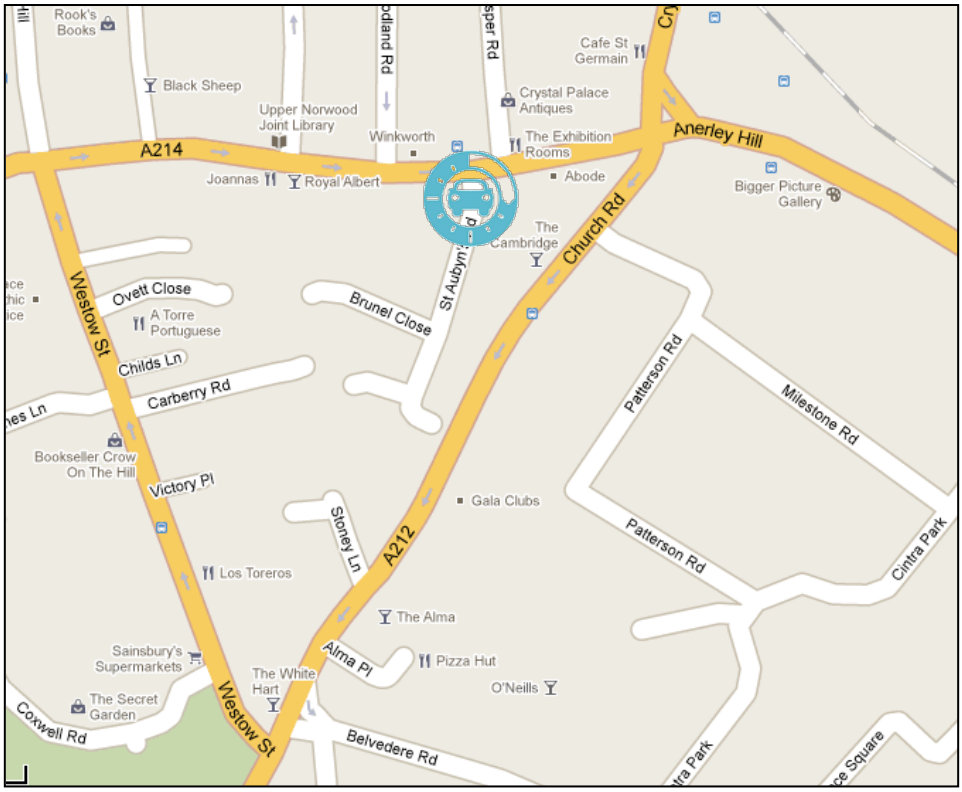


Figure B7 - St. Hubyn's Road Audit Map

Beulah Road – F11
On Street
Done By: Rick Tombarelli and Adeola Otuyelu
Overall Rating (1-5): 4
CPZ: No

Figure B8 - Beulah Road

General Information:
The parking bays on Beulah Road are located off of a somewhat busy intersection. The intersection is of Parchmore Road and Beulah Road. Further down Beulah Road past the parking bays, there are densely packed houses and some apartment buildings. There are lots of small businesses off of the intersection. There is a car repair shop directly across from the parking bays. The bays are highly visible, as there is a decent amount of pedestrian and vehicle traffic around then,

The area is very clean, and was repaved recently as of April 2011.

Safety of Location:
The location appeared to be very safe. There is a traffic camera pointing directly at the parking bays. The bays are near a busy intersection and have great visibility. There are also tall lights near the bay.

Surrounding Businesses:

1. Servicing and Repairs (02082396961)
2. Snow White Dry Cleaners

Pros	Cons
• Very safe • Directly off intersection • Densely packed residential area • Good bay visibility	• Surrounding businesses aren't great

EVCP Compatible?

Yes. There is a green power box next to the bays.

Additional Pictures:

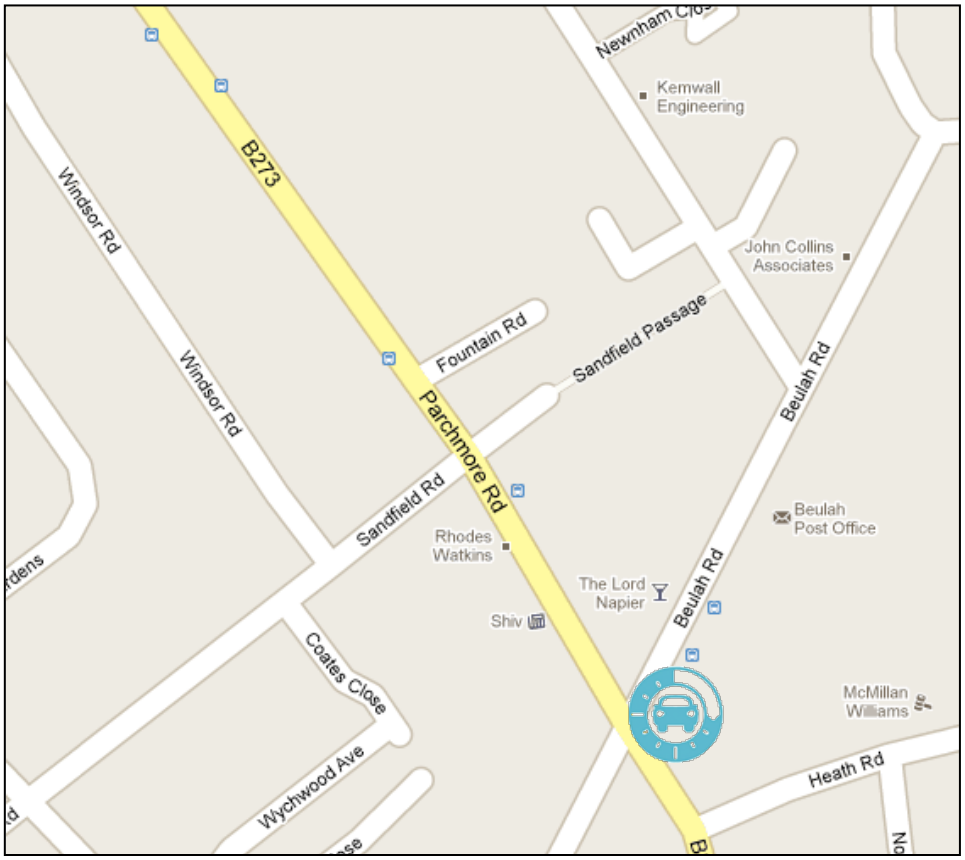


Figure B9 - Beulah Road Audit Map

Canterbury Road – K7
On Street
Done By: Rick Tombarelli and Calvin Lam
Overall Rating (1-5): 4
CPZ: No

Figure B10 - Canterbury Road

General Information:
The parking bays on Canterbury Road are located on a fairly busy road. Residential houses and a car dealership directly surround the bays. Most of the residential houses surrounding the bay do not have driveways. There is a bus stop within 100 meters of the bay. Down the road from the bays, there is a busy rotary, with several businesses and an office building. The bays have great visibility from the pedestrian and car traffic on Canterbury Road. The bay would likely need to have signs on posts indicating that it was a car club bay as there is limited wall space near the bay.

Safety of Location:
The bay location is directly below a streetlight on a busy road. The area is clean, graffiti free and is very safe. The surrounding neighborhood is clean and safe as well.

Surrounding Businesses:
1. Within 5 minute walk of the Lombard House Office Building.
2. Tool Station

Pros	Cons
• Very clean and safe • Close to office building • Good bay visibility	• Lack of surrounding businesses

EVCP Compatible?
No

Additional Pictures:

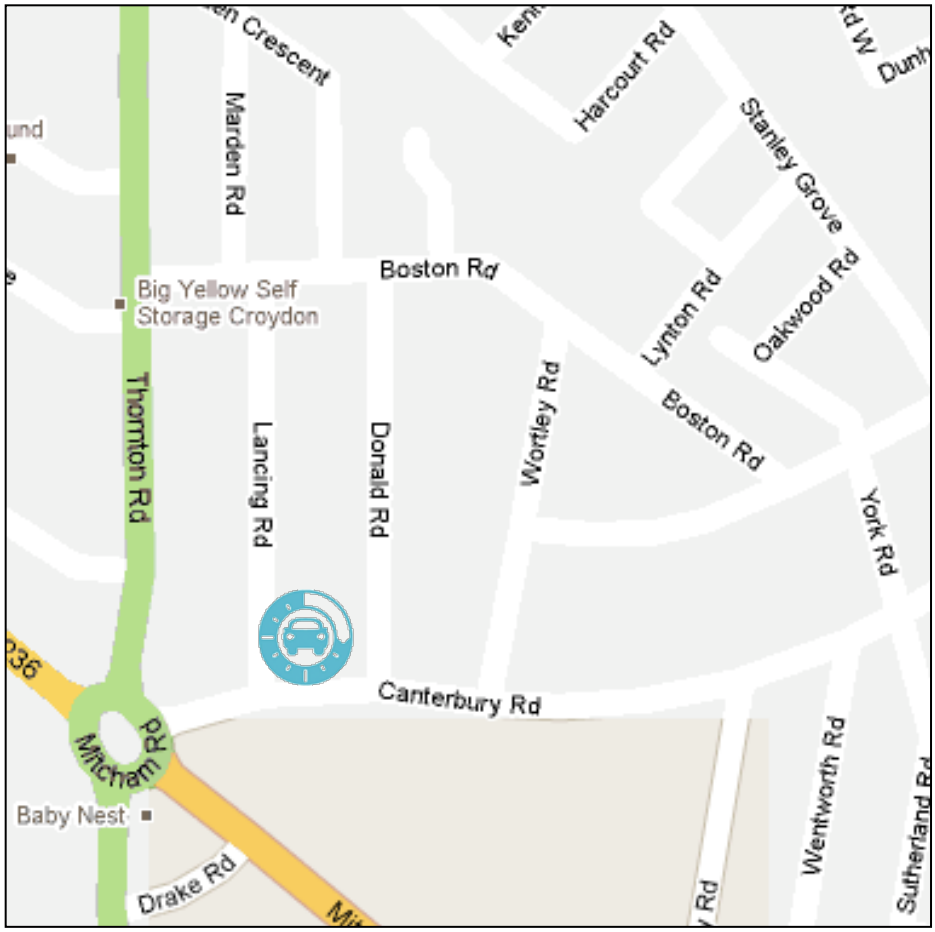


Figure B11 - Canterbury Road Audit Map

Belgrave Car Park – H16
Off Street
Done By: Rick Tombarelli, Calvin Lam
Overall Rating: 3.8
CPZ: Yes

Figure B12 - Belgrave Car Park

General Information:
The Belgrave Car Park is a 15 bay car park with two rows of parking. The lot is immediately surrounded by several tall residential buildings, and directly off of a busy road with small businesses. The residential buildings appear to be for somewhat low-income residents. There are also apartments above many of the businesses on the main road and other residential buildings close by.

The parking lot was somewhat busy with about 25% of the spaces available in the early afternoon when visited. There is a bus stop directly next to the lot, almost in the middle of it. The lot is open and there were people walking through it at the time of the audit. There is ample room to put up signs for a car club bay vehicle.

Safety of Location:
The location appeared to be very safe. The lot is open and spacious, with multiple entry points. There is adequate lighting. There is also no graffiti or other indicators of vandalism and the lot appeared to be clean and well kept.

Surrounding Businesses:
The lot is surrounded by many small businesses. There are a lot of small restaurants, and many real estate agencies.

1. Red Properties – Estate Agents (020-8653-5000)
2. Townends Real Estate
3. Homecastle Estate Agents

Pros	Cons
• Very clean and safe • Next to tall residential buildings • Mix of residential/commercial • Very open	• Visibility from main road is minimal

EVCP Compatible?
No

Additional Pictures:

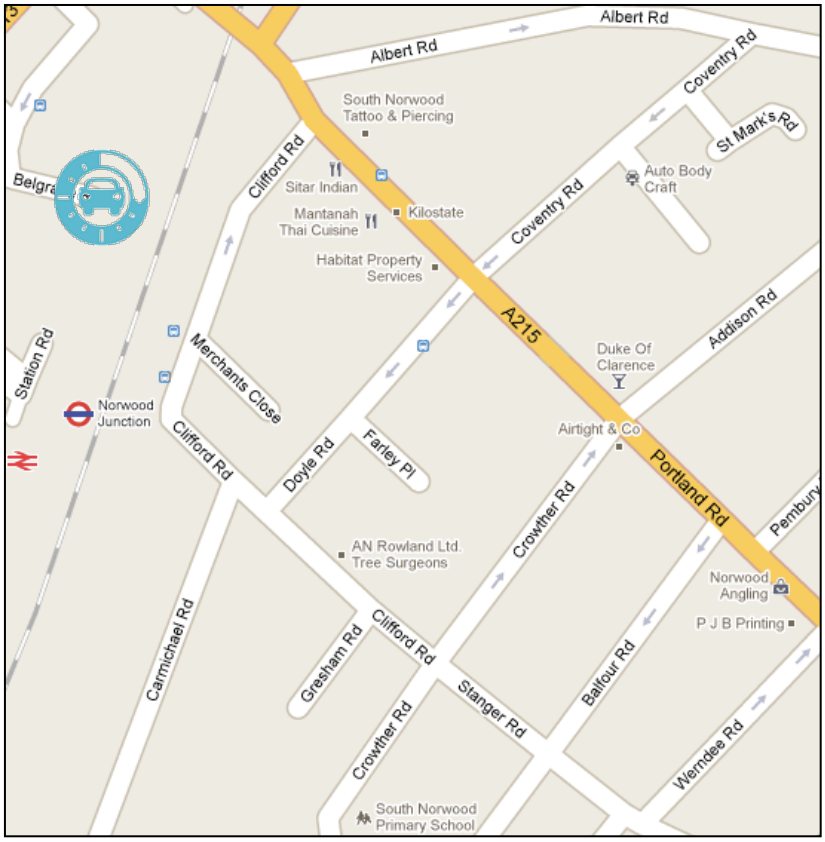


Figure B13 - Belgrave Car Park Audit Map

Moreland Ave – L14
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 3.8
CPZ: Yes

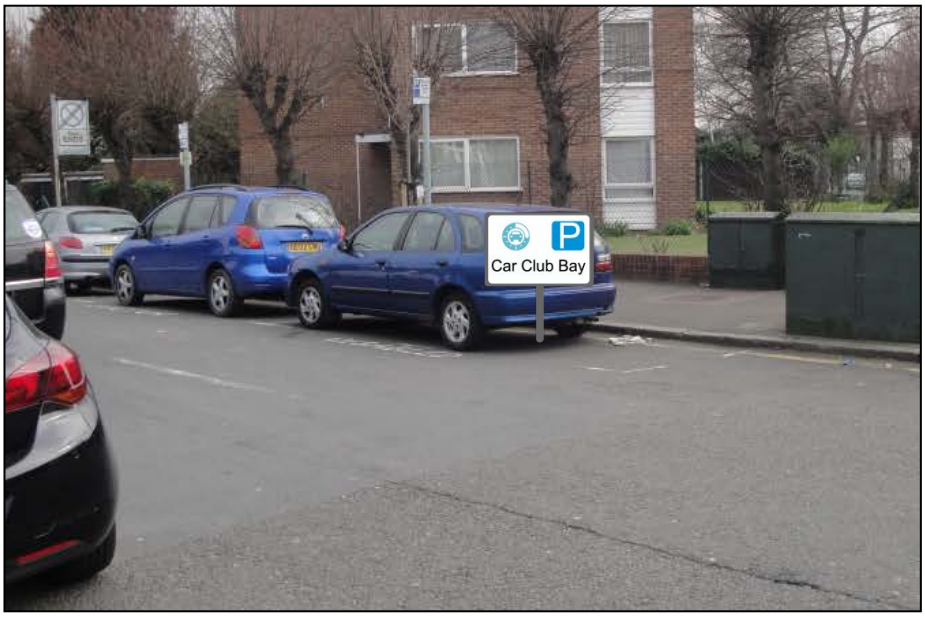


Figure B14 - Moreland Ave

General Information:
The area surrounding the parking bays on Moreland Ave. is an even mix of commercial and residential buildings. Moreland Ave is a one-way, and the only access is from Lower Addiscombe Road, right on the rotary. The street that the bay is on is completely residential with private cars taking up nearly all the available bays. The traffic is high due to the rotary and as Moreland Ave. is a main road. For a one-way street, it is very wide, providing enough room for parking on both sides, and 2 driving lanes. As such, this is a great street for vehicle maneuverability. This area is also very close to at least 3 bus stops, and the East Croydon rail station is within 400m. There is a fair amount of people walking by but even more cars driving through, making this a highly viewed area.

Safety of Location:
There is an abundance of lighting in this area, with flood lamps from the rotary, and multiple streetlamps on the street, each roughly 40m apart. There are pubs in the vicinity of the bay, but they are out of sight. This bay is very close to a dentist office, a nursing home, and a medical office, which may signify that this is a safe area.

Surrounding Businesses:

1. Nursing Home Barrington Lodge
2. Reese House Business Building
3. Moreland Road Clinic
4. Moreland Surgery

Pros	Cons
• Well lit • Close to shops and offices not prone to vandalism • High visibility	• Pubs nearby • Only road leading to bay is a rotary • Accessibility is an issue because it is a one-way street

EVCP Compatible?

Yes. As can be seen in the picture above, there is a feeder pillar-box next to the bay.

Additional Pictures:

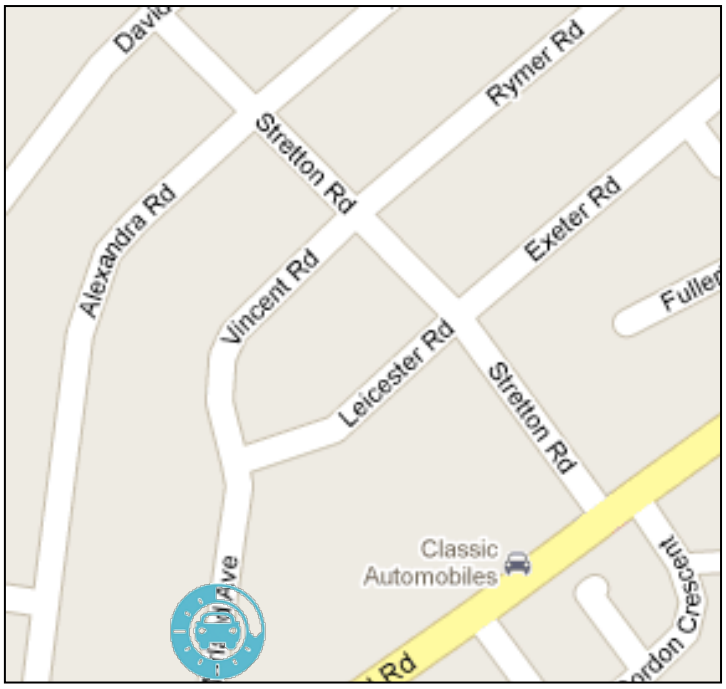


Figure B15 - Moreland Ave Audit Map

Figure B16 - Moreland Ave Image 2

Garnet Road Car Park – H12
Off Street
Done By: Rick Tombarelli and Kevin Ducharme
Overall Rating (1-5): 3.75
CPZ: Yes

Figure B17 - Garnet Road Car Park

General Information:
The Garnet Road Car Park is located in a residential area, directly next to a tall residential building. The car park is surrounded by small houses and several residential roads, and is a very short walk from the busy district center. In the district center there is a supermarket, community center, and many small businesses. The traffic and pedestrian flow directly next to the car park is somewhat low, but the pedestrian flow and traffic on the main road of the district center is high. Visibility of the car bay is the biggest issue with the car park. It will be primarily surrounding residents who see the car bays. The Thornton Heath Train Station is within a short walk to the bay, as well as many bus stops in the district center.

The Garnet Road Car Park is decently large, and was roughly 50 percent full when visited during the late morning. The lot was very clean, and had plenty of room for vehicle maneuverability.

Safety of Location:
The location appeared to be very safe. There were lots of lights in the lot, and the area was very clean. The lot appeared to be well maintained.

Surrounding Businesses:

1. Oasis / Foyer Croydon Community Center
2. Home Lets Estate Agents
3. Kingbury Estate Agents
4. Townends
5. Drummonds Mortgage/Loans/Real Estate

Pros	Cons
• Clean and safe • Close to district center • Lots of residential buildings nearby	• Visibility of bay

EVCP Compatible?

No

Additional Pictures:

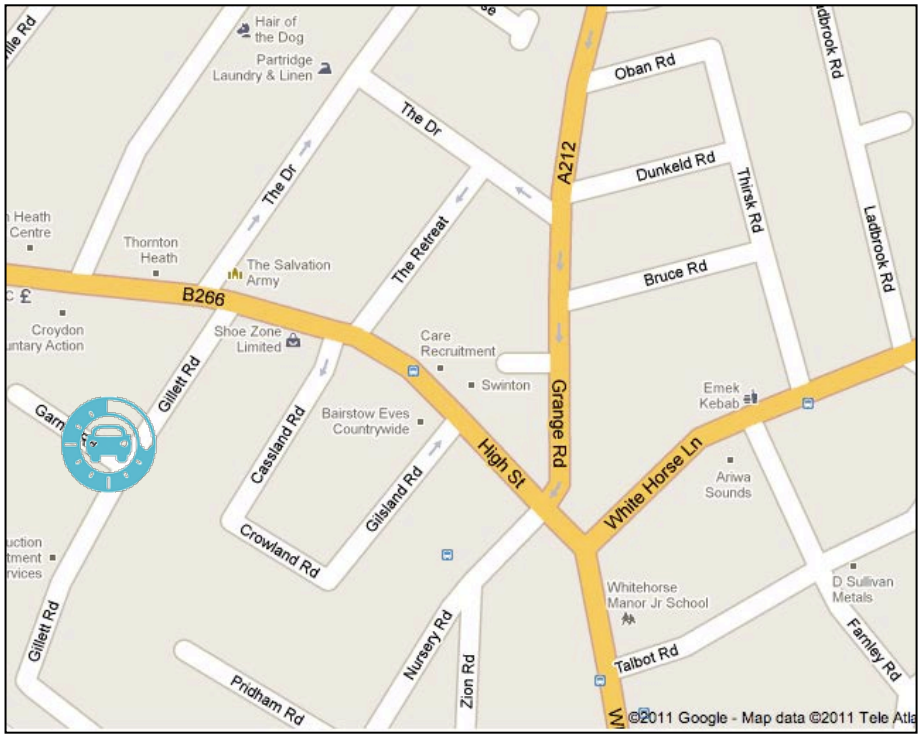


Figure B18 - Garnet Road Car Park Audit Map

Woodcroft Road – J10
On Street
Done By: Kevin Ducharme and Rick Tombarelli
Overall Rating (1-5): 3.75
CPZ: Yes

Figure B19 - Woodcroft Road

General Information:
Woodcroft Road is located right near a nice neighborhood. The neighborhood residents are currently all paying for on street parking. The proposed bay location is also right across the street from the staff parking lot of a health center and hospital that is a little way down the street. The closest district area to Woodcroft Road is around 400 yards down Mayday Road. Being adjacent to Mayday Road, the location has good access to the main road to get to the district center. There are also a lot of vehicles passing by down Mayday Road; however the pedestrian traffic is low. Woodcroft Road is relatively narrow. The closest bus stop is around 400m away. There is a Streetcar Location around 200m away from Woodcroft Road.

Safety of Location:
Overall the location is very safe. Having a church, hospital, and health center nearby means there is CCTV coverage in the area. There is a small amount of litter in the road, and no graffiti. The proposed location is also right next to a street light and the lights along the street are spaced about 40 yards apart.

Surrounding Businesses:
1. Croydon Health Authority
2. Metis Physic Center
3. Croydon University Hospital

Pros	Cons
• CCTV coverage • Very safe – near a church and hospital • No vandalism • Very clean area • Good lighting • Good access to main road • Lots of residents that are paying for on-street parking	• Narrow road – bad maneuverability • About 200 meters from a Streetcar location • Closest bus stop is about 400 meters away

EVCP Compatible?
No

Additional Pictures:

Figure B20 - Woodcroft Road Audit Map

Parchmore Road – G11
On Street
Done By: Rick Tombarelli and Kevin Ducharme
Overall Rating (1-5): 3.7
CPZ: Yes

Figure B21 - Parchmore Road

General Information:
The parking bays on Parchmore Road are located in a residential area, and are on a side road from a district center. The bays are around a 3-minute walk from the district center. The surrounding neighborhood consists of residential houses and apartment buildings. There are a few churches and a community center right next to the bays. The parking bays are near bus stops, and are within a 5-minute walk from the Thornton Heath Rail Station.

Parchmore Road is a rather busy road, with a fair amount of pedestrian and vehicle traffic. There is a high level of visibility of the parking bays.

Safety of Location:
The area appeared to be safe and clean. There was no graffiti, and the area seemed to be well maintained.

Surrounding Businesses:
1. Parchmore Church / Youth and Community Center
2. St. Paul's Church

Pros	Cons
• Clean and safe area • Around churches • Good amount of traffic/visibility	• Businesses are not directly near bays

EVCP Compatible?
No

Additional Pictures:

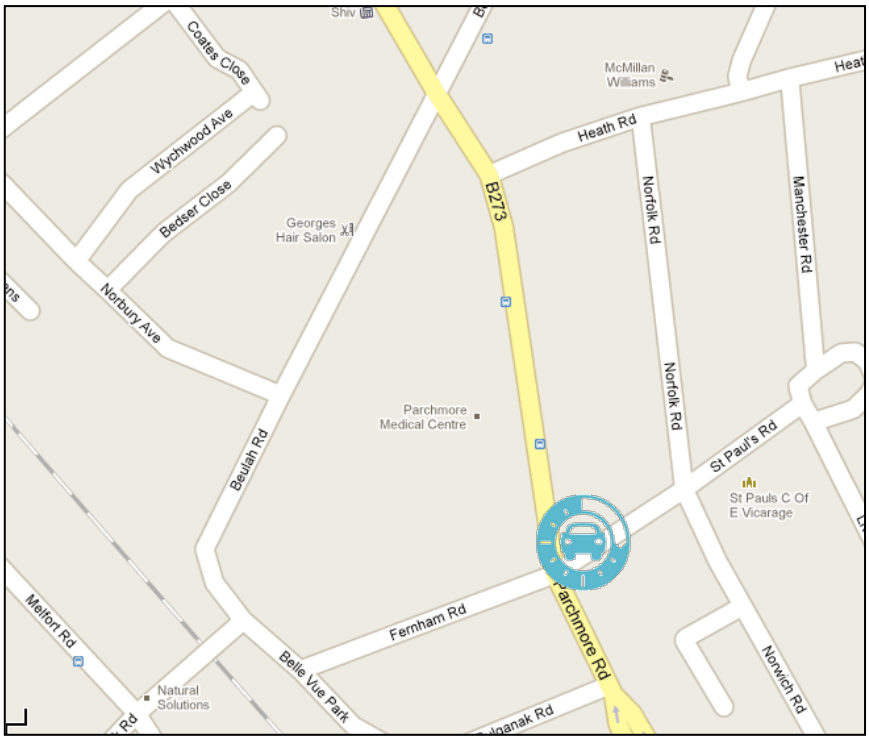


Figure B22 - Parchmore Road Audit Map


Figure B23 - Parchmore Road Image 2

Pembury Road – H17
On Street
Done By: Rick Tombarelli, Calvin Lam
Overall Rating (1-5): 3.7
CPZ: Yes

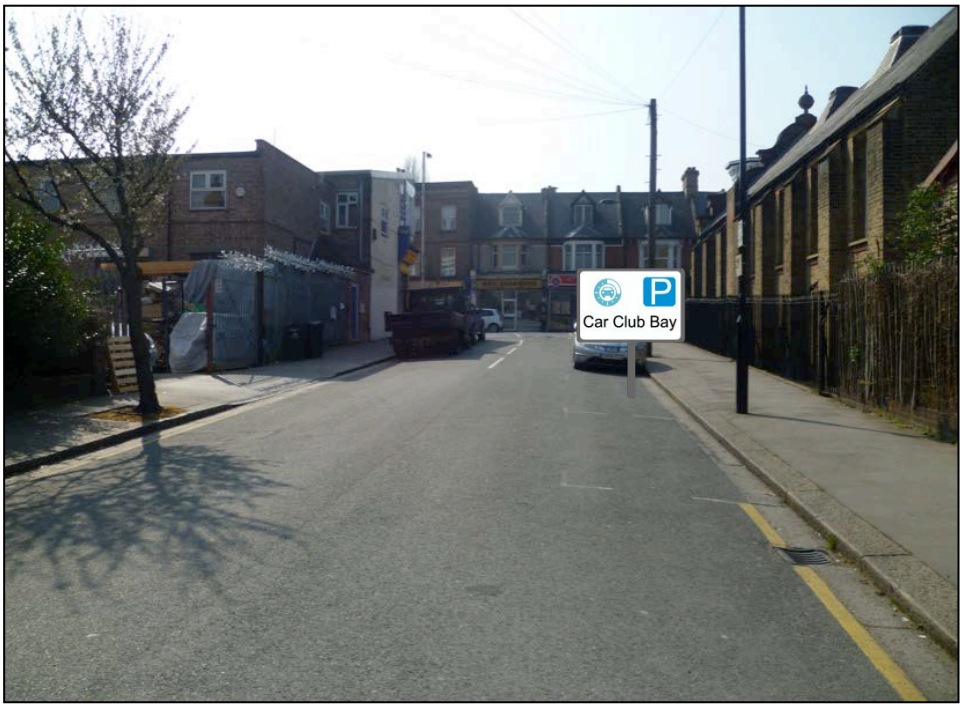


Figure B24 - Pembury Road

General Information:
The on street location at the end of Pembury Road includes several parking bays directly off the main road. The bays are on a dead end road with a residential cul-de-sac at the end. There were roughly 60 percent of the bays taken on the road during the early afternoon when the road was audited. The road that Pembury Road is off of is a busy road with a decent number of retail shops, although most shops are small restaurants. There is a high level of visibility of the bays from the main road. There is a bus stop about 200m away from the bays and a train station about 400m away. There is ample room to put up signs for a car club bay vehicle.

Pembury Road is somewhat narrow, with bays on each side of the road. When bays on both sides of the road are used, only one car can pass down the road.

Safety of Location:
The location appeared to be safe. There was no evidence of vandalism, and good lighting. The surrounding residential area appeared to be safe, and the end of the road consisted of nicer upper middle class houses. The locations appeared to be clean and in a decent area.

Surrounding Businesses:
The bays are surrounded by lots of small businesses, mostly small restaurants.

1. Habitat Property Services
2. BM Photographic Studios
3. Church – London City Mission Hill

Pros	Cons
• Safe road • Good visibility	• Surrounding businesses not optimal • Narrow road

EVCP Compatible?
Yes. As can be seen in the picture above there is a green feeder pillar across the street from the bay.

Additional Pictures:

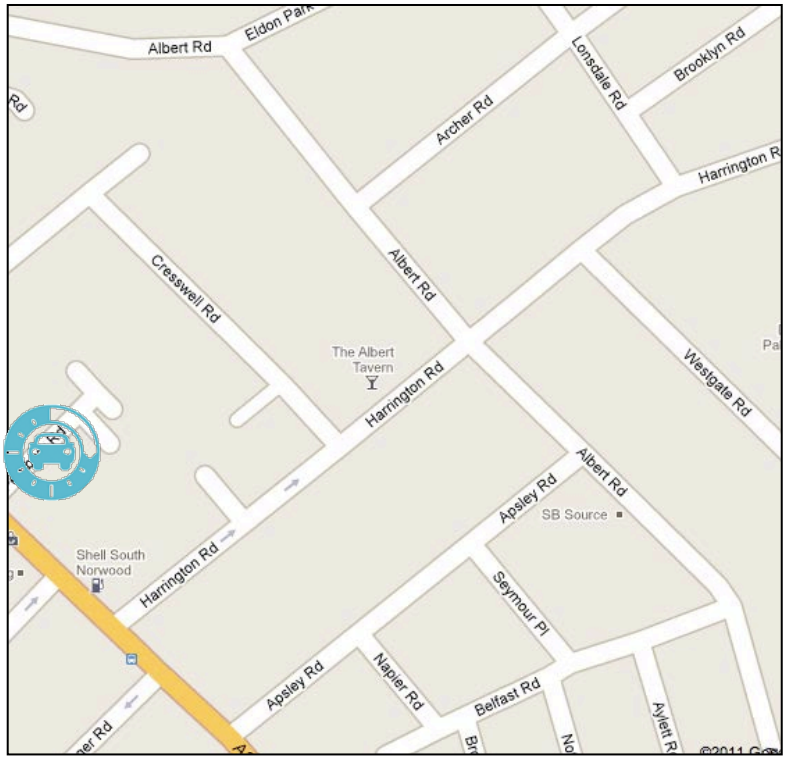


Figure B25 - Pembury Bay Audit Map

Birdhurst Gardens – Q13
On Street
Done By: Rick Tombarelli and Adeola Otuyelu
Overall Rating (1-5): 3.5
CPZ: Yes

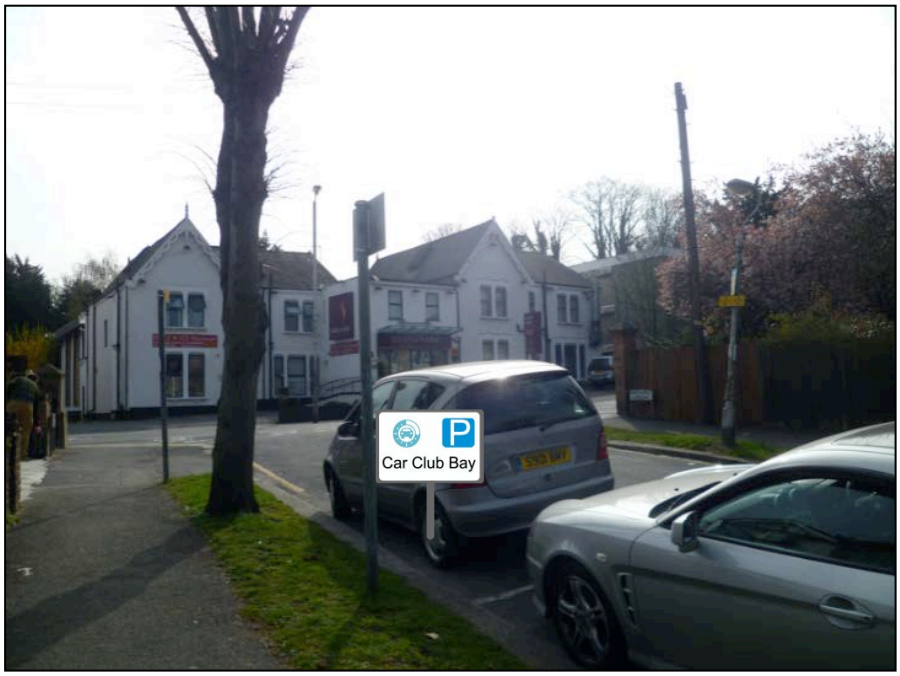


Figure B26 - Birdhurst Gardens

General Information:
The on street parking bays on Birdhurst Gardens road are located in a quiet residential area. There are lots of small single-family houses immediately next to the bays, and some residential buildings near the bays. Roughly 50 feet from the bays is a small hotel with an Indian and Chinese restaurant. The restaurant uses an electric vehicle, and has a charge port for the vehicle in the front of the restaurant. Roughly 80 percent of the bays were being utilized during the early afternoon when the area was audited. Birdhurst Gardens road is a relatively narrow road with parking on both sides.

There are two bus stops within a 30 second walk from the bays. There is not a lot of pedestrian foot traffic running past the bays.

Safety of Location:
The area around the bays is very safe. There is adequate lighting on the road, and the surrounding area is clean and safe. There are also schools nearby, indicating that the area was safe.

Surrounding Businesses:
The surrounding area is mostly residential with very few businesses. The largest business close to the bays is a hotel with restaurant attached.

1. South Park Hotel
2. Spice N Ice Restaurant
3. Folly Send Christian School

Pros	Cons
• Safe area • Hotel nearby	• Low pedestrian flow • Mostly residential

EVCP Compatible?
No, there is an electric vehicle and charging point within 50 feet of the bay.

Additional Pictures:

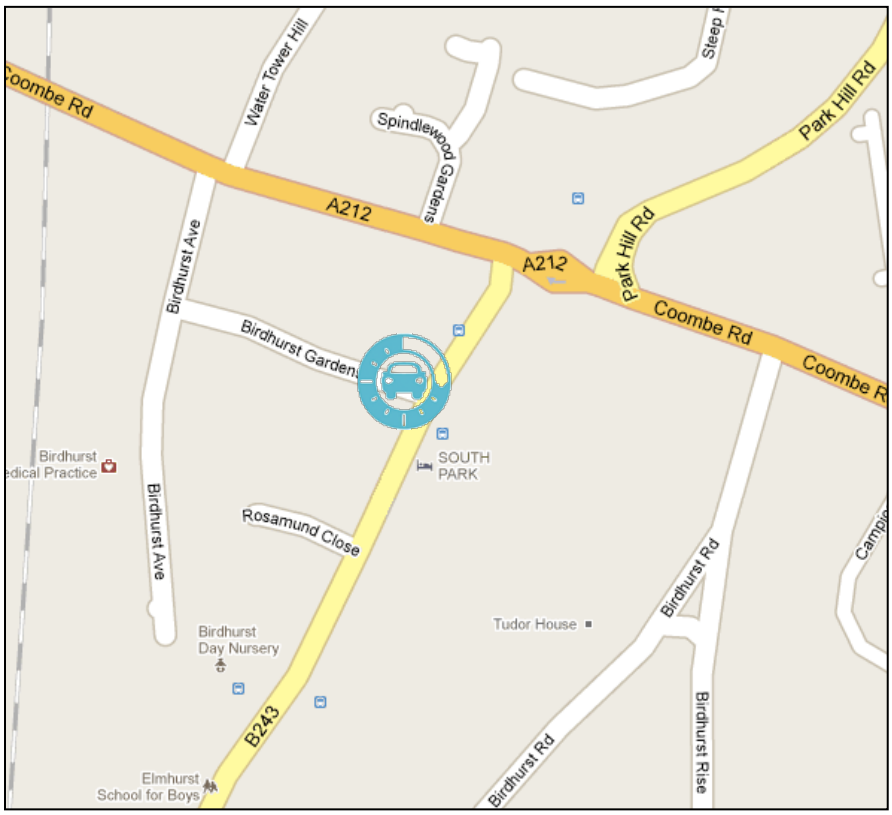


Figure B27 - Birdhurst Gardens Audit Map

Sissinghurst Road- L16
On Street
Done By: Calvin Lam and Adeola Otuyelu
Overall Rating (1-5): 3.5
CPZ: No

Figure B28 - Sissinghurst Road

General Information:
The parking bay location on Sissinghurst Road is located two streets away from the main road (Lower Addiscombe Road) but it is adjacent to a semi- busy road in a predominantly residential area. The bay is on a 4-way intersection that is surrounded by small shops and close to the Blackhorse tram station. There are multiple bus stops and two tram stations within 100m (walking distance) of the location. There was a decent amount of vehicle traffic past the location. The visibility of the bay is average. It was noted at the time of audit that there was an average parking occupancy level in the area, a little more than half of the spots were taken. Sissinghurst road has an average width.

Safety of Location:
There is a floodlight very close to the spot and a street light nearby so the lighting is good. A house on the opposite side of the bay has CCTV coverage. The bay is in a quiet neighborhood area with a neighborhood watch program. There is no evidence of vandalism whatsoever, the area is very clean and overall the appearance is good. Overall safety rating is above average.

Surrounding Businesses:
None

Pros	Cons
• Clean and no vandalism • Decent bay visibility • Good lighting	• Low pedestrian flow • Lack of businesses nearby

EVCP Compatible?
No

Additional Pictures:

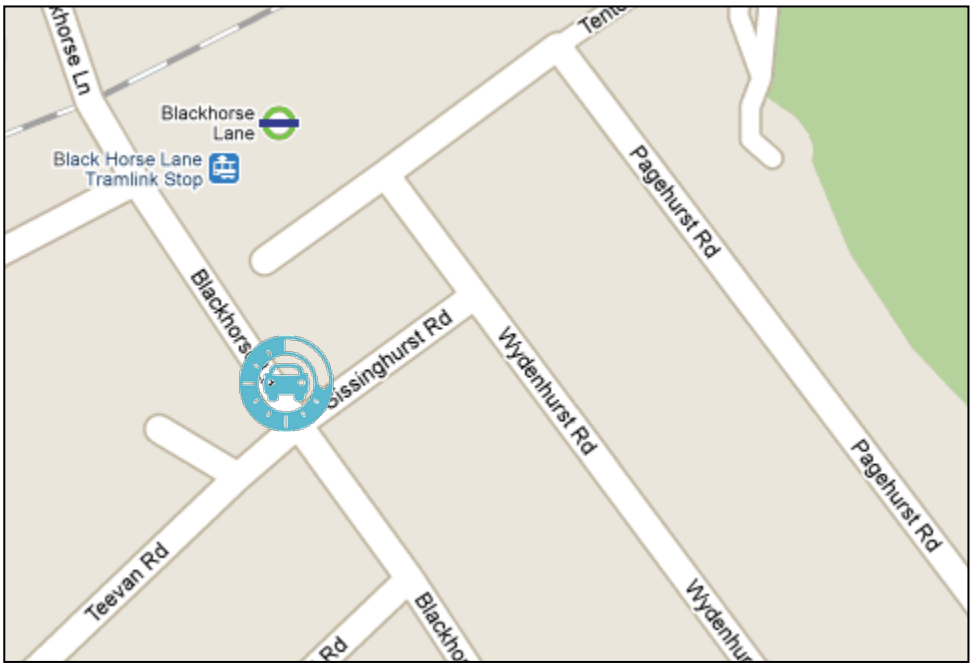


Figure B29 - Sissinghurst Road Audit Map

Figure B30 - Sissinghurst Road Image 2

Clifford Road Car Park – H16
Off Street
Done By: Rick Tombarelli, Calvin Lam
Overall Rating (1-5): 3.3
CPZ: Yes

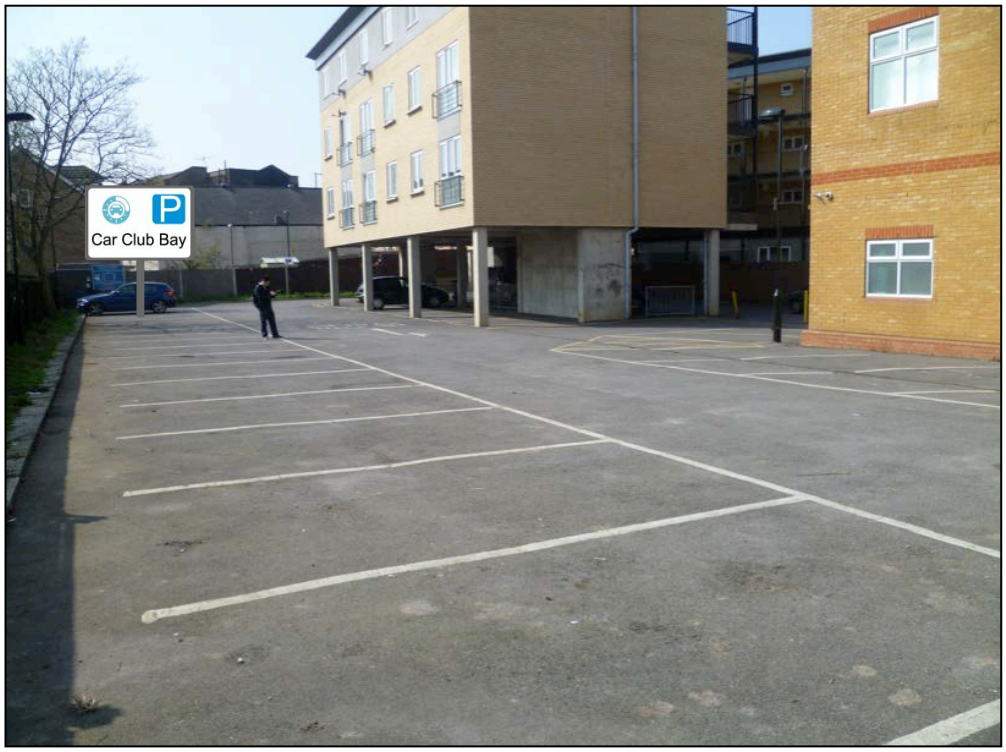


Figure B31 - Clifford Road Car Park

General Information:
The Clifford Car Park is a single entrance car park located off of a somewhat quiet street near a bus stop. The park is located behind a residential building in a residential area. It is about a 2-minute walk from a busy road with lots of retail businesses. The lot had some spots that were covered by a residential building. The lot appeared to be barely utilized in the early afternoon when it was visited. The lot is several minutes away by foot from a train stop. There is ample room for car club signs in the car park, and leading into the park. The lot was mostly clean with a small amount of litter on the surrounding grass.

The lot was very quiet when visited in the early afternoon, and had very few pedestrians walking past.

Safety of Location:
The location appeared to be very safe. It is behind a building and appeared to be clean. There is a small amount of graffiti on the back fence of the park. There is also a camera overlooking the car park. There are 5 lights in the park, which seemed to be adequate to light the whole park.

Surrounding Businesses:
The closest businesses are on the main road, but within a short walk to the car park. The businesses were mostly small retail businesses, and included many small restaurants.

1. AMS PC Solutions – Computer Repair
2. Habitat Property Services
3. BM Photographic Studios

Pros	Cons
• Clean and safe area • Good residential surroundings • Well lit	• Bad bay visibility • Lack of businesses nearby • Very quiet area

EVCP Compatible?
Yes. There is a feeder pillar in the car park.

Additional Pictures:

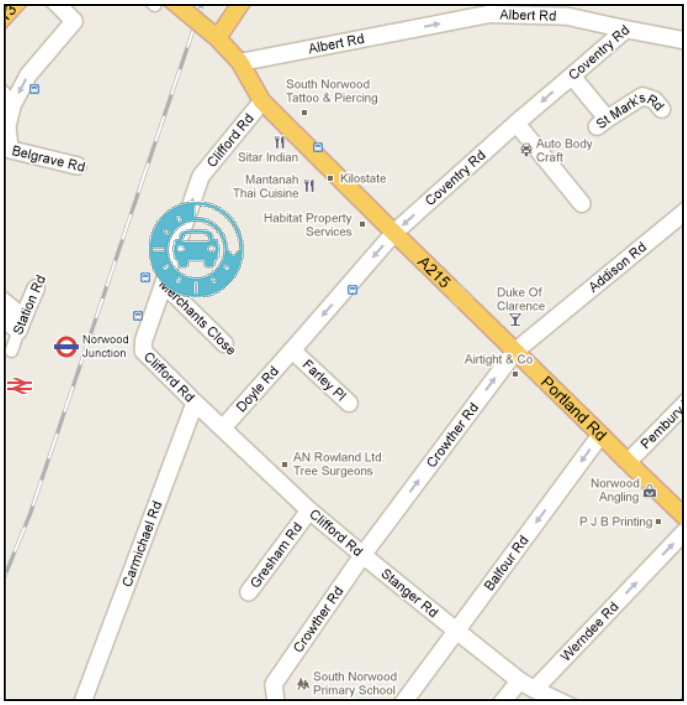


Figure B32 - Clifford Road Audit Map

Braybrooke Gardens – C15
On Street
Done By: Rick Tombarelli and Kevin Ducharme
Overall Rating (1-5): 3.3
CPZ: No

Figure B33 - Braybrooke Gardens

General Information:
The on street bays on Braybrooke Gardens are located two roads off of a busy main road, but are within a 30 second walk of the main road. The immediate surrounding area is completely residential, but around a 5-minute walk to many businesses on the main road. The residential surrounding consists of lots of single-family homes that are closely packed, and medium sized apartment buildings.

The biggest downside to the location is the lack of visibility from pedestrians and vehicles passing by on the main road.

Safety of Location:
Braybrooke Gardens appeared to be a very safe road, as it was quiet, clean, and did not have any graffiti on the nearby walls when visited. The road also had lots of lighting, and seemed as though it would be well lit at night.

Surrounding Businesses:

1. Crystal Palace Tower Hotel
2. Queen's Hotel
3. Upper Norwood Group Practice (020 8771 6040)

Pros	Cons
• Apartments buildings nearby • Good residential surroundings • Hotels nearby	• Bad bay visibility • Lack of businesses nearby

EVCP Compatible?

No

Additional Pictures:

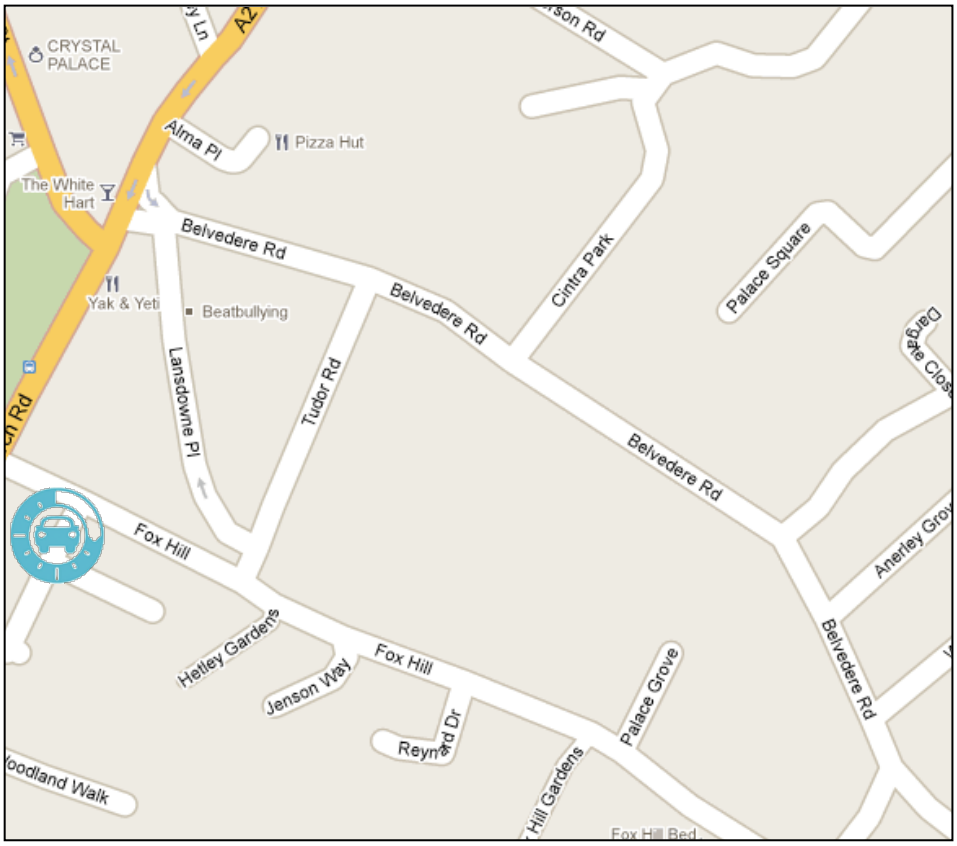


Figure B34 - Braybrooke Gardens Audit Map

Goldwell Rd – H8
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 3.3
CPZ: No

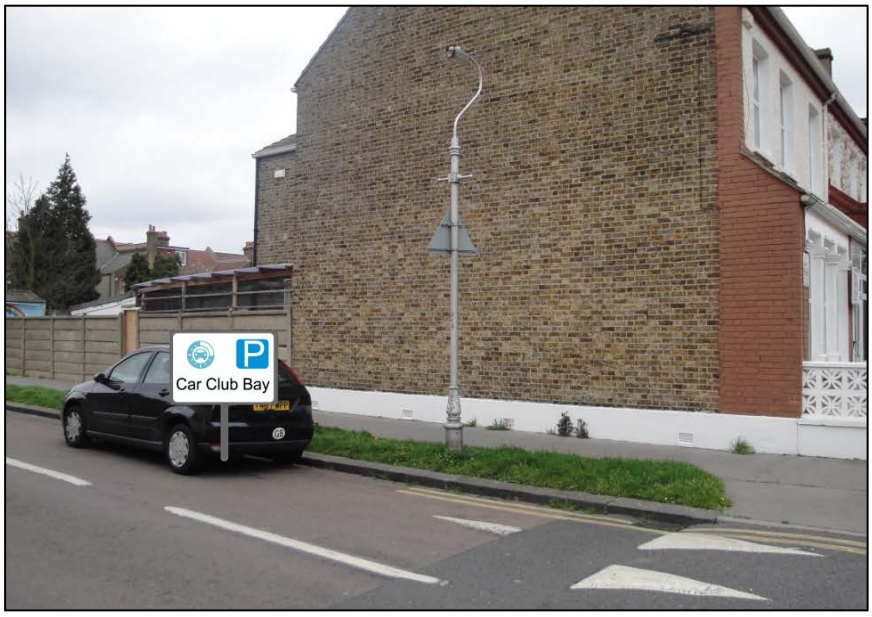


Figure B35 - Goldwell Road

General Information:
This parking bay location on Goldwell Road is in a very residential area. The few surrounding businesses are all shut down, or at the very least not open during usual business hours like more stores and shops are. Goldwell Rd is at the end of Leander Rd, which is a branch off of the main road, London Rd. When audited during the early afternoon, parking on the street was moderate, roughly 55% taken up. There is no street clutter on the road. Traffic from cars is very low as it is not close to a main road. Vehicle maneuverability is also very tight, as the road width is narrow. With a bay placed in this location, there would only be one lane available for traffic. Luckily this is a less traveled road. The closest bus stop is on London Rd, which is within 100m of the bay. Pedestrian flow is also very low. The visibility of the bay is somewhat limited.

Safety of Location:
The location has good lighting, with streetlights placed very close to each other. The bay is located right underneath one of these streetlights on the corner of the street. In addition, this location has CCTV coverage and is right next to a nursery school, which could indicate that this area is a very safe neighborhood. On the other hand, there are some walls nearby with barbed wire running across the top, which may signify that this area has been through some bad times. There is no evidence of vandalism. The area is very clean and well kept.

Surrounding Businesses:

1. Living Hands Nursery School
2. Primary Care Centre (on the corner meeting London Rd)

Pros	Cons
• Safe and clean • CCTV coverage	• Bad bay visibility • Lack of businesses nearby

EVCP Compatible?

No

Additional Pictures:

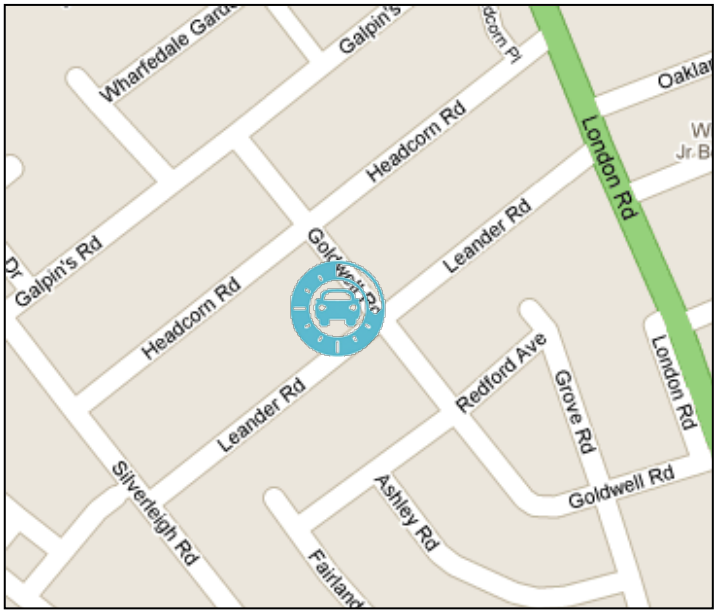


Figure B36 - Goldwell Road Audit Map

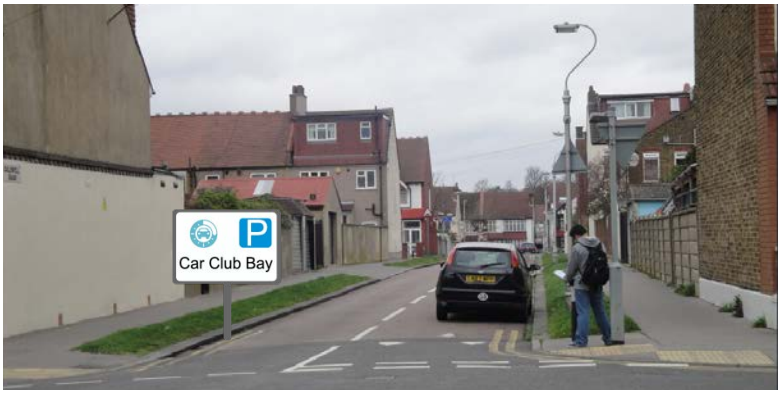


Figure B37 - Goldwell Road Image 2

Harold Road – B13
On Street
Done By: Kevin Ducharme and Rick Tombarelli
Overall Rating (1-5): 3.3
CPZ: No

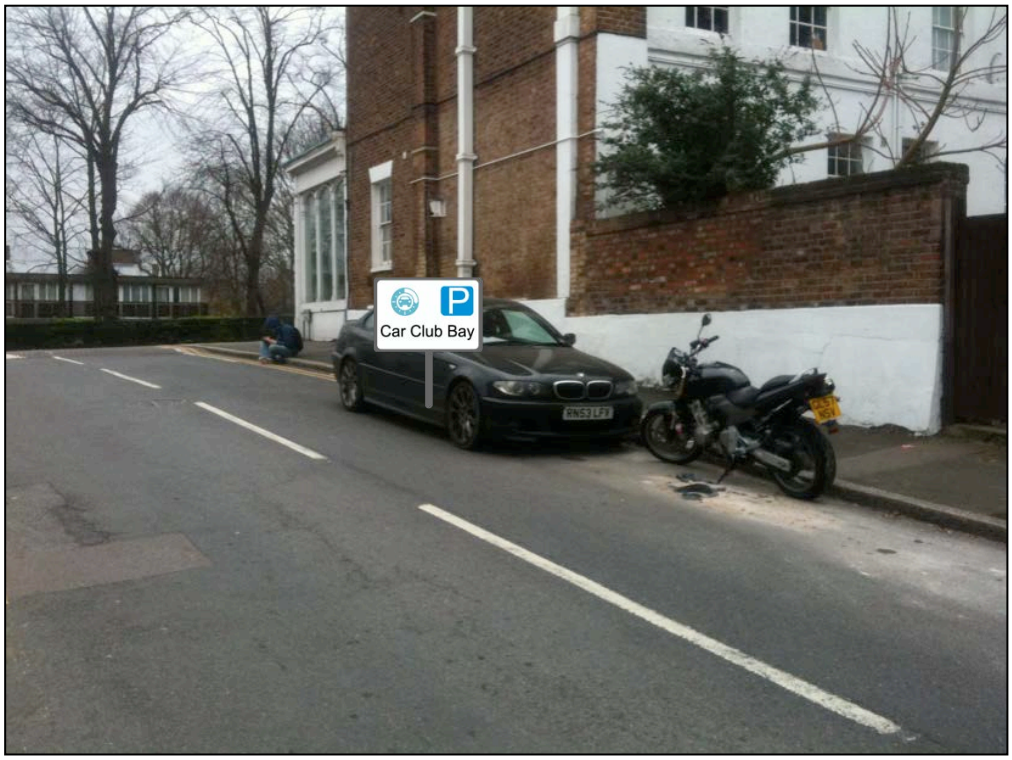


Figure B38 - Harold Road

General Information:
The proposed bay location on Harold Road is right off the A214 giving it good access to the main road in the area. The location is surrounded by single and multi-family homes as well as large apartment buildings that primarily pay for on-street parking. At the time of the audit, 12:00, roughly 50 percent of the nearby spaces were used. Harold Road is of average width. The street only has parking on one side of the street giving more maneuverability for the vehicles. Being right next to the main road and have a lot of wall space for posters and signs makes the bay location very viewable. The bay location on Harold Road is very close to a bus stop.

Safety of Location:
The lighting in the area is very good. Streetlights are spread out on both sides of the street about 30 yards apart. There is no CCTV coverage but there are also no pubs or clubs and no vandalism evident in the area. Being a nice, residential area it seemed very safe. The area was also very clean with little to no trash on the streets.

Surrounding Businesses:
None, but there is a small shopping district about a 5 minute walk down the A214.

Pros	Cons
• Right off main road • Next too many bus stops • Good visibility – big wall for posters • Safe area – good lighting and no vandalism • Many residents pay for on-street parking	• No CCTV • No businesses in area

EVCP Compatible?
No

Additional Pictures:

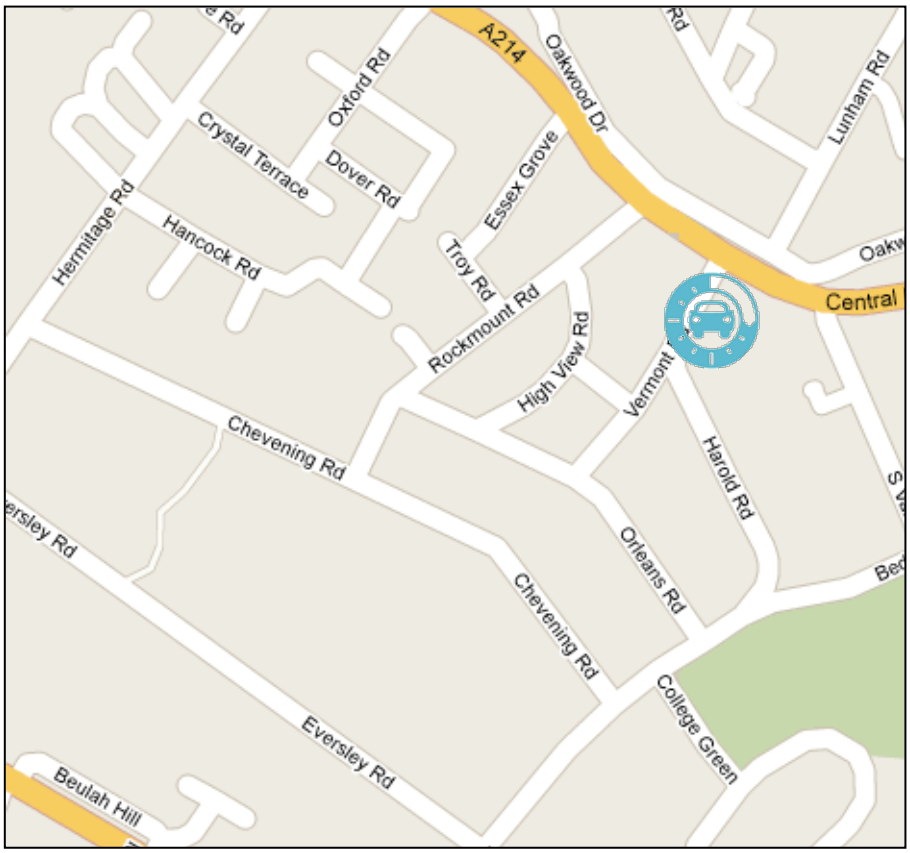


Figure B39 - Harold Road Audit Map

Lebanon Road – N14
On street
Done By: Rick Tombarelli, Adeola Otuyelu
Overall Rating (1-5): 3.25
CPZ: Yes

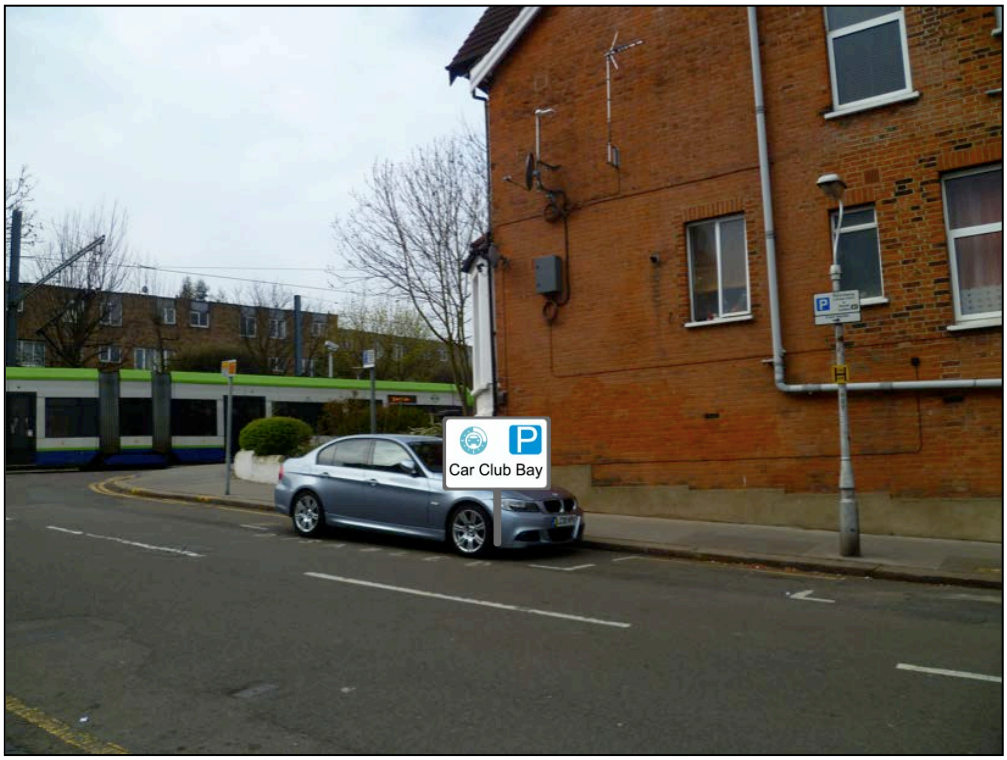


Figure B40 - Lebanon Road

General Information:
The on street bays on Lebanon Road are located on a side street directly off a busy road. The busy road has a tram link line going on it, and many buses stops along it. The area is completely residential with no businesses apart from a couple of small dentist offices. There are single-family homes, and many apartment buildings and complexes. There appeared to be a number of younger families, as there were mothers walking by with young children during the audit.

Lebanon Road is a wide road with ample room for vehicle maneuvering. The road appeared to be somewhat busy during the late morning. There is good visibility of the bays from the busy road.

Safety of Location:
The bay locations at the end of Lebanon Road have adequate lighting, and the area appeared to be safe during the audit. There were young children in the area, CCTV coverage nearby, expensive cars, and lots of lighting. There was no evidence of vandalism in the area.

Surrounding Businesses:
There were several small dentist offices nearby, but apart from that, no businesses.

1. Smile Dental Practice

Pros	Cons
• Safe area • Near bus stops and tram station • Lots of residential buildings nearby • Highly visible from main road	• Lack of businesses nearby

EVCP Compatible?
Yes, there is a feeder pillar box nearby.

Additional Pictures:

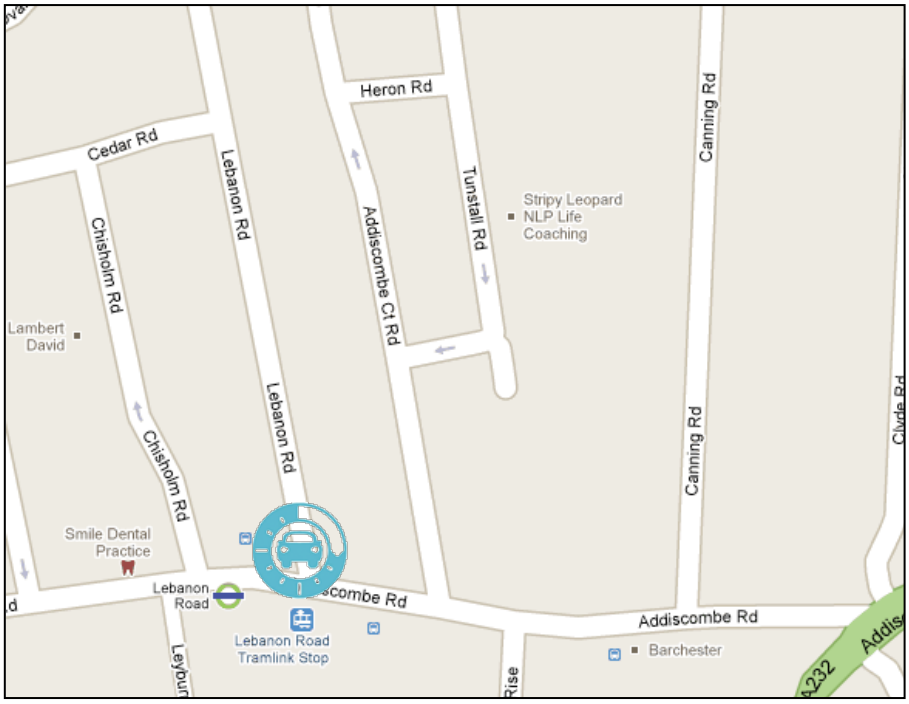


Figure B41 - Lebanon Road Audit Map

Gonville Rd – I8
On Street
Done By: Calvin Lam & Rick Tombarelli
Overall Rating (1-5): 3.2
CPZ: No

Figure B42 - Gonville Road

General Information:
The parking bay location on Gonville Road is in an area with a mix of residential and commercial buildings. Gonville Rd is all residential housing, but on the main road that Gonville branches off of, Thorton Rd, there nearly lots of businesses. At the time of audit, the road was 85-90% filled with parked private vehicles. Thornton road has a decent amount of vehicle traffic, with buses and cars driving back and forth often. The width of Gonville Rd is of average size, with double-sided parking and a two-way traffic lane. Realistically, it is wide enough for a car to perform a 3-point turn, and for only one car to drive through at a time if both sides of the road are filled. There are bus stops all along Thorton Rd, and the closest tram station is a bit over 400m away. The main road has a moderate amount of pedestrian traffic, with a lot of people walking by to get to the shops and bus stops. There was also a fair amount of people walking on Gonville Rd.

Safety of Location:
Lighting is of poor in this area. There was one streetlamp on the corner of the road, and the next streetlamp was 150 ft. away on the opposite side of the road. There is also no CCTV coverage or a neighborhood watch in place to protect the area. In

addition, there was a betting place a street over. There was no evidence of vandalism though. Overall, the area was clean and fairly well maintained.

Surrounding Businesses:

1. St Jude & St Pidon Church

Pros	Cons
• Next to church • Clean area	• School kids frequently walking in the area on their way home • Close to a betting shop • Lack of businesses

EVCP Compatible?

Yes. There is a feeder pillar box nearby.

Additional Pictures:

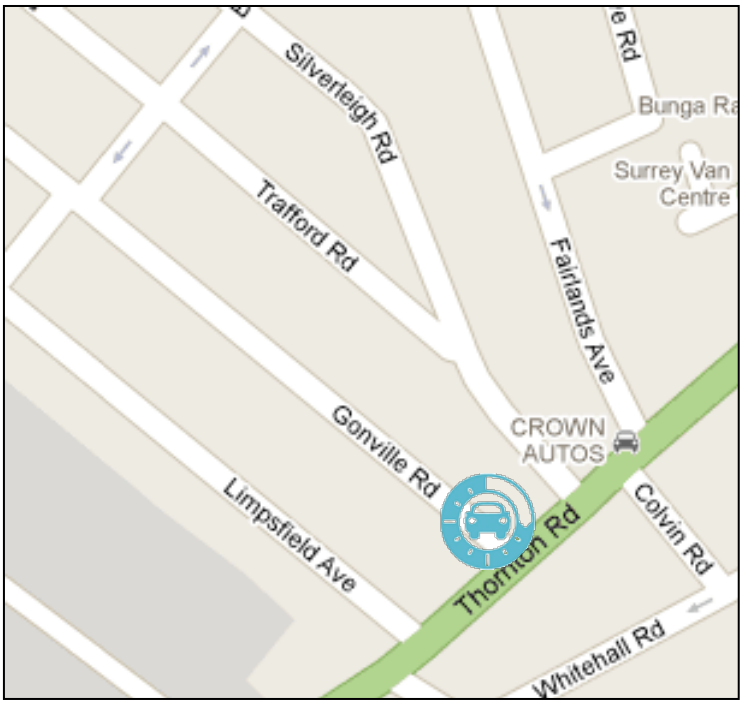


Figure B43 - Gonville Road Audit Map

Harcourt – J8
On Street
Done By: Rick Tombarelli and Calvin Lam
Overall Rating (1-5): 3.2
CPZ: No

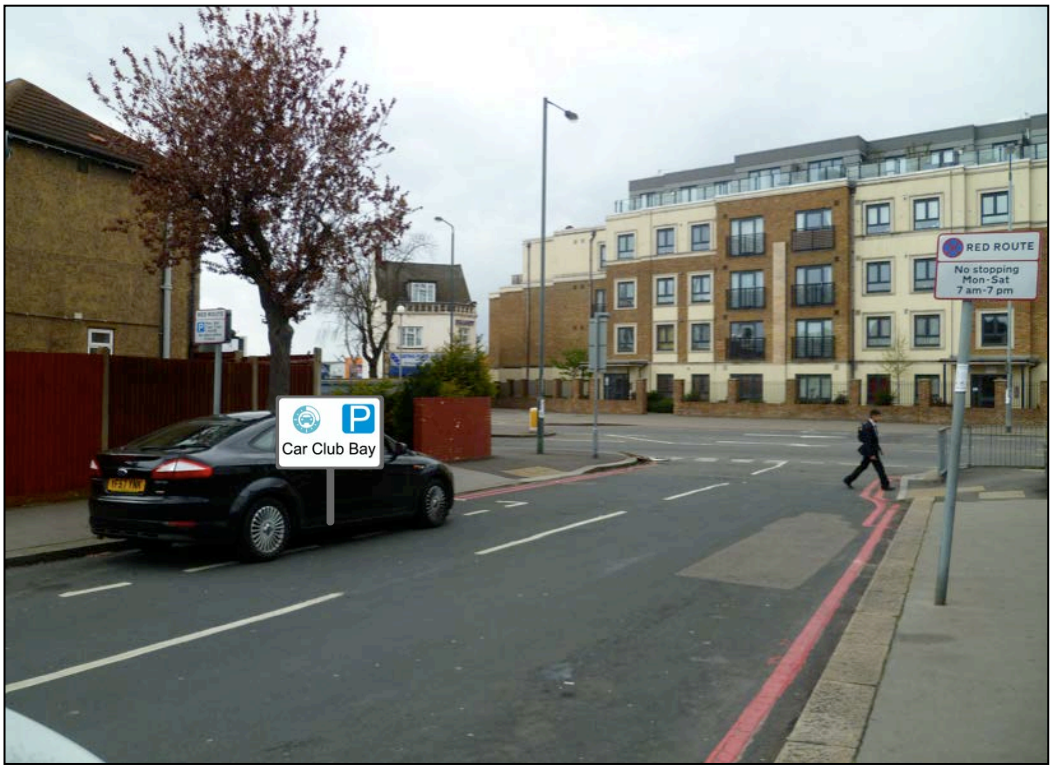


Figure B44 - Harcourt Road

General Information:
Harcourt Road is an average width residential road located off Thornton Road, which is fairly busy. The bays are within 50 feet of Thornton Road. Harcourt has very few private driveways, with lots of densely packed residential housing. The houses appeared to be owned by middle class citizens. There is an apartment building across the road from the bays, which seemed to be for lower income citizens. There is ample room for putting signs to identify the parking location, and the visibility from Thornton Road is good.

Safety of Location:
Harcourt Road was fairly clean, but had some trash on it further down the road. There is a small amount of graffiti in areas near the bay, but no graffiti right near the bay.

Surrounding Businesses
1. Red Gables Family Center (02086800699)
2. Croydon House Business Center

Pros	Cons
• Good visibility • Ample room for car club sign • Corydon house business center nearby	• Small amount of graffiti nearby • Lack of business nearby

EVCP Compatible?
No

Additional Pictures:

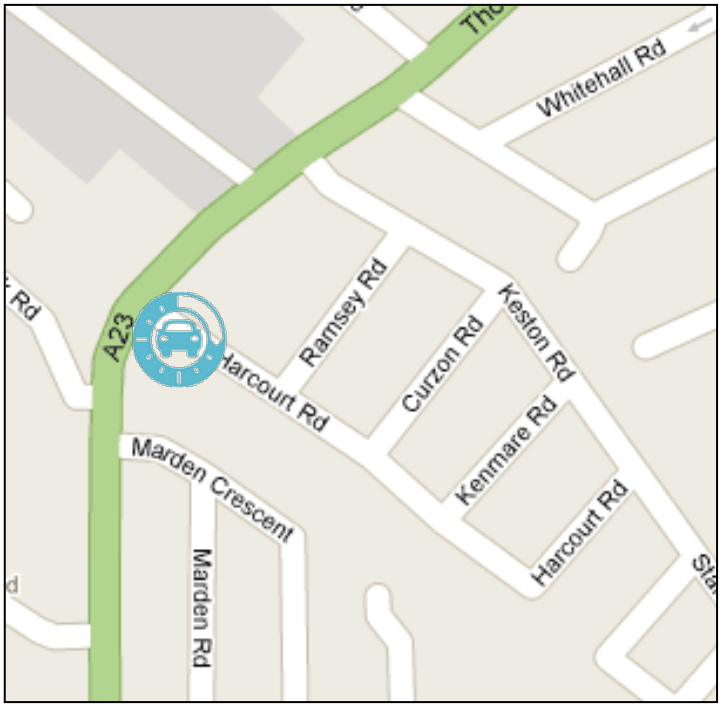


Figure B45 - Harcourt Road Audit Map

Oxford Road – A13
On Street
Done By: Kevin Ducharme and Rick Tombarelli
Overall Rating (1-5): 3.1
CPZ: No

Figure B46 - Oxford Road

General Information:
The proposed bay location is right along Croydon's Northern border. Oxford Road is located right off the A214 giving the bay location good access to the main road. The surrounding area is all residential single and multi-family homes and some big apartment complexes. Some of these houses have driveways and the apartment complexes have car parks, however, there is also a lot of on street parking that the residents utilize. The street that the proposed bay location is located on is very narrow; however, the driveways can be used to turn around in. Since the location is right next to the main road and there is a big wall right next to it for signs, the location is very viewable. The wall will help with promotions because there are a lot of vehicles that drive by on the main road. The main road also has several bus stops on it that are very close to the location.

Safety of Location:
Since the bay location is in a residential neighborhood the lighting is very good on all of the surrounding roads. This should help because there is no CCTV coverage around the bay area. There are also no pubs or clubs around and no signs of vandalism. Overall the area was very safe and very clean.

Surrounding Businesses:

1. Roman Catholic Church of the Virgin

Pros	Cons
• Right off main road • Next to many bus stops • Good visibility – big wall for signs • Safe area – good lighting and no vandalism • Many residents pay for on-street parking	• No CCTV • No businesses in area • Narrow road

EVCP Compatible?

No

Additional Pictures:

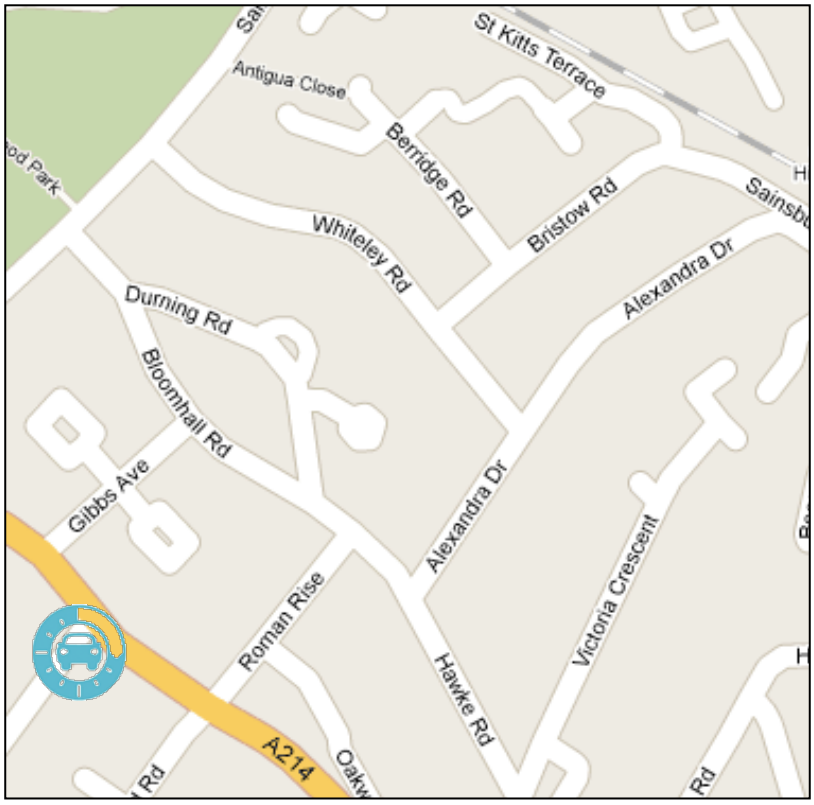


Figure B47 - Oxford Road Audit Map

Havelock Road – N15
On street
Done By: Adeola Otuyelu and Rick Tombarelli
Overall Rating (1-5): 3
CPZ: Yes

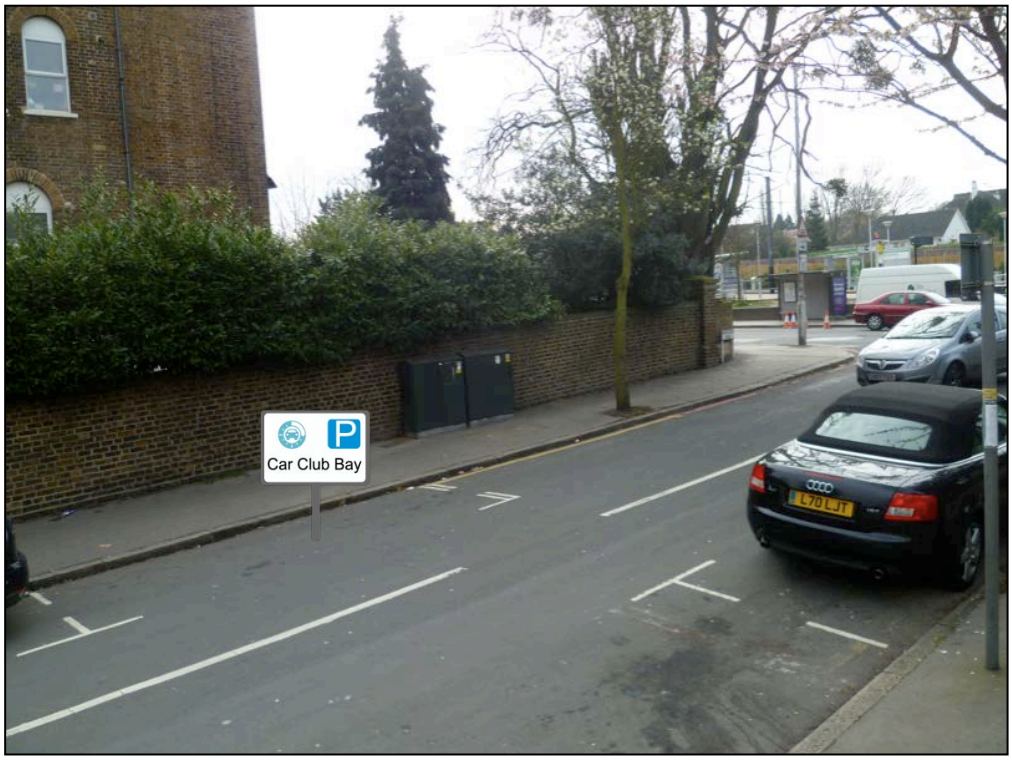


Figure B48 - Havelock Road

General Information:
This spot is located directly off a main road in a predominantly residential area consisting of a lot of apartment buildings. It is within a considerably nice neighborhood (medium income class). Very accessible to public transportation as there is a bus stop within 100m which caters to a lot of buses and a busy tram station right opposite it. There is average pedestrian activity as well as a medium to high level of traffic flow in the area although the street itself is very quiet. It was noted at the time of audit that there was a very low parking occupancy level in the area – about 20%. Havelock road has an average width and with double parking leaves a single lane for traffic flow.

Safety of Location:
There are streetlights all the way down the road so the lighting is very good. The bay location is very close to a busy street, which often has cameras and other security measures. There are some safety indicators in the area such as expensive cars parked on the road, street signs stating surveillance in the area, safe apartment buildings and close proximity to the tram station. Evidence of vandalism is very low

as there is very little graffiti on the garbage disposal. The area looks very clean and overall appearance is good. Overall safety is high.

Surrounding Businesses:
None.

Pros	Cons
• Next to many bus stops • Good visibility – plenty of room for signs	• Completely residential

EVCP Compatible?
Yes. There is a feeder pillar box near the bay location.

Additional Pictures:

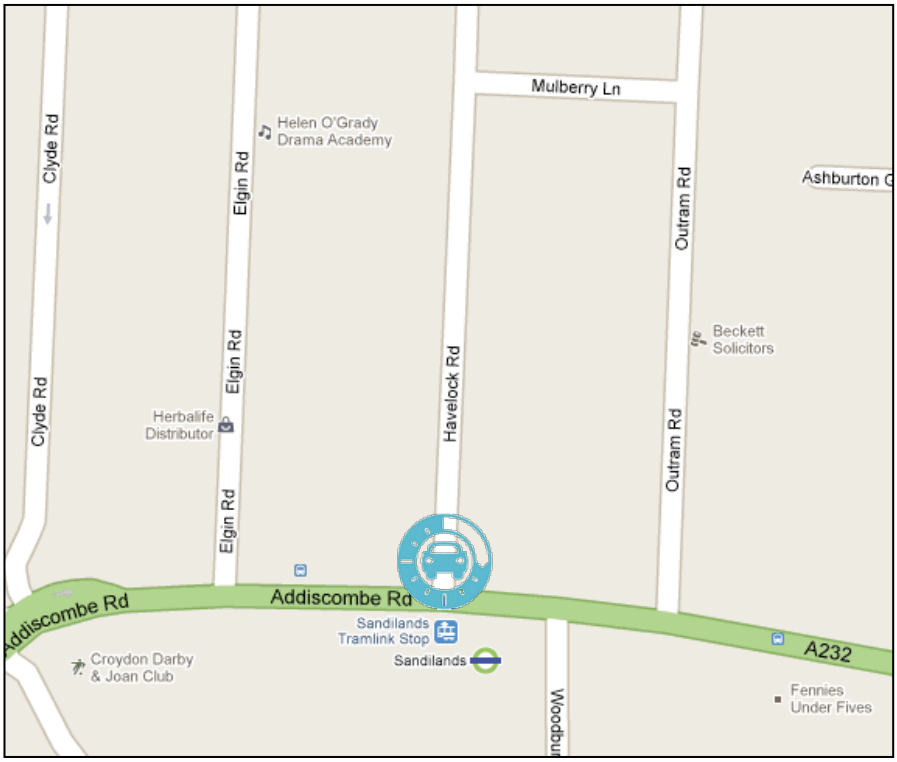


Figure B50 - Havelock Road Audit Map

Barring Rd – M16
On Street
Done By: Calvin Lam & Adeola Otuyelu
Overall Rating (1-5): 3
CPZ: Yes

Figure B51 - Barring Road

General Information:
This parking bay location on Barring Road is at the intersection with Lower Addiscombe Road. The surrounding area is a mix of residential and commercial buildings. Barring Road is a wide one-way street, with parking on both sides. At the time of audit, the street was 90% filled with parked private cars. The traffic in the area was of a medium to high rating, with buses and cars driving through often, however the pedestrian traffic was low. There are three grocery stores near the location.

Safety of Location:
The parking bay location is in a safe neighborhood. The location is right on the corner of the street meeting the main road, and as such there is ample lighting. There are two main street floodlights nearby and the location itself is right underneath a streetlight. This location is also close to shops and restaurants. There are no pubs nearby but there is a betting place a couple streets down. It is a very clean street and area.

Surrounding Businesses:

1. Stephens of Addiscombe
2. Garden and Pet Sundries
3. Albion Windows and Conservatories
4. Sullivan's Florist

Pros	Cons
• Close to bus and tram stop • Good visibility • Great lighting • Small district area • Clean, well-kept area	• Near betting places • No CCTV coverage • No neighborhood watch

EVCP Compatible?

No

Additional Pictures:

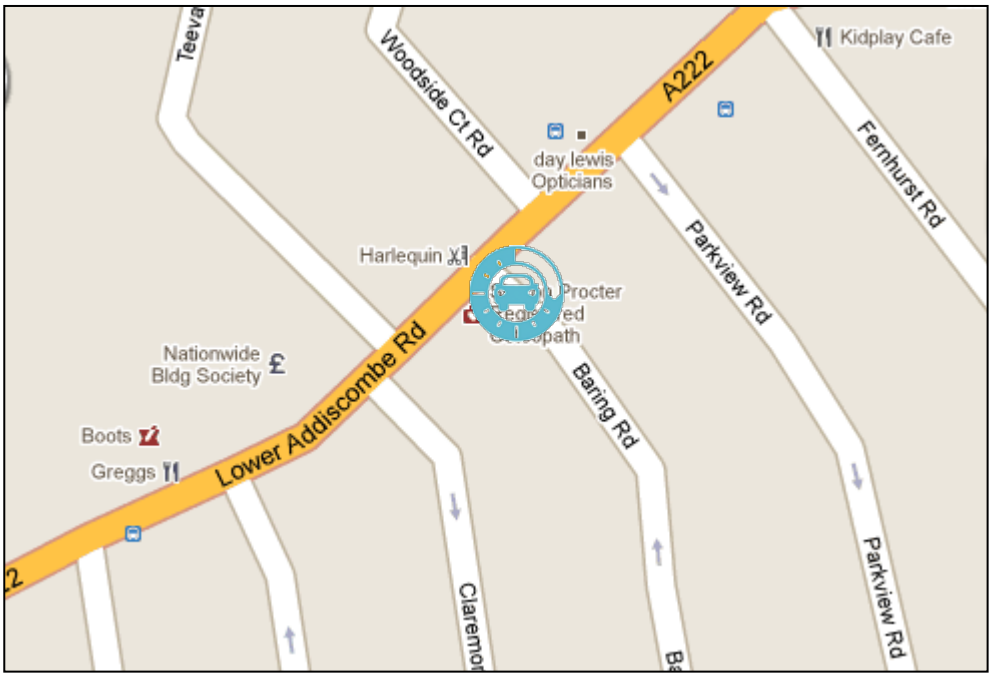


Figure B52 - Barring Road Audit Map

Bensham Manor Road – H11
On Street
Done By: Kevin and Rick
Overall Rating (1-5): 3.0
CPZ: Yes

Figure B53 - Bensham Manor Road

General Information:
The proposed bay location on Bensham Manor Road is located right off Brigstock Road, a main road. There are many small shops right next to the location, as well as, a big apartment building and some single-family homes down the street. At the time of the audit, 10:40am, there were few cars parked in the area. The road is relatively narrow when cars are parked on both sides. Being next to the main road gives the location close access to multiple bus stops, the Thorton Heath train station is also right on the corner. In terms of traffic flow and visibility, the main road always has high amounts of traffic; this includes cars driving by and people walking. There is limited wall space for promotional material.

Safety of Location:
The overall safety of the location is poor. There is no CCTV, the location is right next to a pub and there is trash and liter all over the surrounding area. There is a small amount of graffiti and vandalism. The location is down the street from a church however. A street light is also right over the bay location and the lights along the street are spaced only about 50 yards apart.

Surrounding Businesses:
1. Haart Real Estate
2. Saint John's Congregational
3. Drummands Mortgage and Loans and Real Estate
4. Townends

Pros	Cons
• Close to bus stops and train station. • Near lots of residents that may benefit from a car club. • Lighting right over location. • Low amounts of parking spaces taken up during time of audit. • Right next to main road, good traffic flow.	• Right next to a pub. • Very little room for big promotional material. • Area not clean. • Narrow street. • No CCTV • Mostly small businesses around

EVCP Compatible?
No

Additional Pictures:

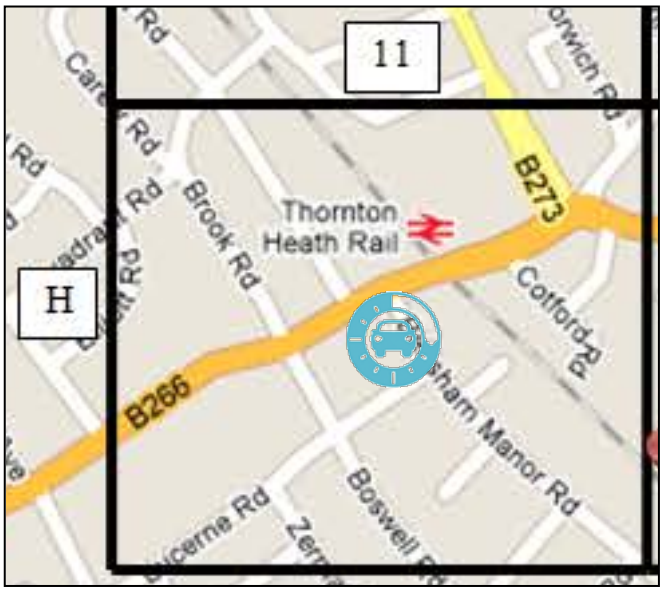


Figure B54 - Bensham Manor Road Audit Map

Leslie Grove – M13
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 3
CPZ: Yes

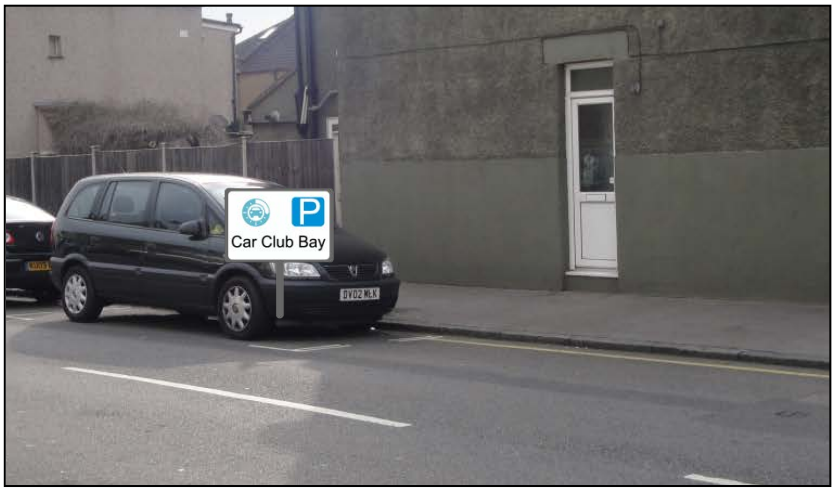


Figure B55 - Leslie Grove

General Information:
The parking bay location on Leslie Grove is in a mostly residential area. There are businesses on 2 main roads, Cherry Orchard (CO) and Lower Addiscombe (LA) Road. Leslie is sandwiched between CO and Cross St, which is sandwiched between CO and LA. The majority of the spots were filled when the site was audited. Cluttering the street were trees, other cars, and some signs.

There is low traffic on Cross Rd, but there is medium to high traffic on CO. Also, as Leslie has parking on both sides, the road is very narrow. The bays themselves are long enough for the average car, but maneuverability is very tight. There are 3-4 bus stops within 100m radius of the bay. This bay needs signage from the main road to indicate where the bay is, as the visibility from the road is limited.

Safety of Location:
This location has poor lighting. There are only 3-4 lampposts on the whole street, each spaced roughly 100 meters apart. There is also no CCTV coverage, but there is a primary school nearby which may indicate that it is a safe location. There are shops and pubs on CO.

There is no sign of vandalism and the street is pretty clean overall.

Surrounding Businesses:

1. Barker & Hibbert
2. Benson and Partners
3. Tyler Paris Estate Agents
4. Tanell Flowers for all Occasions
5. Just Move In Estate Agents
6. Church of Nazarene.

Pros	Cons
• Safe and clean area • Close to public transportation	• Need to look a bit to find bay • Poor lighting • Somewhat close to pubs • Limited bay visibility

EVCP Compatible?
No.

Additional Pictures:

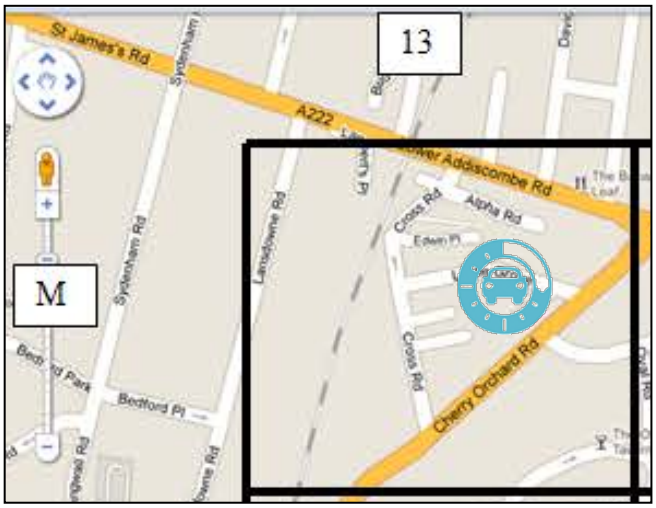


Figure B56 - Leslie Grove Audit Map


Figure B57 - Leslie Grove Image 2

Outram Road - M15
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 3
CPZ: Yes

Figure B58 - Outram Road

General Information:
The proposed bay location is located directly off the main road, Lower Addiscombe road, in a predominantly residential area. It is between two shopping areas, which are a 2-5 minute walk from the location. There are multiple bus stops around the location, less than 100 meters that are a short walk. There is low-medium pedestrian activity, more bikers in the area than people walking on foot. There is also a high chance of people using the bus more often than regular. It was noted at the time of audit that there was a very low parking occupancy level in the area. Outram road has an average width and with double parking has two lanes for traffic flow.

Safety of Location:
There is a flood lamp on the corner of the main road; the bay could be placed underneath the first lamppost on the road. Good lighting, lamps are placed 75- 80 yards apart from each other on alternating sides so 150 yards between lamp posts on same side. However, there are no cameras or CCTV coverage. There are also no pubs or clubs in the area and overall the area seems relatively safe neighborhood as there is a neighborhood watch in the area. There is little evidence of graffiti on a green electrical box. The location looks very clean and overall appearance is good apart from a few yards, which were messy and cluttered.

Surrounding Businesses
None

Pros	Cons
• Low level of street clutter • Good vehicle maneuverability • Close to bus stops and train station • Good lighting • Safe area • Very clean and good appearance – little evidence of vandalism	• Medium to low pedestrian flow • No businesses in area • Tight vehicle maneuverability

EVCP Compatible?
Yes. There is a feeder pillar next to the bay location.

Figure B59 - Outram Road Audit Map

Figure B60 - Outram Road Image 2

Woodsville Road – G12
On Street
Done By: Kevin Ducharme and Rick Tombarelli
Overall Rating (1-5): 3.0
CPZ: Yes

Figure B61 - Woodsville Road

General Information:
The overall make up of the area surrounding the proposed bay location is a mix of commercial and residential, but primarily being residential. Most of the residential homes are paying for on-street parking; however, a few homes do have private driveways. The district area is located at the end of Woodsville Road. At the time of the audit, 11:25am, there was scattered parking within the area of the bay location. Woodsville Road is relatively narrow but there are driveways that can be used to turn around in. The road is also relatively busy when it comes to vehicle traffic, however, there was very few residents walking by the location at the time of the audit. There is a bus stop located at the end of Woodsville Road and it is only about a 5 minute walk to Thornton Heath train station.

Safety of Location:
There is no CCTV coverage in the area but there is also no evidence of vandalism within the surrounding area of the bay location. This is probably due to there being no pubs or clubs in the area. The bay location could either be put directly next to a street light or it could be put between lights that are spaced about 40 yards apart. The area is also very clean with very little amounts of trash.

Surrounding Businesses:

1. Haart Real Estate
2. Saint John's Congregational
3. Drummands Mortgage and Loans and Real Estate
4. Townends

Pros	Cons
• Very clean area. • Well lit. • No vandalism. • Not near pubs or clubs. • Near bus stop and train station. • On a fairly busy road.	• No CCTV • Not many walkers in area. • Road is narrow – tough to be a 2 lane road when parking on both sides. • Not many big businesses in area – just smaller businesses.

EVCP Compatible?
No

Additional Pictures:

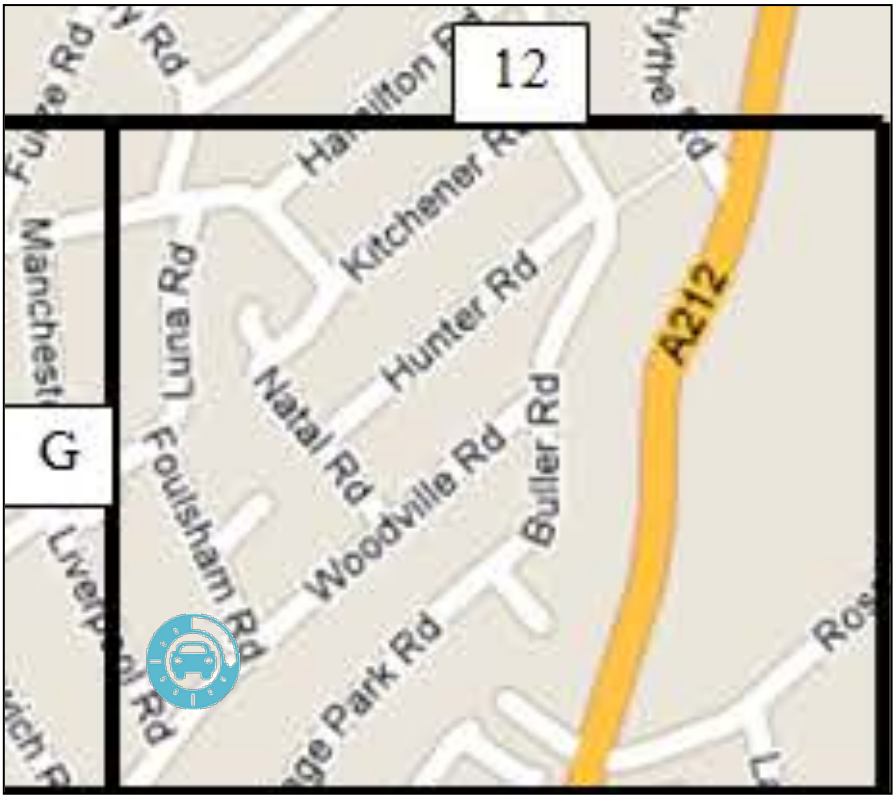


Figure B62 - Woodsville Road Audit Map

Aurelia Road – K7
On Street
Done By: Calvin Lam & Rick Tombarelli
Overall Rating (1-5): 3
CPZ: No

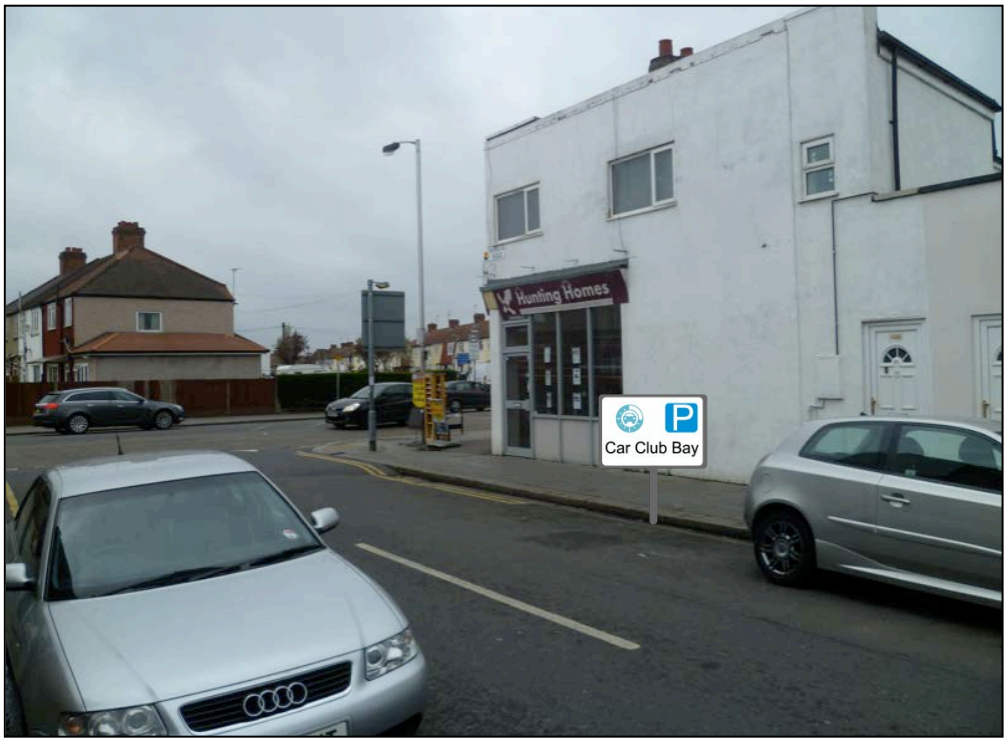


Figure B63 - Aurelia Road

General Information:
The proposed bay location is surrounded by a mix of mainly residential houses and commercial buildings. The area comprised of mainly single family homes that are densely packed. It was a relatively quiet area that branches off of the busy main road, Mitchem Road. The majority of parking bays on both sides were taken up at the time of audit; roughly 85% of spots were filled. There was little to no objects cluttering the street though. On the main road, there was a lot of traffic, especially with all the buses passing through. Aurelia Road is of average width, with parking on both sides, and being a two way traffic road, it is still wide enough for a car to perform a 3 point turn. The bus and tram stops were all within a 100 meter radius of the bay. The amount of pedestrians walking by was roughly medium-low and the visibility of the car club bay is very high as it is right off of the main road.

Safety of Location:
The area is well lit, as there were two flood lamps essentially on the two corners of the main street. Also, there was a streetlight nearby on the other side of the street from the bay. However, there is no CCTV coverage, nor is there a neighborhood watch. There are also no pubs or clubs nearby. This makes the area a bit safer. There

was some minor graffiti on a wall. The ground was littered with gum stuck to the pavement, and pieces of trash in the gutter every now and then, so it is not the cleanest of areas.

Surrounding Businesses:

1. Hunting Homes Estate Agents

Pros	Cons
• Far away from pubs and betting places • Good lighting • Close to multiple forms of public transportation • Close to mayday hospital	• No CCTV coverage • No Neighborhood watch • No businesses that would use a car club nearby

EVCP Compatible?

No

Additional Pictures:

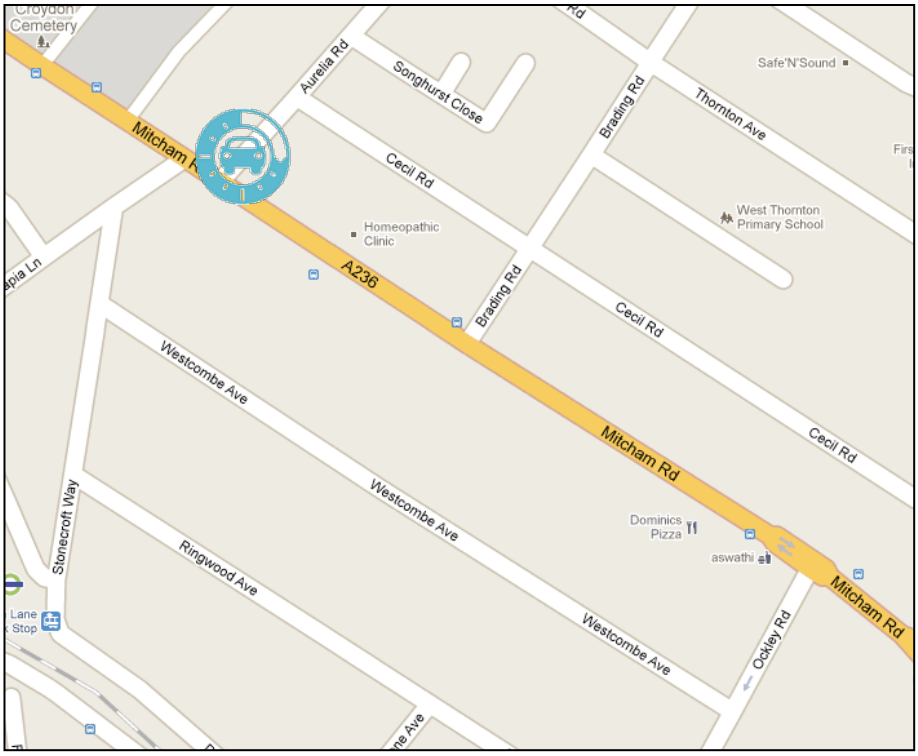


Figure B64 - Aurelia Road Audit Map

Belmont Road – J17
On Street
Done By: Rick Tombarelli and Kevin Ducharme
Overall Rating (1-5): 3
CPZ: No

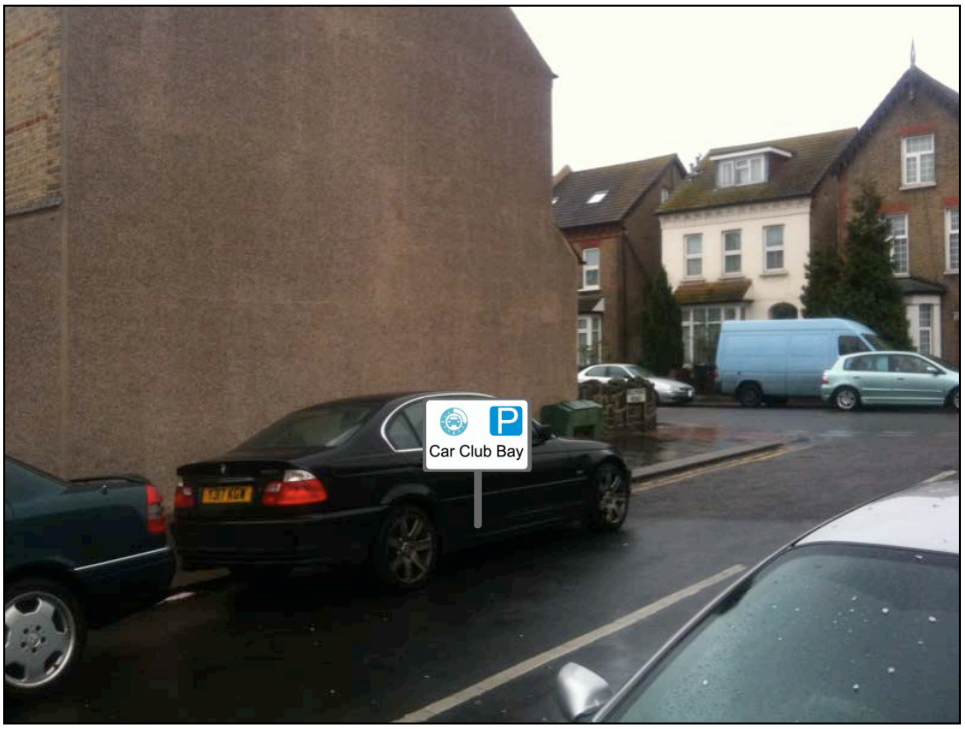


Figure B65 - Belmont Road

General Information:
The proposed bay location on Belmont Road is located directly off of Portland Road. With Portland road being the main road in the area the bay is close to many bus stops. Portland Road is a busy road with lots of bus stops and a mix of small businesses and residential housing. Belmont Road is quieter, with only residential housing. The housing consists of densely packed single-family homes. The visibility from Portland Road of the bays is good, having a big wall next to the bay to put a sign or poster. Belmont Road is a wide road having parking on both sides but still being able to fit two-way traffic.

Safety of Location:
The lighting in the area is average for the Borough. There is no evidence of vandalism around the bay location; however, there is no CCTV coverage or neighborhood watch. There are also no pubs or clubs within the area. Overall the area surrounding the bay was clean and well kept.

Surrounding Businesses:
1. The Copeland Group

Pros	Cons
• Good bay visibility • No vandalism • Clean area • Good road width • Close to bus stops	• No CCTV coverage • No Neighborhood watch • Surrounding businesses not optimal

EVCP Compatible?
No

Additional Pictures:

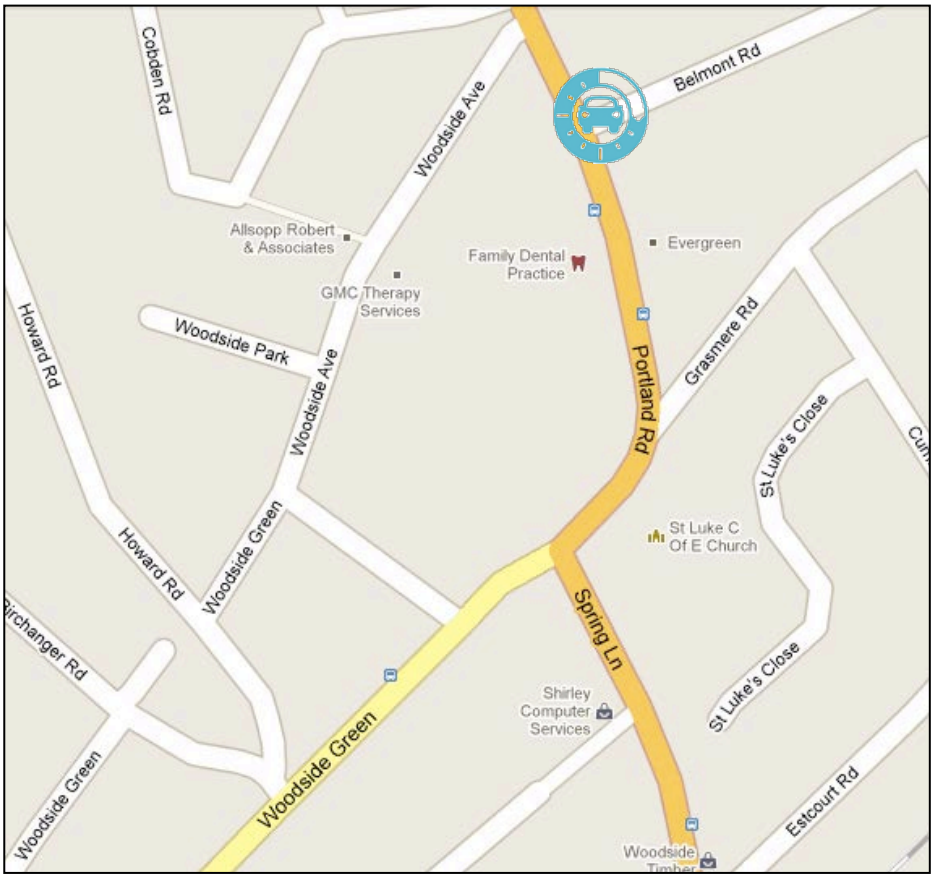


Figure B66 - Belmont Road Audit Map

Lakehall Road – I10
On Street
Done By: Adeola Otuyelu and Kevin Ducharme
Overall Rating (1-5): 3
CPZ: No

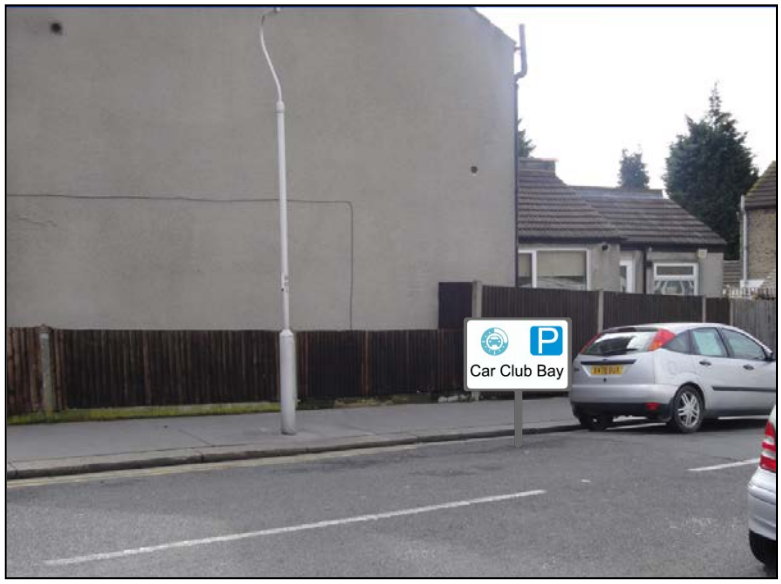


Figure B67 - Lakehall Road

General Information:
This proposed bay is located one to two streets away from the main road but is right off the corner of a semi- busy road in a predominantly residential area; right opposite two businesses. It is very accessible to public transportation as there are multiple bus stops within 100 meters of the location. At the time of the audit there was low pedestrian activity, with people only occasionally walking by, as well as a low level of traffic flow going by the location. Hence, the visibility of the bay would be average. It was noted at the time of audit that there was a very high parking occupancy level in the area; almost all the spots were taken. Lakehall road has an average width and with parking on both sides of the street can only fit one way of traffic.

Safety of Location:
There is a flood light right above the bay and continues down the street approximately 40 yards apart, therefore lighting is good. There is a neighborhood watch in the area; however, there is not CCTV coverage. There are also no pubs or clubs in the area. There is no evidence of vandalism whatsoever and the area is very clean. The overall the appearance of the area is good. Being a residential area the safety seems good.

Surrounding Businesses:
1. Lynton House

Pros	Cons
• Low level of street clutter – plenty of rooms for signs • Close to bus stops • Good lighting in area • Clean and safe area – no evidence of vandalism	• Low pedestrian • Low traffic flow • Low commercial activity

EVCP Compatible?
No

Additional Pictures:

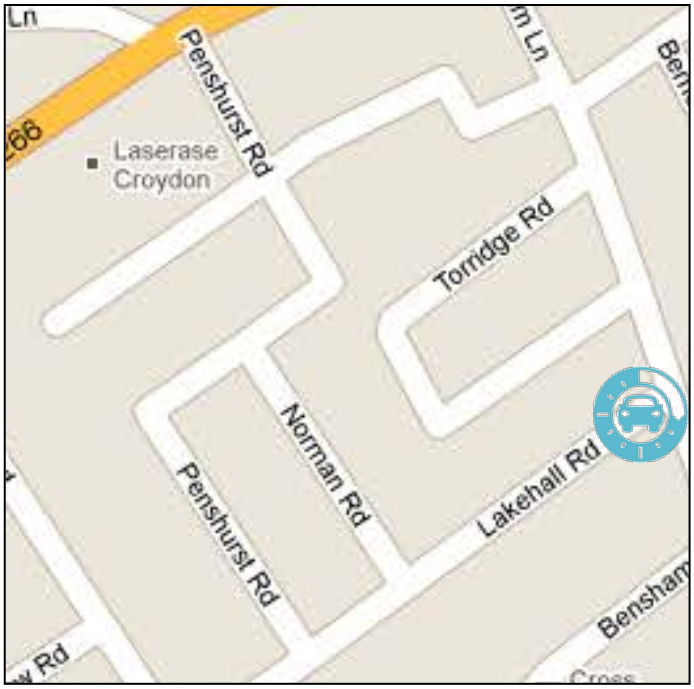


Figure B68 - Lakehall Road Audit Map

Malvern Road-H9
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 3
CPZ: No

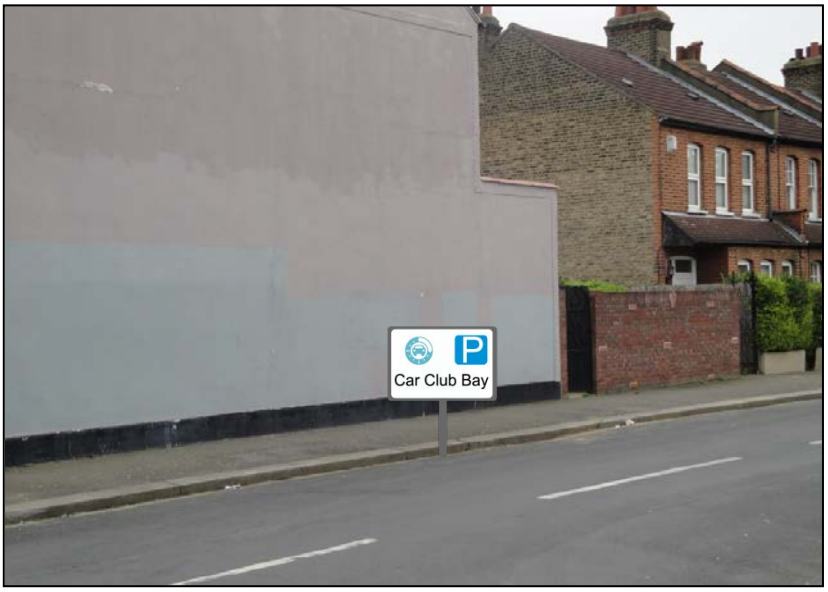


Figure B69 - Malvern Road

General Information:
The proposed bay location is surrounded by a completely residential area. The bay is located on a T-Bone section of the road. It is a neighborhood of single-family homes. Malvern Road branches off the main road, London. Road. At the time of the audit, the parking spaces on the street were roughly 60-70% filled. The only street clutter was trees and parked cars blocking the view of the bay. The location of the bay was over 300 meters down Malvern Road, so the traffic flow in the local area around the bay was very low. Pedestrian traffic was also very low. The street itself was very wide though. With double parking and two-way traffic, there was enough room for 4 cars to park side by side across the road, more than enough room to pull off a 3 point turn. The closest bus stop was on London Rd, roughly 300-400m away from the bay. The visibility of the car club bay was medium for the area. Traffic from all three roads of the intersection would be able to easily see the bay.

Safety of Location:
The location has good lighting. Street lamps are about 40 yards apart from each other. In addition, the bay is located on the first spot from the corner, and there is a flood light across the street. Overall the area is clean and well kept. However, there is no CCTV coverage or neighborhood watch. There are also some pubs on London Road, but they are far away and it would be unlikely for the pubs to pose a problem for the bay.

Surrounding Businesses:

1. Thornton Heath Evangelical Free Church

Pros	Cons
• Far from pubs • Center of residential area • Good lighting in area	• Can't be seen from main road • Low traffic flow

EVCP Compatible?

No

Additional Pictures:

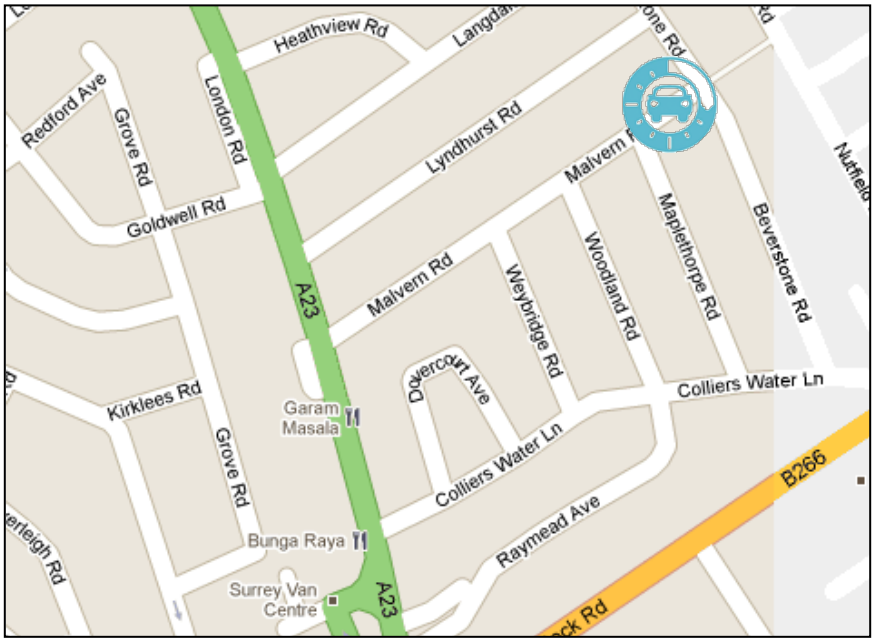


Figure B70 - Malvern Road Audit Map

Figure B71 - Malvern Road Image 2

Malcolm Road – K16
On Street
Done By: Calvin Lam & Adeola Otuyelu
Overall Rating (1-5): 2.9
CPZ: No

Figure B72 - Malcolm Road

General Information:
The area surrounding the proposed bay location is mostly residential. The street is right off the main road, Woodside Green, and is close to a 3-way intersection. Overall the road is wide being able to fit traffic going both ways with parking on both sides. At the time of the audit, traffic for cars and pedestrians was lower. However, it is important to note that it was raining out which may have affected the normal pedestrian flow. There was, however, medium car and bus traffic. Close to the bay location there are bus stops and the Blackhorse tram stop. This location is highly visible. There is also a district center down the road.

Safety of Location:
The lighting in the area was average. The bay is right underneath a streetlamp and the main road has flood lamps. There is no CCTV coverage, but the area looked clean and well kept. Residential homes looked like they were middle class. Nearby is a children's center/school, which may signify a safe area.

Surrounding Businesses:
1. Woodside Green Christian Center
2. Woodside Green Children's Center

Pros	Cons
• Good visibility • Close to district center	• Close to pubs • No CCTV coverage

EVCP Compatible?
No

Additional Pictures:

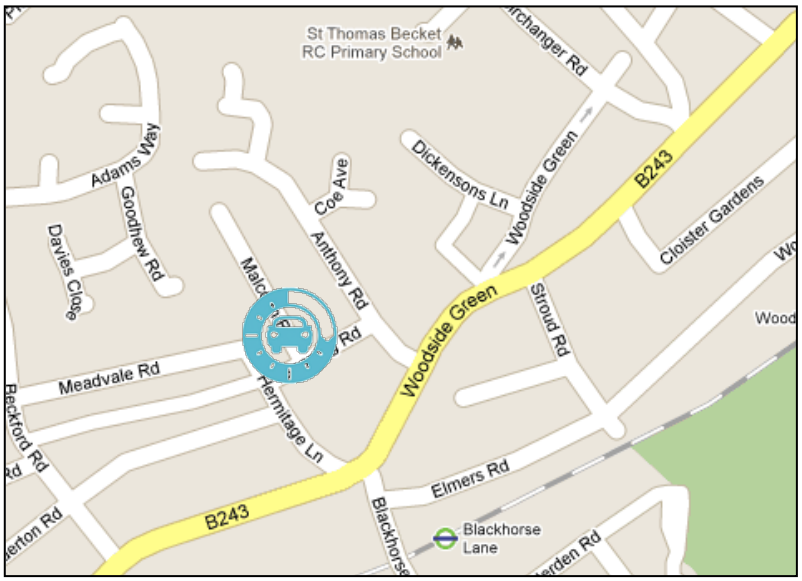


Figure B73 - Malcolm Road Audit Map

Figure B74 - Malcolm Road Image 2

St Mary's Road- G14
On street
Done By: Adeola Otuyelu and Rick Tombarelli
Overall Rating (1-5): 2.9
CPZ: No

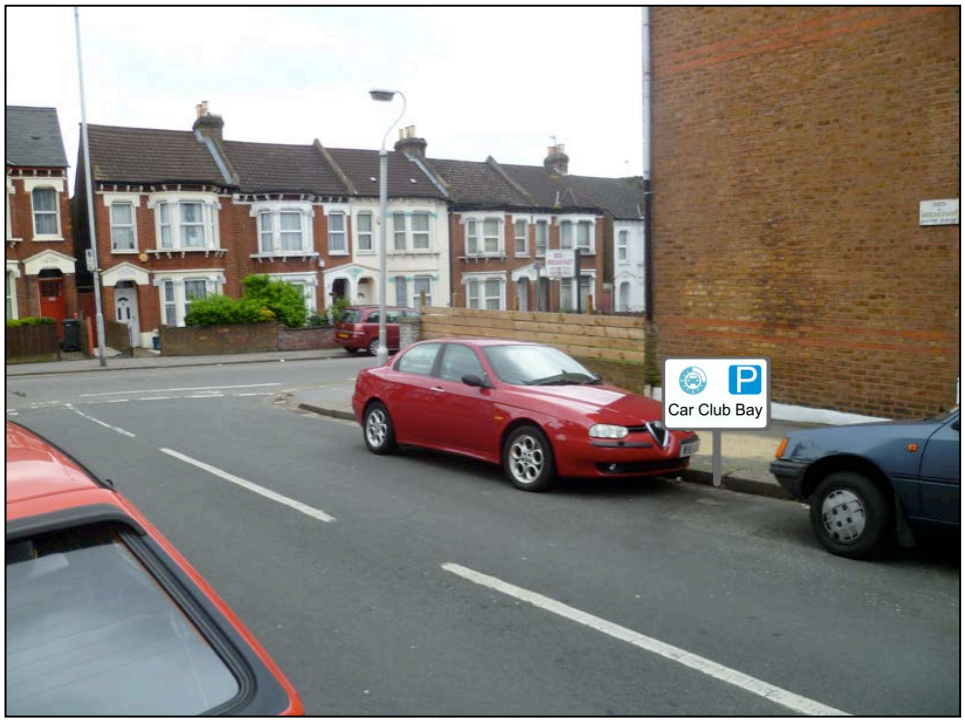


Figure B75 - St. Mary's Road

General Information:
The proposed bay location is directly off a main road in a predominantly residential area and a short walk from small shops. It is also right next to a Bed and Breakfast inn. The bay location is within a below average neighborhood (low income class). The bay is close to public transportation as there are bus stops within 100 meters going either way. The rate of pedestrian activity is low with only occasionally, people walk by and there is a medium level of traffic flow in the area although the street itself is very serene. It was noted at the time of audit that there was a very high parking occupancy level in the area; about 90% of the parking spots were filled. St Mary's road has a narrow width and with parking on both sides of the street only one small lane is free traffic flow.

Safety of Location:
There is flood light right above the spot and across the road. Flood lights continue all the way down the road so the lighting is very good. The bay location is very close to a busy street, which often has cameras and other security measures. There are some safety indicators such as traffic enforcement camera signs. There is also no evidence of vandalism at all. The area looks very clean and overall appearance is good.

Surrounding Businesses:
None

Pros	Cons
• Good visibility • High traffic flow • Good vehicle maneuverability • Clean area – no evidence of vandalism	• Safety of area is below average • Low commercial activity in area • Medium level of street clutter • Low pedestrian flow

EVCP Compatible?
No

Additional Pictures:

Figure B76 - St. Mary's Road Audit Map

Ashburton Road – M16
On Street
Done By: Calvin Lam & Adeola Otuyelu
Overall Rating (1-5): 2.8
CPZ: Yes

Figure B77 - Ashburnton Road

General Information:
The area surrounding the proposed bay location is comprised of even mix of residential and commercial buildings. Ashburton Road is a one-way road with parking on both sides, making it a wide road with high maneuverability. At the time of audit, 90% of spots were taken. There was a moderate amount of street clutter, with the main ones being the amount of parked cars and the trees on both sides. There was also a medium amount of vehicle traffic in the area, at the time of the audit. There are both tram and bus stops within 100 meters of the bay location. Most people probably stop farther along down the road though so pedestrian traffic is poor. The location of the car club bay is right on the corner of the two roads so there is high visibility for the car club bay.

Safety of Location:
There is strong lighting in the area. The bay is right underneath a main road flood light and there is a close streetlight across the street from the bay. This street is also a neighborhood watch; however, there is no CCTV coverage. There is also no evidence of vandalism in the area. Overall, the street and surrounding area is very clean.

Surrounding Businesses:

1. Kingsbury estate agents
2. Streets Ahead estate agents

Pros	Cons
• Clean, well-kept area • Brightly lit • No vandalism • Good road width • Neighborhood watch • Close to public transportation	• No CCTV coverage • Close to betting places • Low pedestrian flow

EVCP Compatible?

No

Additional Pictures:

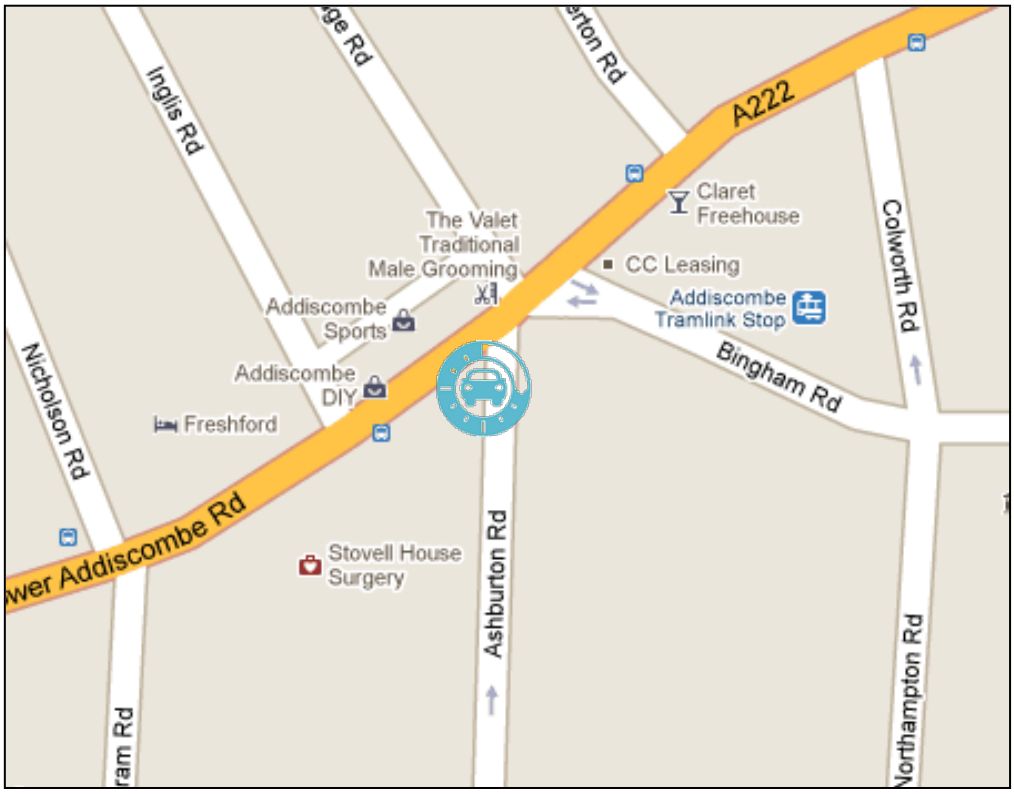


Figure B78 - Ashburnton Road Audit Map

Figure B79 - Ashburnt Road Image 2

Beckford Road – K15
On Street
Done By: Calvin Lam & Adeola Otuyelu
Overall Rating (1-5): 2.8
CPZ: No

Figure B80 - Beckford Road

General Information:
The area surrounding the proposed bay location is completely residential except for a small general store on a corner. The bay is located on a 4-way intersection. The main road, Woodside Green, is 3-4 streets away, following the street that the bay is on. At the time of audit, both car and pedestrian traffic flow was low; however, it was raining, so traffic from pedestrians was lower than expected. Also at the time of the audit, roughly half of all parking bays were taken up in the surrounding streets. Beckford Road is a bit like a main road, in that all residential houses reside on streets that branch off Beckford Road. It is a 2-way road with parking on only 1 side. As such, the street is very wide. Bus and tram stops are all within 400m distance from the bay. With the abundance of residential homes without private parking, the placement on a main branch off of the main road, and the only general store for many streets being on the corner, the bay location should be highly visible.

Safety of Location:
The lighting for this area was poor. The closest light source was a streetlamp across the street. The next closest was at the corner of the street. Luckily, it is in a neighborhood watch area, and the general store has a camera, although it doesn't point in the direction of the bay. There is also no evidence of vandalism in the area and there are no pubs or clubs nearby. Overall, it is a very clean and well-kept area.

Surrounding Businesses:
None

Pros	Cons
• Lots of residential homes that are paying for on-street parking • No pubs or clubs around	• No businesses • Bit of a walk to closest public transportation • Poor lighting

EVCP Compatible?
Yes. There is a feeder pillar box next to the bay.

Additional Pictures:

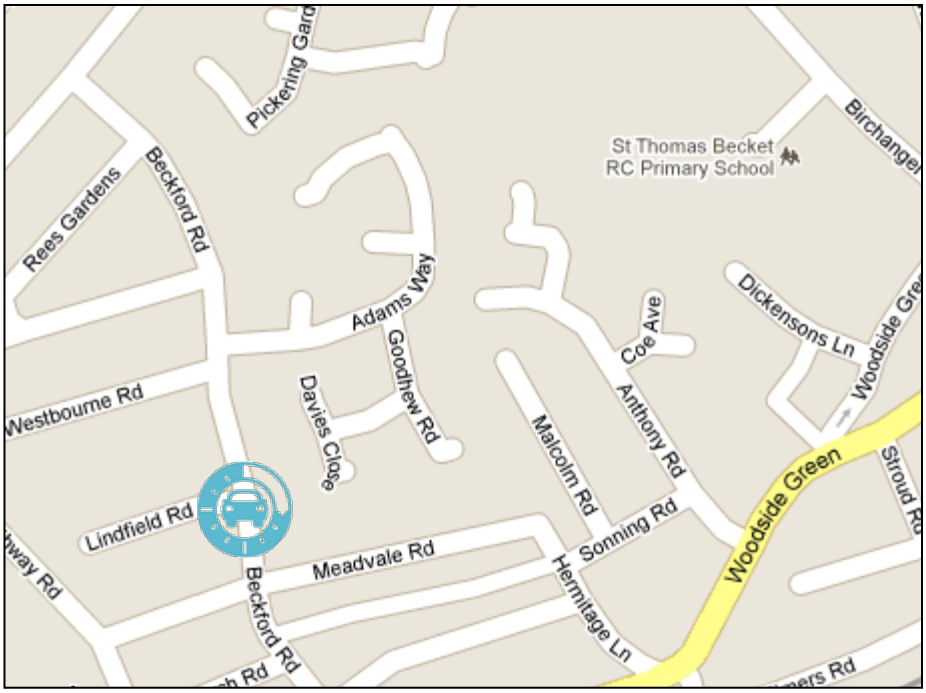


Figure B81 - Beckford Road Audit Map

Burlington Road – E12
On Street
Done By: Rick Tombarelli and Adeola Otuyelu
Overall Rating (1-5): 2.8
CPZ: No

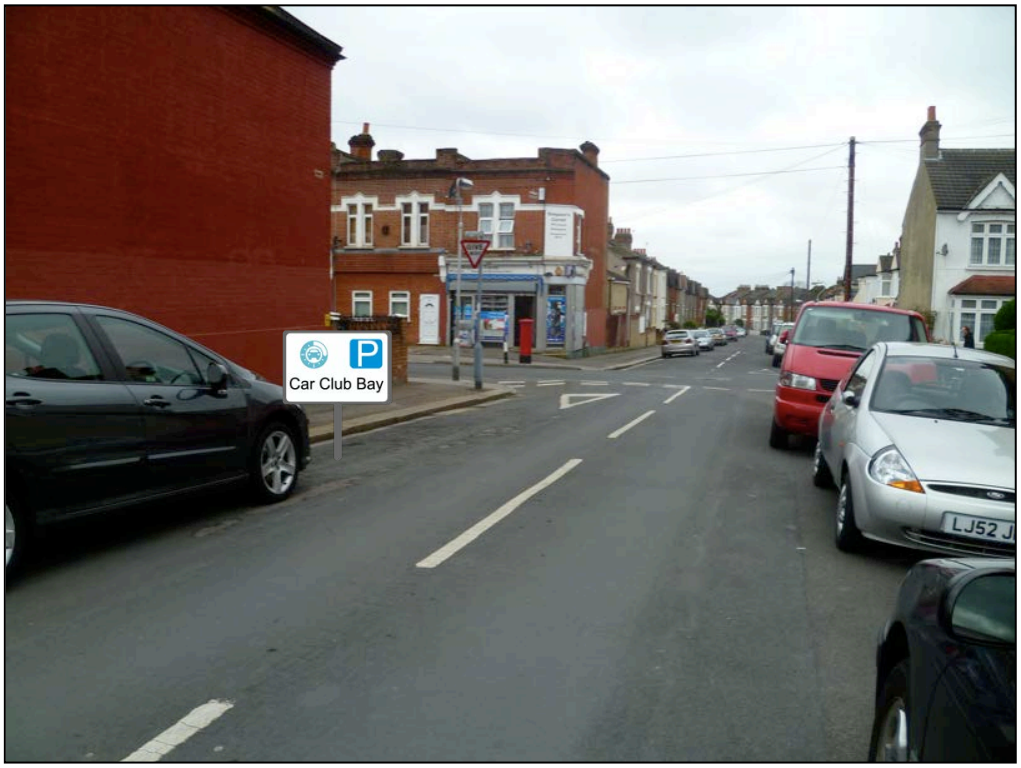


Figure B82 - Burlington Road

General Information:
The proposed bay location on Burlington Road is located right next the intersection with Howberry Road. Both roads are residential, with lots of densely packed houses and several apartment buildings. There is a convenience store on the corner with apartments above it. Burlington Road is of average width, and has lots of rooms for car club bay signs on a wall behind the bays. There is a bus stop within 200 meters of the parking bay location. The bay has great visibility from the intersection; however, both roads were not very busy at the time of the audit.

Safety of Location:
There is decent lighting on the road with a light nearby the bay location. Since the bay is located at an intersection, there is good visibility of the bays, making them safe. However, there is a small bit of graffiti on the wall. Overall, the area surrounding the bay location is clean.

Surrounding Businesses:
None

Pros	Cons
• Clean area • Good residential surroundings • Near public transportation	• No businesses • No neighborhood watch • No CCTV coverage

EVCP Compatible?
No

Additional Pictures:

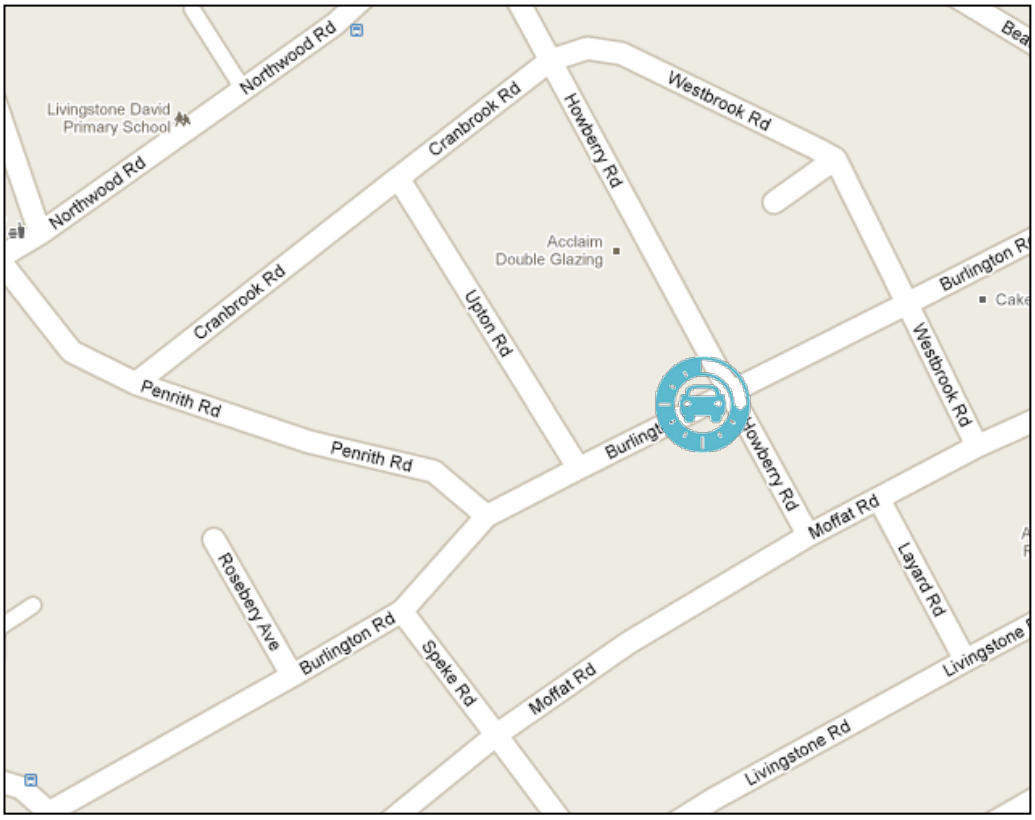


Figure B83 - Burlington Road Audit Map

Stuart Road – H11
On Street
Done By: Rick Tombarelli and Kevin Ducharme
Overall Rating (1-5): 2.75
CPZ: Yes

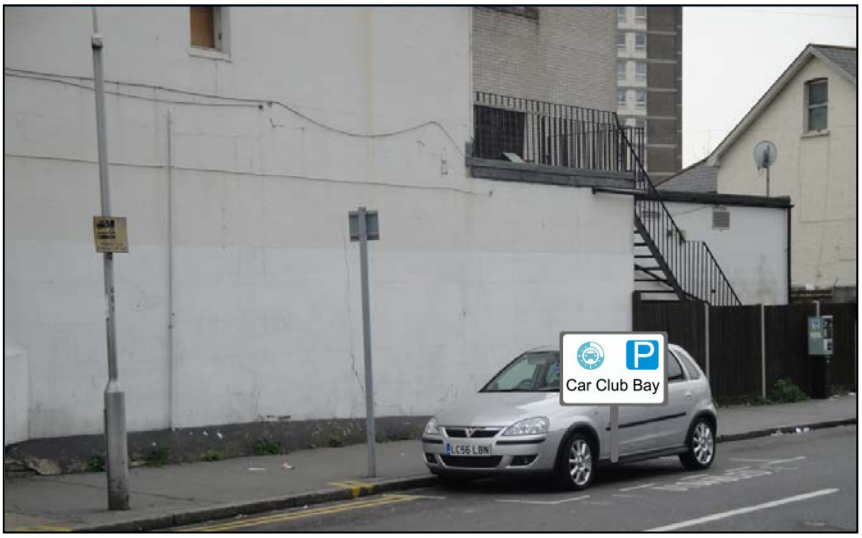


Figure B84 - Stuart Road

General Information:
The proposed bay location on Stuart Road is located directly off of the main road in the district center. Stuart Road is a residential road with single and multi-family homes, and is near many apartment buildings. The road is off of High Street, a busy road with many small businesses. The entrance to Stuart Road is directly across from a large Leisure Center.

Safety of Location:
The area had some graffiti and signs of vandalism, but much of the graffiti showed at least some effort to clean it. The area did not seem very clean, as there was a fair amount of litter in the road. The area had good lighting, but no CCTV coverage. There were also some pubs within a short walk of the location.

Surrounding Businesses:
1. Drummongs Mortgage/Loans/Real Estate
2. Townends
3. Offices Building
4. Gordon & Keenes Estate Agents

Pros	Cons
• Near district center • Lots of residential surroundings • Near leisure center	• Not very clean • Near pubs • No CCTV coverage

EVCP Compatible?
No

Additional Pictures:

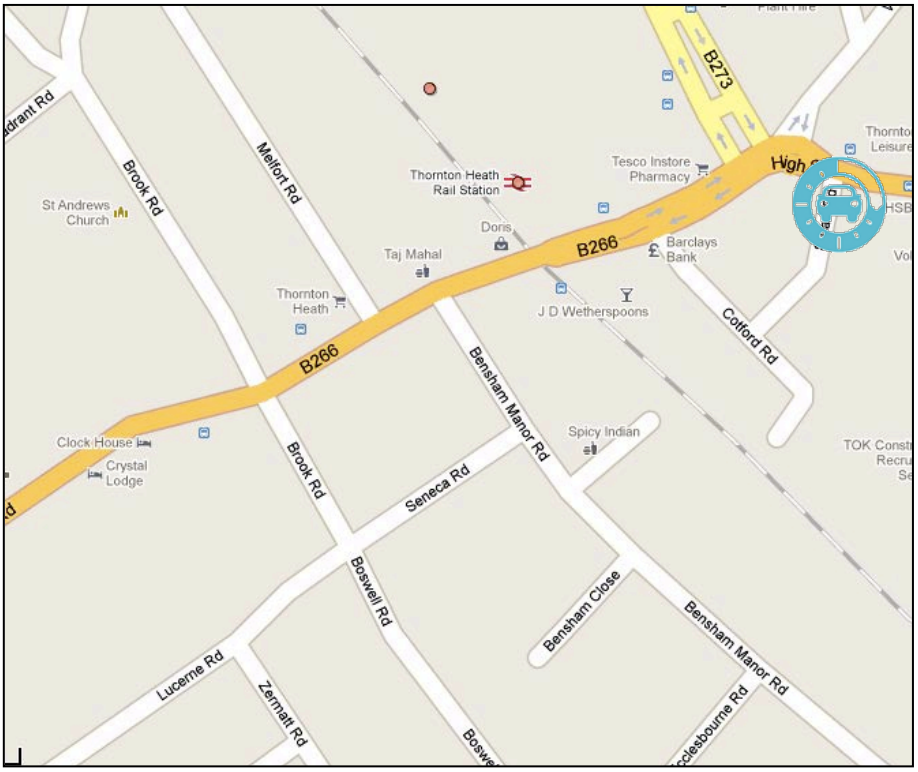


Figure B85 - Stuart Road Audit Map


Figure B86 - Stuart Road Image 2

Figure B87 - Stuart Road Image 3

Lonesdale Road G17
On Street
Done By: Rick Tombarelli and Kevin Ducharme
Overall Rating (1-5): 2.75
CPZ: No

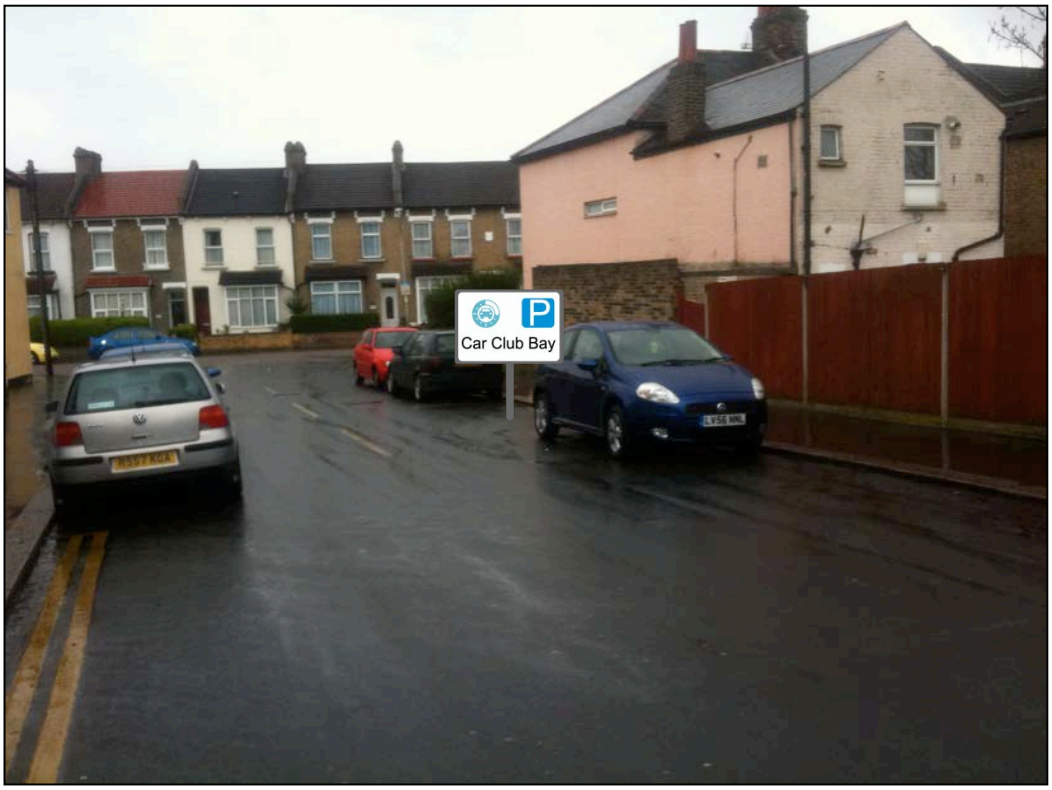


Figure B88 - Lonesdale Road

General Information:
The proposed bay location on Lonesdale Road is located in a mostly residential area. The bays are surrounded by single and multi-family homes that are closely packed. There is a convenience store right next to the bay location. Lonesdale Road is a fairly quiet road and is about a 5-minute walk from Portland Road where there are some small businesses. The closest bus stop to the parking bays is roughly 400 meters away. The overall road width is average. When there is parking on both sides of the road two-way traffic can fit down the road, however, it is a tight fit.

Safety of Location:
Lonesdale Road and the surrounding area have good lighting. There is no evidence of vandalism and there are no pubs or clubs in the area. Overall the area is very clean and well kept.

Surrounding Businesses:
None

Pros	Cons
• Clean, well-kept area • Good residential surroundings • Good lighting • Decently wide road	• Lack of businesses nearby • Closest bus stop is pretty far away

EVCP Compatible?
No

Additional Pictures:

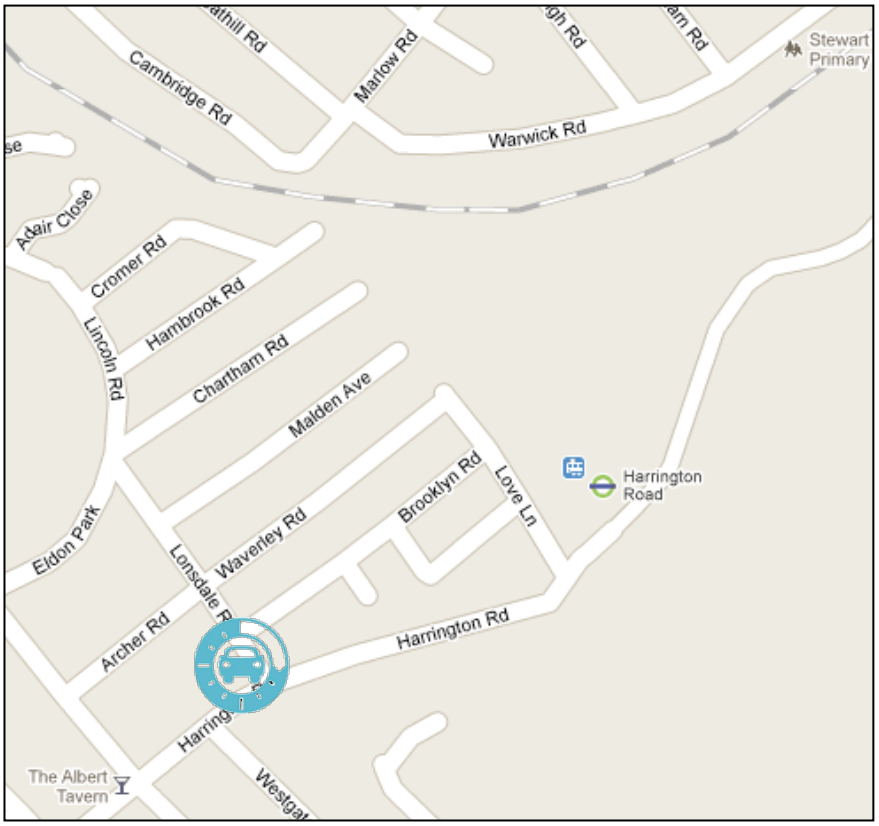


Figure B89 - Lonesdale Road Audit Map

Buller Road – F12
On Street
Done By: Adeola Otuyelu and Rick Tombarelli
Overall Rating (1-5): 2.75
CPZ: No

Figure B90 - Buller Road

General Information:
This proposed bay is located two streets away from the main road in a predominantly residential area. It is within a fairly nice neighborhood (medium income class). The closest means of public transportation is about 250m away from the bay location. At the time of the audit there was very low pedestrian activity in the area around the bay location, hardly anyone walked by, as well as a low level of traffic flow in the area. Hence, the visibility of the bay would be average. It was noted at the time of audit that there was an average parking occupancy level in the area; almost half of the spots were taken. Buller road has an average width and with double parking leaves a wide lane for traffic flow.

Safety of Location:
There is a flood light close to the proposed bay and some lights down the road therefore lighting is average. There is no neighborhood watch or CCTV coverage in the area. However, there is no evidence of vandalism. Overall the area is clean and well kept.

Surrounding Businesses:
None

Pros	Cons
• Low level of street clutter – plenty of room for signs • Decent bay visibility • Clean area • No evidence of vandalism	• Low pedestrian flow • Low traffic flow • Completely residential – no businesses • Public transportation not easily accessible

EVCP Compatible?
Yes. There is a feeder pillar box next to the bay.

Additional Pictures:

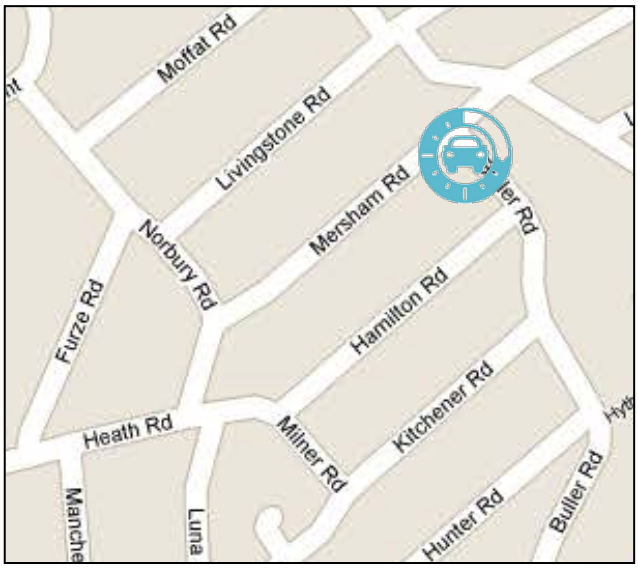


Figure B91 - Buller Road Audit Map

Harrington Road – H17
On Street
Done By: Calvin Lam and Rick Tombarelli
Overall Rating (1-5): 2.7
CPZ: Yes

Figure B92 - Harrington Road

General Information:
The proposed bay location is located on a road leading to the main road. The area consists of a good mix of commercial activity and residential area. Cleanliness and overall appearance of the neighborhood is very good. At the time of the audit there was medium traffic flow as it is close to the main road and a gas station. Also at the time of the audit there was medium pedestrian flow because there are shops nearby. There are many bus stops along the main road within 100 meters of the bay location. Visibility of the bay location is good because it is along the main road. It was noted, at the time of audit, that there was a medium parking occupancy level in the area.

Safety of Location:
There are lights on alternative sides of the street about 50 meters apart from each other, hence the lighting is average. There are houses on either side of the location so there are possibly some security measures. However, no CCTV coverage or neighborhood watch signs were found. There are no safety indicators and location is within high proximity of a gas station and some stores. Only small amounts of

graffiti were found on a nearby trash dumpster and door. The area looks clean and overall appearance is very good.

Surrounding Businesses:

1. There are some restaurants that may use a car club.

Pros	Cons
• Good residential/commercial mix • Clean and safe area • Close to public transportation • High visibility • Good lighting	• Narrow road • Surrounding businesses not optimal • No CCTV coverage • No neighborhood watch • Small amounts of vandalism evident

EVCP Compatible?

Yes. There is a feeder pillar box next to the bay.

Additional Pictures:

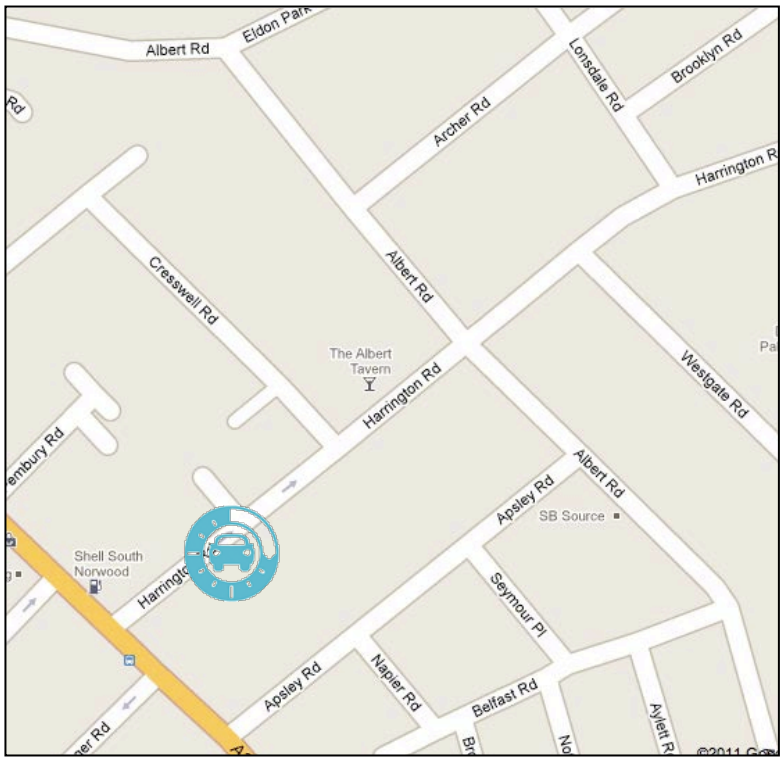


Figure B93 - Harrington Road Audit Map

Hartley Road- K11
On Street
Done By: Calvin Lam and Adeola Otuyelu
Overall Rating (1-5): 2.7
CPZ: Yes

Figure B94 - Hartley Road

General Information:
This proposed bay location is located two streets away from the main road but it is adjacent to a semi- busy road in a predominantly residential area. It is within a considerably nice neighborhood (low - medium income class). There are both bus stops and a tram station within 400 meters of the bay location. At the time of the audit there was very low pedestrian activity with only people walking by occasionally, as well as a low level of traffic flow in the area. It was noted at the time of audit that there was a very high parking occupancy level in the area; in fact 100% of the parking was occupied. Hartley road has a narrow width and with double parking leaves only one lane for traffic flow. This will make maneuverability in and out of the bay poor.

Safety of Location:
There is a flood right above the spot and although there are a few lamps on the road, the lighting is considered to be poor. There is no CCTV coverage in the area or neighborhood watch. However, there are also no pubs or clubs nearby. There is a little evidence of graffiti on the wall and a broken window right across the street. There is also a lot of litter on the ground and trash left on the side of the road. The overall appearance and cleanliness of the area is below average.

Surrounding Businesses:
None

Pros	Cons
• No pubs or clubs nearby • Close to public transportation • Light directly over bay	• Narrow road • Medium to low pedestrian flow • No businesses in area • Poor vehicle maneuverability • Overall poor lighting in area • Low safety rating • Low traffic flow • Poor bay visibility

EVCP Compatible?
No

Additional Pictures:

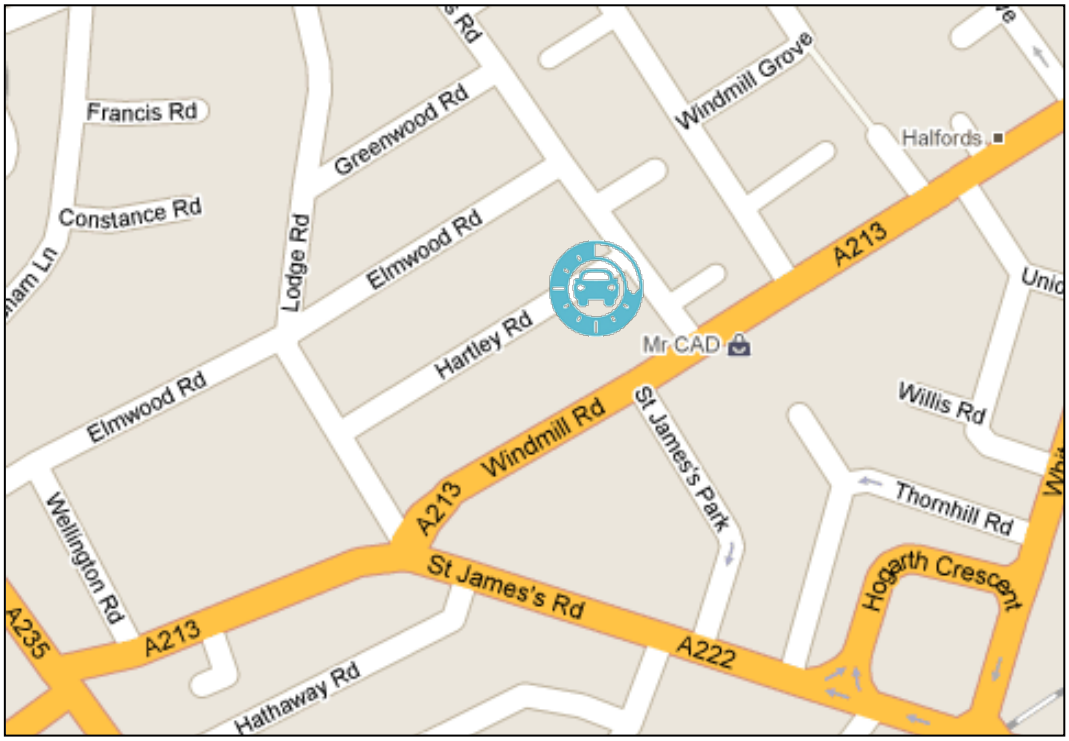


Figure B95 - Hartley Road Audit Map

Figure B96 - Hartley Road Image 2

Frant Road – I9
On Street
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 2.7
CPZ: No

Figure B97 - Frant Road

General Information:
The proposed bay location is directly off Brigstock Road, which is the main road in the area. It is surrounded by single-family homes and down the street from a district center. Some of the homes have driveways; however, most of them are paying for on street parking. Since Brigstock Road is a major road there are a lot of cars and people going by the site. The high traffic flow and a big wall to put promotional material on is optimal view ability for the bay. Also being next to the main road means there are lots of bus stops near and around the bay location. One downside to Frant Road is that it is very narrow. There is parking on both sides of the street and only one car can fit down it at a time, even though it is a two-lane road. At the time of the audit, 11:45am, almost all of the parking spots were taken up. Being a narrow road also means maneuverability for the car would be minimal.

Safety of Location:
The lighting around the bay location is very good. A light is directly next to the location and other lights are spaced around 30 yards apart along the road. There is no CCTV coverage in the area and there are Pubs along London Road. However, there is only a little bit of graffiti on the wall next to the bay and only small amounts of litter on the street. Overall the area seemed pretty clean.

Surrounding Businesses:

1. The Potters House Christian Church
2. AMH Estate Agents
3. Croydon University Hospital – a little way down London Road

Pros	Cons
• Next to main road. • Good lighting. • Houses around area are paying for on-street parking. • Big wall for promotional material.	• No CCTV. • Pubs on London Road. • Graffiti on wall next to location. • Very narrow road.

EVCP Compatible?

No

Additional Pictures:

Figure B98 - Frant Road Audit Map

Wiltshire Road – G9
On Street
Done By: Kevin Ducharme and Calvin Lam
Overall Rating (1-5): 2.7
CPZ: No

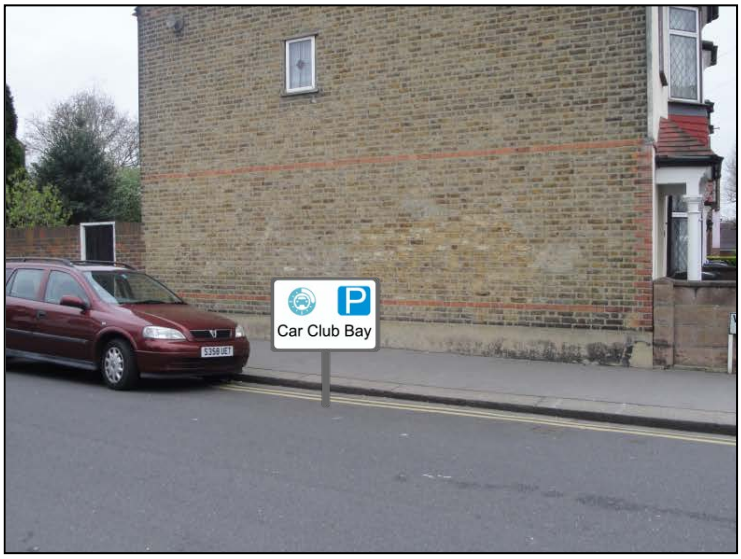


Figure B99 - Wiltshire Road

General Information:
Wiltshire Road is located a couple streets away from London Road, which is the main road in the area. London Road is where the closest bus stops are. The proposed bay location is completely surrounded by single-family homes, all of who are paying for on-street parking. At the time of the audit, 10:25am, there was only about 60% to 70% of parking taken up in the area. There is a big wall to put sings on next to the bay, which can be seen in the picture above, but there were also a lot of real estate signs throughout the adjacent streets. Overall the street was an average width, being a two-lane road with parking on both sides. However, if there are vehicles parked on both sides one cannot do a three-point turn. The adjacent traffic flow is decent with a good number of cars driving by but not many people walking by the location.

Safety of Location:
There is a light right next to the bay; however, all of the other lights are spaced roughly 60 yards apart. There are pubs on London Road, but the bay location is far enough away from London Road that it should not make a difference. There is no CCTV coverage in the area; however, there is a neighborhood watch. Small amounts of graffiti are on the wall next to the bay and there is trash on the surrounding streets.

Surrounding Businesses:
None

Pros	Cons
• Residents are paying for on-street parking. • No pubs or clubs. • Neighborhood watch. • Light right next to location. • Good traffic flow.	• No CCTV. • Graffiti near site. • No people walking by. • No businesses. • Trash in surrounding streets.

EVCP Compatible?
Yes. There is a feeder pillar right across the street.

Additional Pictures:

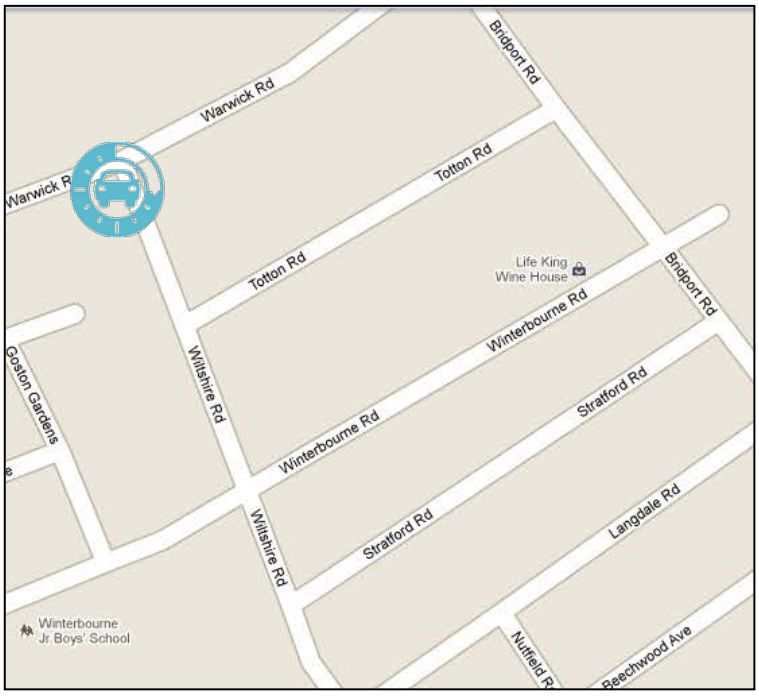


Figure B100 - Wiltshire Road Audit Map

Figure B101 - Wiltshire Road Image 2

Figure B102 - Feeder Pillar Next to Wiltshire Road Bay

Lebanon Road – M14
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 2.6
CPZ: Yes

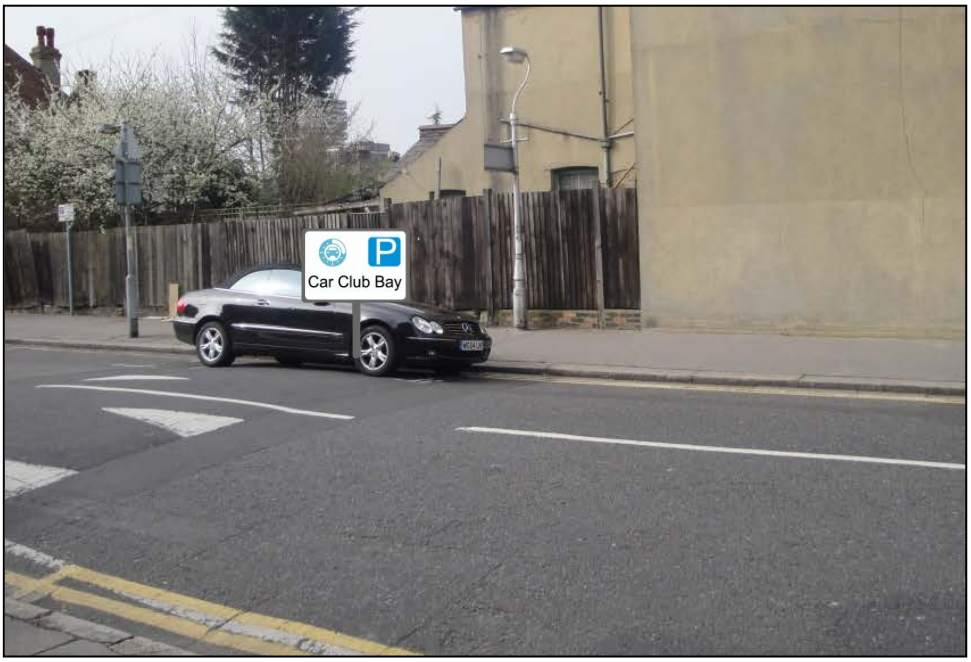


Figure B103 - Lebanon Road

General Information:
The area surrounding the proposed bay location is mostly residential area. Leslie Road connects to Lebanon Rd, and Leslie exits to Lower Addiscombe and Cherry Orchard. At the time of audit, the area was moderately populated with private cars. The street was also moderately cluttered with the pub, a papa john's delivery car, realtor signs, an automobile repair shop and a construction company office. If a bay were to be added here, signs leading to the bay would be necessary from the main road, but once you are on Leslie, the bay would be visible within a few minutes of walking. At the time of audit, traffic was very low, but assuming during peak business hours, traffic would probably be medium. The road is of an average width. With parking on both sides, it may be cutting it close for vehicle maneuverability. At least, at the entrance of the road, which is the ideal location of the car club bay, parking is only on one side of the road. This location is also close to 3 – 4 bus stops, all within 100m. Also with vehicle traffic as stated above, pedestrian traffic will probably be better during the end of the day.

Safety of Location:
There is pretty good lighting in the area. There are 2 big flood lights nearby and 1 smaller streetlamp right above the car club bay. There is no CCTV coverage and as there is a pub located right across the street, this area is not the safest of area.

However, there was no vandalism evident in the area. Overall, this street and area is very clean.

Surrounding Businesses:

1. Graybank Construction

Pros	Cons
• Clean area • Good lighting • No vandalism • Close to main road	• Right across the street from a pub • No CCTV coverage

EVCP Compatible?

No

Additional Pictures:

Figure B104 - Lebanon Road Audit Map

Figure B105 - Lebanon Road Image 2

Cambell Road- K9
On Street
Done By: Calvin Lam & Adeola Otuyelu
Overall Rating (1-5): 2.5
CPZ: Yes

Figure 106 - Cambell Road

General Information:
The proposed bay location is located directly right off the corner of a main road (London road) in a predominantly residential area and right next to a Church and City House/ Edison court apartment buildings. It is within an average neighborhood (low- medium income class). There are multiple bus stops going in both directions within 100 meters of the bay location. At the time of the audit the rate of pedestrian activity was average as there was a fair amount of shops on either direction of the main road. Also at the time of the audit there was a high level of traffic flow on the main road although the street itself is not busy. It was noted at the time of audit that the parking occupancy level was average– almost 50% and it has only one-sided parking. Cambell road is very wide because of the one-sided parking scheme.

Safety of Location:
There are two street lamps around it and lighting continues all the way down the road so the lighting is very good. The bay location is within proximity to a busy street, which may have security cameras and other security measures. There are cameras on the apartment buildings as well. There is no evidence of vandalism at all. The area looks a bit dirty and the ground was littered. Overall the general appearance and cleanliness of the area is average.

Surrounding Businesses
None

Pros	Cons
• Low level of street clutter – only a few signs • Wide road • High vehicle maneuverability • Close to bus stops • High pedestrian and traffic flow • Good bay visibility • No evidence of vandalism	• Completely residential – no businesses • Safety of area is only average • Overall appearance of area below average

EVCP Compatible?
Yes. There is a feeder pillar near the proposed bay location.

Additional Pictures:

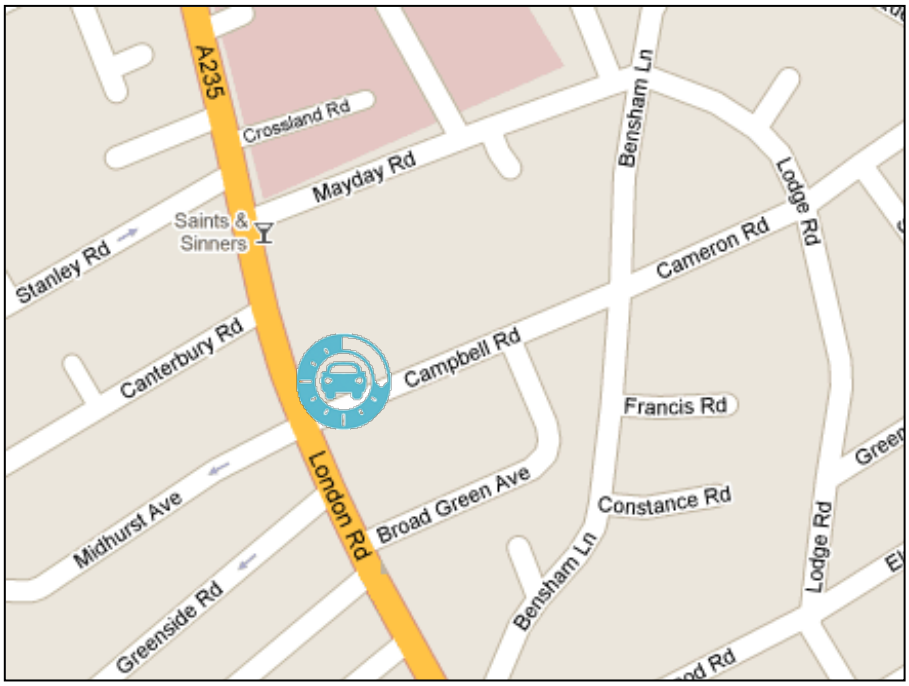


Figure 107 - Cambell Road Audit Map

Canning Road – M14
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 2.5
CPZ: Yes

Figure 108 - Canning Road

General Information:
The area surrounding the proposed bay location is a mix of residential and commercial buildings. The bay location is the first bay on the street, and the road is right off of Lower Addiscombe Road. At the time of the audit, the road was nearly filled with private vehicles, and parking is permitted on both sides of the road. There is minor street clutter on Canning Rd, apart from the number of cars, but on Lower Addiscombe Road have a whole lot of commercial stores. At the time of the audit, vehicle and bicycle traffic was very high. Canning Rd is also a two way road with two lanes, but realistically, only one car can pass through at a time if both sides of the road are full of parked cars. The individual parking bays are long enough for the average car, but turning space is tight. This location is located right next to a bus stop. This results in a moderate amount of pedestrian traffic. Visibility of the parking bay is very high because it is right off of the main road, Lower Addiscombe Road.

Safety of Location:
The area surrounding the bay location is very safe. There are 2 flood lamps due to the main street, and the parking bay has 1 streetlamp right above it. This street is a neighborhood watch area, and although there are no signs signifying CCTV coverage, the stores on Lower Addiscombe Road all have CCTV coverage, which may provide some coverage for Canning Road. There is no evidence of vandalism in the area but there is a pub a couple blocks away. Overall, the area is very clean. However, there is some moderate noise pollution from the main road.

Surrounding Businesses:

1. D.A. Lindsay & Sons Funeral Directors

Pros	Cons
• Clean area • Mix of residential/commercial • Good lighting • Good bay visibility • No evidence of vandalism	• Close to pub • No CCTV coverage • Narrow road – limited maneuverability

EVCP Compatible?
No

Additional Pictures:

Figure 109 - Canning Road Audit Map


Figure 110 - Canning Road Image 2

Dornton Road – R13
On Street
Done By: Adeola Otuyelu and Rick Tombarelli
Overall Rating (1-5): 2.5
CPZ: Yes

Figure B111 - Dornton Road

General Information:
The proposed bay location is located directly off a main road in a predominantly residential area consisting of some apartment buildings and private houses. It is within a considerably nice neighborhood (upper income class) with mostly retired people and nursing homes. There are two bus stops less than 100 meters away from the bay location as well as a train station within 100 meters to 400 meters of the bay. At the time of the audit, there was very low pedestrian activity, as well as a medium level of traffic flow in the area. It was noted at the time of audit that there was a very low parking occupancy level in the area, only about 10%. It was also noted that a good portion of the houses in the area were up for sale. Dornton road has an average width and with double parking leaves only a single lane for traffic flow.

Safety of Location:
There is a flood right above it and it continues all the way down the road so the lighting in the area is very good. There is no CCTV coverage of a neighborhood watch, however, it seems like it is a relatively safe neighborhood. There is also no sign of vandalism in the area and there are no pubs or clubs nearby. Overall the area is very clean and has a good appearance.

Surrounding Businesses:
None

Pros	Cons
• Clean and safe area • No pubs or clubs • Good lighting • Good bay visibility • No evidence of vandalism	• Low pedestrian flow • No commercial activity • Average road width • No CCTV coverage • No neighborhood watch

EVCP Compatible?
Yes. There is a feeder pillar next to the bay location.

Additional Pictures:

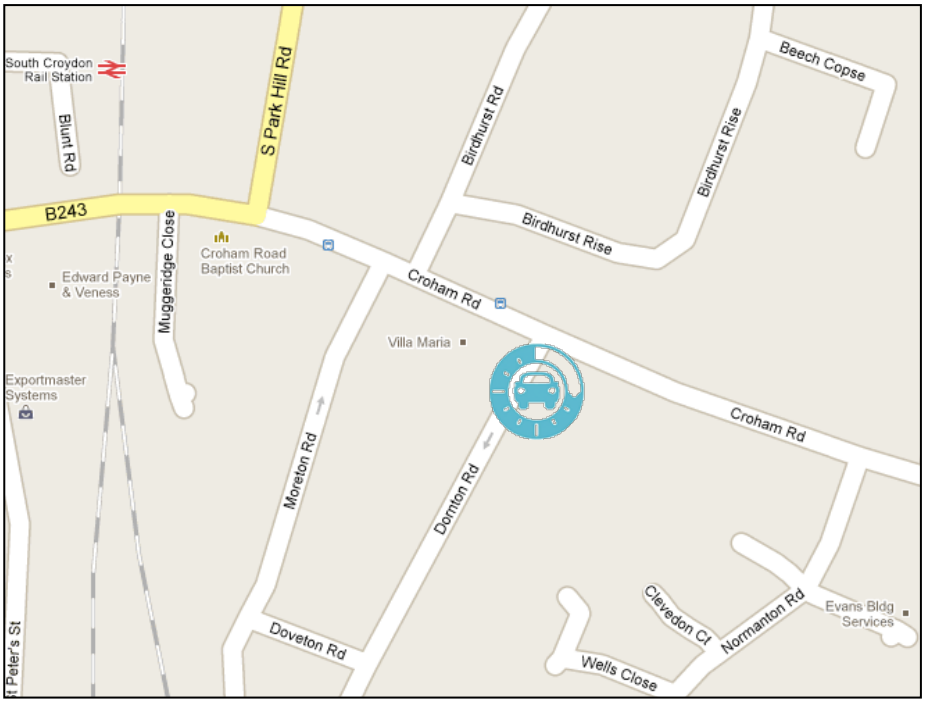


Figure B112 - Dorton Road Audit Map

Thornhill Road- L11
On street
Done By: Adeola Otuyelu and Calvin Lam
Overall Rating (1-5): 2.5
CPZ: Yes

Figure B113 - Thornhill Road

General Information:
The proposed bay location is located directly off a main road in a predominantly residential area and right opposite the Croydon and district Masonic hall. The main road divides from two-way traffic to a one- way intersection. It is within a considerably nice neighborhood (medium income class). There is a bus stop within 100 meters of the bay location, as well as a tram stop between 100 meters to 400 meters away. At the time of the audit, the rate of pedestrian activity was average and there was a high level of traffic flow in the area although the street itself is very serene. It was noted at the time of audit that there was a very low parking occupancy level in the area, almost 10%. Thornhill road has an average width and with double parking leaves two very small lanes for traffic flow.

Safety of Location:
There is flood light right above the bay location and across the road. Flood lights continue all the way down the road so the lighting is very good. The bay is close to a busy street which often has cameras and other security measures. However, there is no CCTV or safety indicator in the area but there is a neighborhood watch. There is no evidence of vandalism at all in the area and there are no pubs or clubs around. Overall the area is very clean and has a good appearance.

Surrounding Businesses:
None

Pros	Cons
• Low level of street clutter – plenty of room for signs • High vehicle maneuverability • Close to bus stop and tram station • High traffic flow • High resident flow • Good lighting • Clean area • No evidence of vandalism • Neighborhood watch	• Completely residential area - no businesses • No CCTV coverage

EVCP Compatible?
No

Additional Pictures:

Figure B114 - Thornhill Road Audit Map

Figure B115 - Thornhill Road Image 2

Lonsdale Gardens – H7
On Street
Done By: Kevin Ducharme and Calvin Lam
Overall Rating (1-5): 2.5
CPZ: No

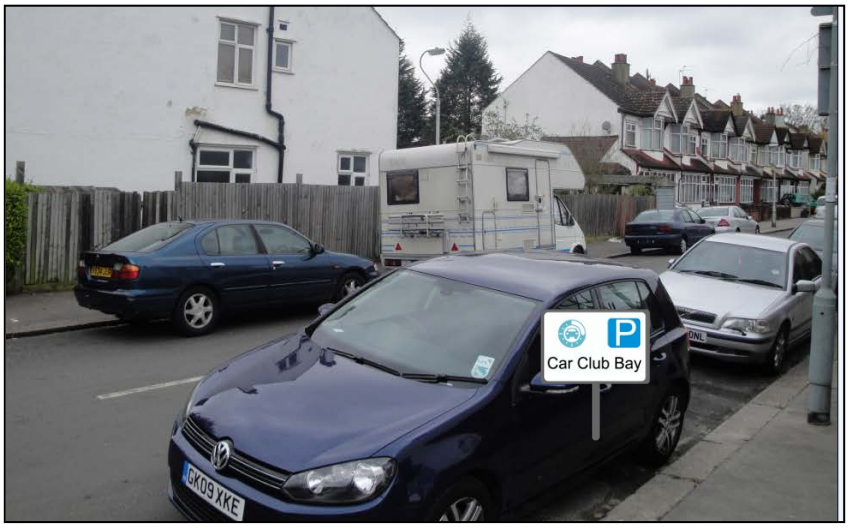


Figure B116 - Lonsdale Gardens

General Information:
Lonsdale Gardens is located directly off of Galpin's Road, which leads to London Road. Galpin's Road has many bus stops along it. The proposed bay location is completely surrounded by single family homes, most of whom have driveways they park in. At the time of the audit, 11:05am, there was only about 40% to 50% of parking taken up in the area. There is a small fence to put sings on next to the bay, which can be seen in the picture above, however, if a car is parked in the spot it may be difficult to see the signs or posters. Overall the street is very narrow, being a two lane road with parking on both sides. If there are vehicles parked on both sides two cars cannot drive down the street simultaneously and there is no way to do a three point turn. The adjacent traffic flow is decent with a good number of cars and people going by the location, this is probably because of the number of bus stops within the area on Galpin's Street.

Safety of Location:
The lighting around the bay location is good. There is a light right over the bay and flood lights are around the area. There are pubs on London Road, but the bay location is far enough away from London Road that it should not make a difference. There is no CCTV coverage in the area; however, there is a neighborhood watch. Overall the area is pretty clean with only minimal amounts of trash on the streets and there is no vandalism evident.

Surrounding Businesses:
None

Pros	Cons
• No pubs or clubs. • Neighborhood watch. • Light right next to location • Near many bus stops. • Good number of people and cars going by.	• No CCTV • Residents have private drive ways. • No businesses. • Car could block a sign or poster that is put up on fence. • Very narrow street.

EVCP Compatible?
No

Additional Pictures:

Figure B117 - Lonsdale Gardens Audit Map


Figure B118 - Lonsdale Gardens Image 2

Saxon Road – I12
On Street
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 2.5
CPZ: No

Figure B119 - Saxon Road

General Information:
The proposed bay location is directly off White Horse Road, which is the main road in the area. It is surrounded by single-family homes and is in the center of a small district area. All of the homes in the area are paying for on street parking. Since White Horse Road is a major road, at the time of the audit, there were a lot of cars and people going by the site. The high traffic flow is optimal view ability for the bay. However, there is not much wall space to put big promotional material because the bay would be directly in front of a house. Also being next to the main road means there are lots of bus stops near and around the bay location. Overall the road width is average and has parking on both sides of the street. At the time of the audit, 3:15pm, almost all of the parking spots were taken up. If somebody needed to do a 3-point turn it can be done on the road but would be slightly difficult.

Safety of Location:
The lighting around the bay location is very good. A light is directly next to the location and other lights are spaced around 40 yards apart along the road. There is no CCTV coverage in the area and there are Pubs in the surrounding area. However, there is a little bit of graffiti on the wall next to the bay. Overall the area is in decent condition. There is basic street liter around the bay location but some of the houses did not seem to be maintained well.

Surrounding Businesses:

1. Pawsons Road Baptist Church
2. Miller Estate Agents

Pros	Cons
• Next to main road. • Good lighting. • Houses around area are paying for on-street parking.	• No CCTV. • Pubs in surrounding area. • Graffiti on wall next to location. • Area not very clean – some houses not maintain very well. • No big wall area for promotional material – right in front of a house. • No big businesses in area – has some small ones though.

EVCP Compatible?
No

Additional Pictures:

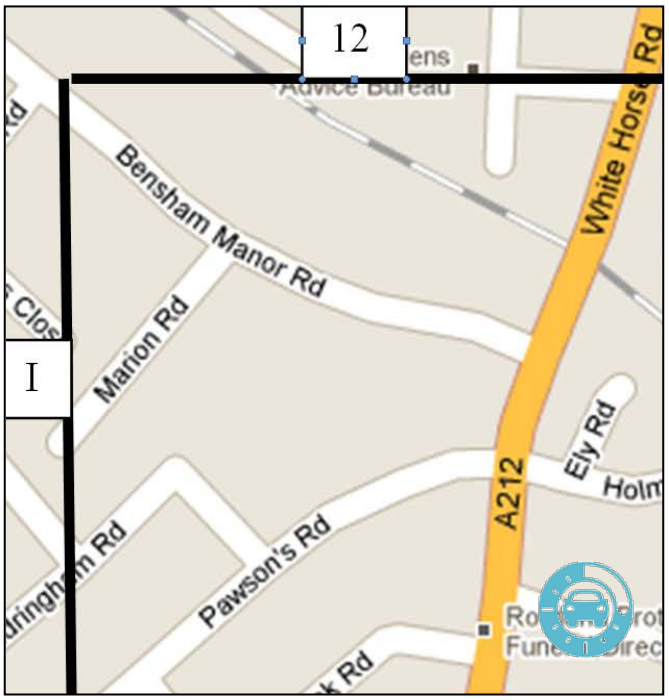


Figure B120 - Saxon Road Audit Map

Warwick Road – G8
On Street
Done By: Calvin Lam & Kevin Ducharme
Overall Rating (1-5): 2.5
CPZ: No

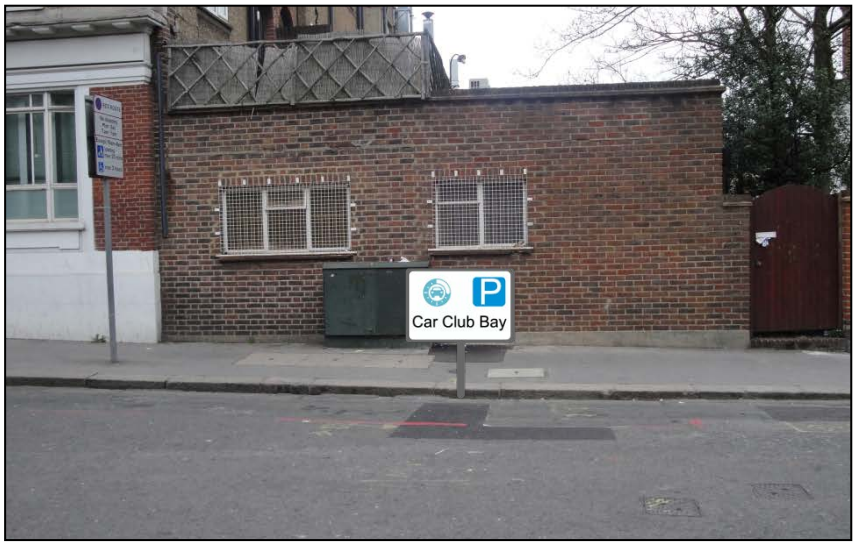


Figure B121 - Warwick Road Map

General Information:
The area surrounding the proposed bay location is a mix of residential and commercial buildings. It is right off of London Road, which is the main road in the area. The area on London Road can be considered a district center. At the time of audit, roughly half of the parking spots in the area were taken up by parked private vehicles. The only street clutter in the area was the shop fronts. At the time of the audit the traffic on the main road was very high, with buses, trucks, vans and cars driving back and forth. The width of Warwick Road was also very wide, with parking on both sides and two way traffic, there was still enough room for two cars to drive by. This also allows for high maneuverability for cars on the road. There are bus stops up and down London Road. At the time of audit, there was a medium to high amount of people walking down the road. Perhaps if the day was not as cloudy and windy, there would be more people walking on the sidewalks. The visibility of the car club bay is very high as it is right off such a busy main road.

Safety of Location:
The lighting in the area was good. There are flood lamps on the main road and streetlights illuminating the area every 55-60 ft. However, there was no CCTV or neighborhood watch in place to protect the area. There was a church nearby, but there was also a betting store nearby. There were no pubs or clubs located nearby. The street was also pretty dirty, with trash littering the gutters of the streets, the sidewalks and private yards.

Surrounding Businesses

1. Parish Church of Saint Stephens
2. Dickson Residential Estate Agents

Pros	Cons
• High bay visibility • No pubs or clubs nearby • Near a church • Good lighting • Wide road	• Close to betting shop • No neighborhood watch • No CCTV coverage • Dirty area

EVCP Compatible?

No

Additional Pictures:

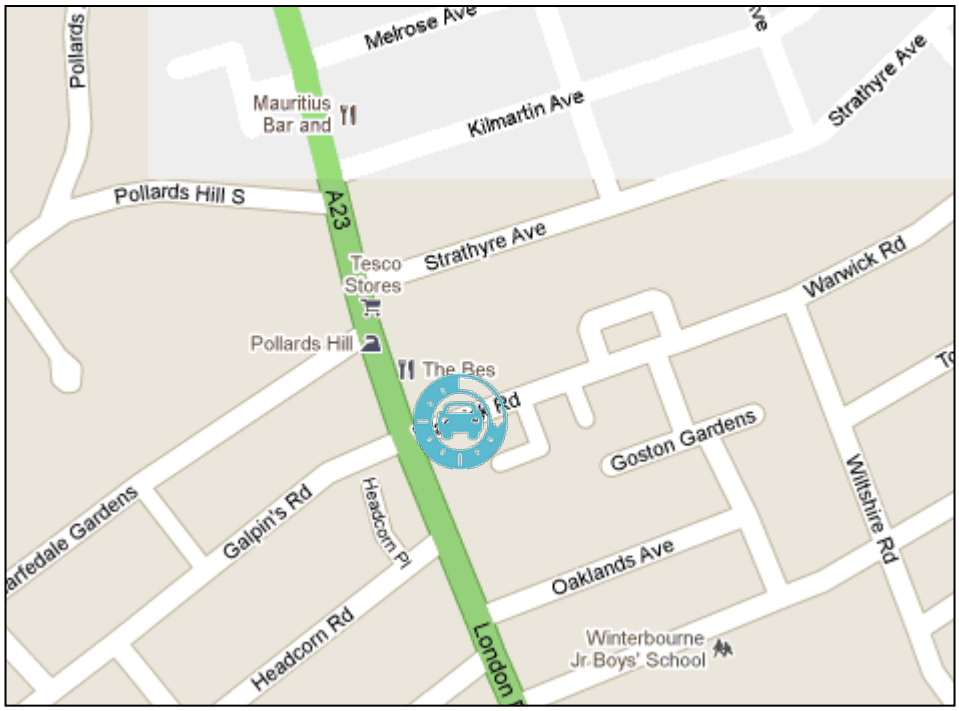


Figure B122 - Warwick Road Audit Map

Morton Road – I16
On Street
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 2
CPZ: Yes

Figure B123 - Morton Road

General Information:
The proposed bay location is completely surrounded by residential housing. The street that the location is on is a two-lane road but if there are cars parked on both sides of the road it only one car can fit. There are bus stops within the surrounding area, the closest one being around 400 meters away. The traffic and pedestrian flow adjacent to and on the proposed bay location's street are minimal to non –existent. The wall next to the location, however, is empty so there is plenty of room for advertisements that will be viewable within the surrounding area. One of the only potentially good things about this location is that all of the residents in the area have to pay for on street parking, so switching to a car club could save them a lot of money.

Safety of Location:
One good thing for the location is there are no pubs or clubs within the surrounding area. However, there is also no CCTV coverage or neighborhood watch. Also, there is no vandalism at all near the bay location and minimal trash and liter on the surrounding streets. Overall, the surrounding area is fairly well kept and clean.

Surrounding Businesses:
None

Pros	Cons
• No pubs or clubs around • All residents are paying for on-street parking • No Vandalism around site • Wall space for promotional material	• Very narrow road • No traffic or pedestrian flow • No CCTV coverage or neighborhood watch • Closest bus stop is around 400 meters away • No businesses in surrounding area • Surrounding area is only residential

EVCP Compatible?
No

Additional Pictures:

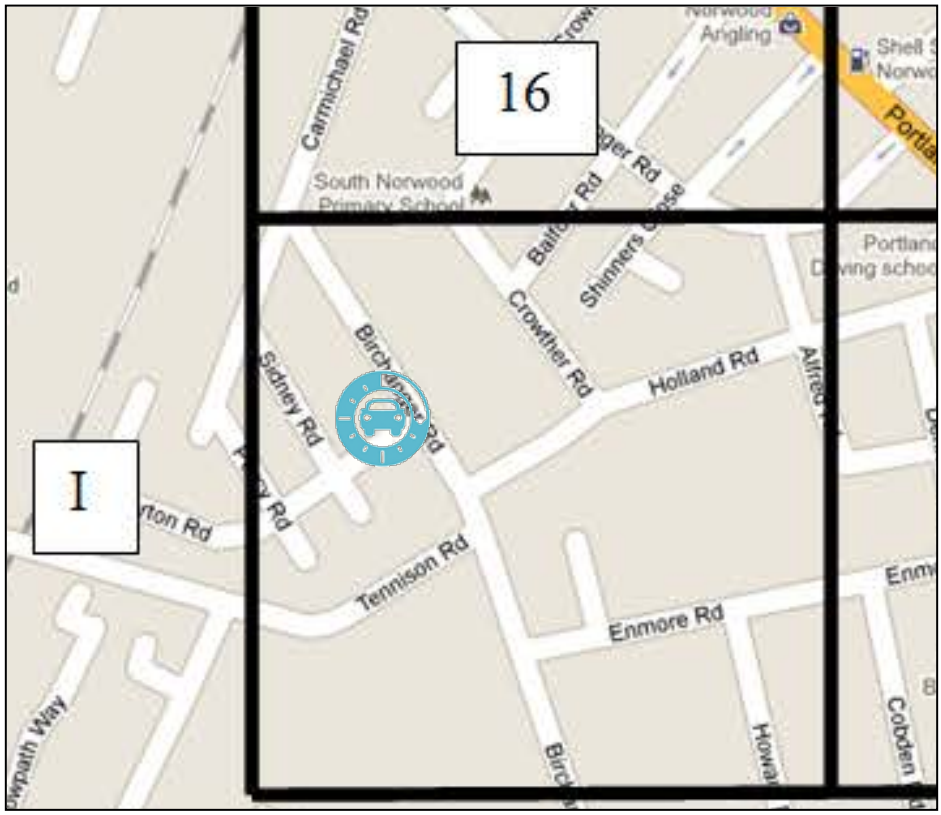


Figure B124 - Morton Road Audit Map

Appendix C: Recommended Location Audits

High St – X9
On Street
Done By: Calvin Lam and Rick Tombarelli
Overall Rating (1-5): 4.3
CPZ: Yes

Figure C1 - High Street

General Information:
The proposed bay location is in a district center. High Street branches off of Brighton Road, and is a one way, left turn only street heading up Whytecliffe Road. In order to get back to Brighton Road, you need to follow Whytecliffe Rd until it exits onto Purley Way, take a right, and then you are at the intersection for Brighton Road. At the time of audit, 80% of all parking spots on the street way taken up. There is also a fair amount of street clutter, with businesses, estate agencies, a church and a hospital, and other commercial stores around the area. Traffic was high on Brighton Road, at the time of the audit, as it is a main road. Buses, trucks, cars, and bikers all share the road. The width of High Street is of average size, but as there is only parking on one side, and it is a one-way road, maneuverability is not a problem. There are bus stops littering Brighton Road, and the Purley rail station is right up Whytecliffe Rd., less than a 5-minute walk away. The pedestrian flow, at the time of the audit, was very high, as it is a district center. The Purley athletics and leisure center is also nearby, which is a major building of interest for residents. Across the street there is also a War Memorial Hospital, and a United Reformist Church. As the bay location is right off of a main road, and is in a district center, the visibility of it is very high.

Safety of Location:
This location is a very safe place. Purley is a mid- to high-class neighborhood. The bay is also in a district center nearby to a church, a hospital, and a community center. The rail station is also nearby. These all contribute to a very safe area. The lighting is also pretty great, with a street lamp right above the bay and main street flood lamps all down Brighton Rd. There is also CCTV coverage. There were no signs of vandalism. This is an extremely clean neighborhood.

Surrounding Businesses:
1. War Memorial Hospital
2. United Reformist Church
3. Purley Community Center
4. Business buildings
5. Norse House

Pros	Cons
• Great neighborhood • CCTV coverage • Great lighting • In a district center • Close to 2 forms of public transportation • No pubs or betting shops around • Very high visibility because right off a main road	

EVCP Compatible?
Yes. There is a feeder pillar box near the proposed bay location.

Additional Pictures:

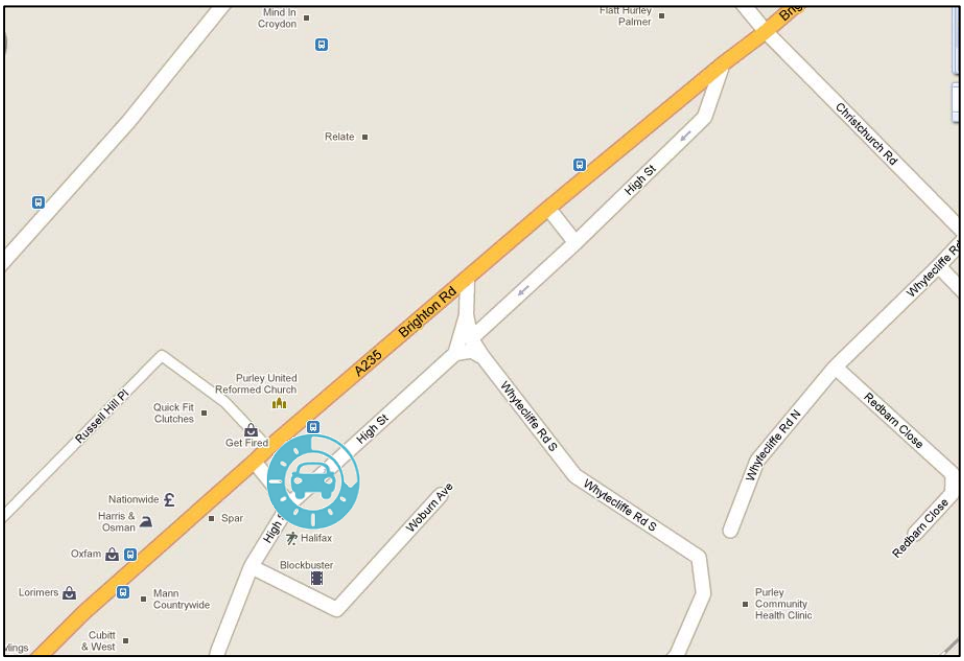


Figure C2 - High Street Audit Map

Victoria Road – DD5
On Street
Done By: Rick Tombarelli and Calvin Lam
Overall Rating (1-5): 3.8
CPZ: Yes

Figure C3 - Victoria Road

General Information:
The on street proposed bay location on Victoria Road is at the end of the road near the intersection with Brighton Road. Brighton Road is a main road that goes through a district center. There are many small retail businesses along Brighton Road. Victoria Road is a one-way road with several small businesses at the beginning, with residential houses down the rest of the road. Being a one-way road means that cars cannot turn onto Victoria Road from Brighton, meaning they will have to loop around to park the cars. The visibility of Victoria Road is great. There is a high flow of pedestrians and vehicles past the parking bay. The bay itself is tucked away, and is protected from other cars. There is a wall directly near the spot, allowing for a place to put signs for the bay. There are many bus stops on Brighton Road directly near Victoria Road, and the bays are within a 5-minute walk from the Coulsdon South Rail Station.

Safety of Location:
The location appears to be safe. There was no evidence of vandalism, and good lighting. The bay is highly visible from a busy road. There is CCTV coverage on the small businesses near the location.

Surrounding Businesses:

1. Sentinel House Offices
2. Daniel Adams Real Estate (020-8763-8878)
3. Bang & Olufsen

Pros	Cons
• Great visibility • Safe area • Many office buildings nearby	• One-way street • Some parking pressure on road

EVCP Compatible?

Yes. There is a green feeder pillar box next to the bay.

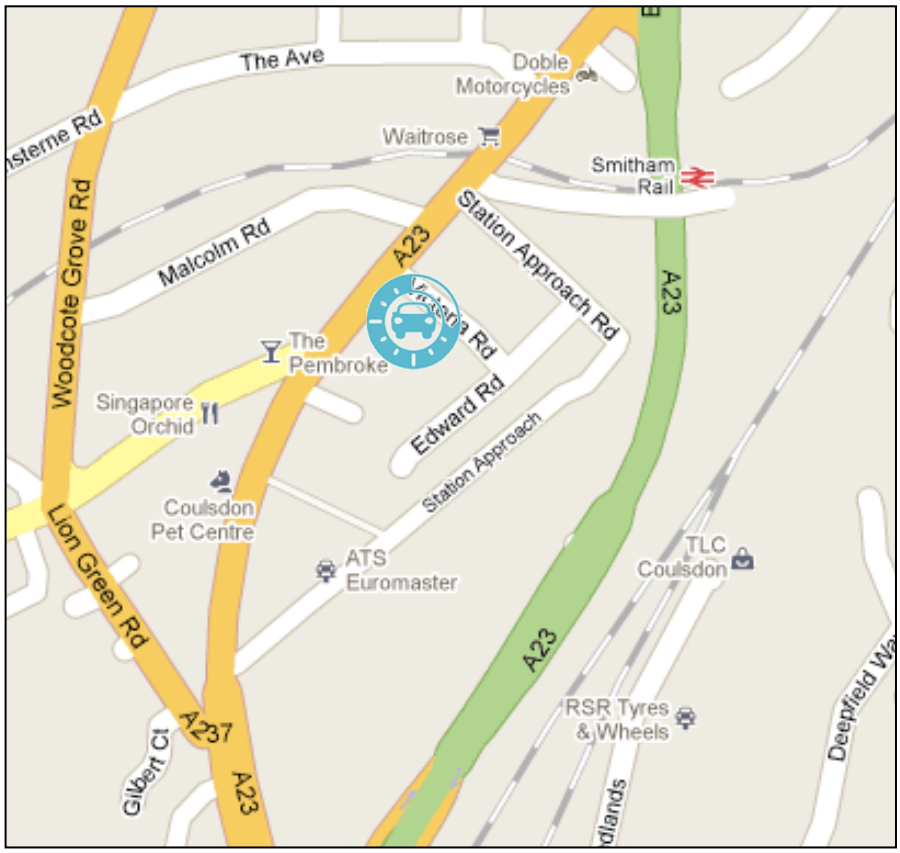


Figure C4 - Victoria Road Audit Map

Additional Pictures:

Purley Car Park – X9
Car Park
Done By: Rick Tombarelli and Calvin Lam
Overall Rating (1-5): 3.8
CPZ: Yes

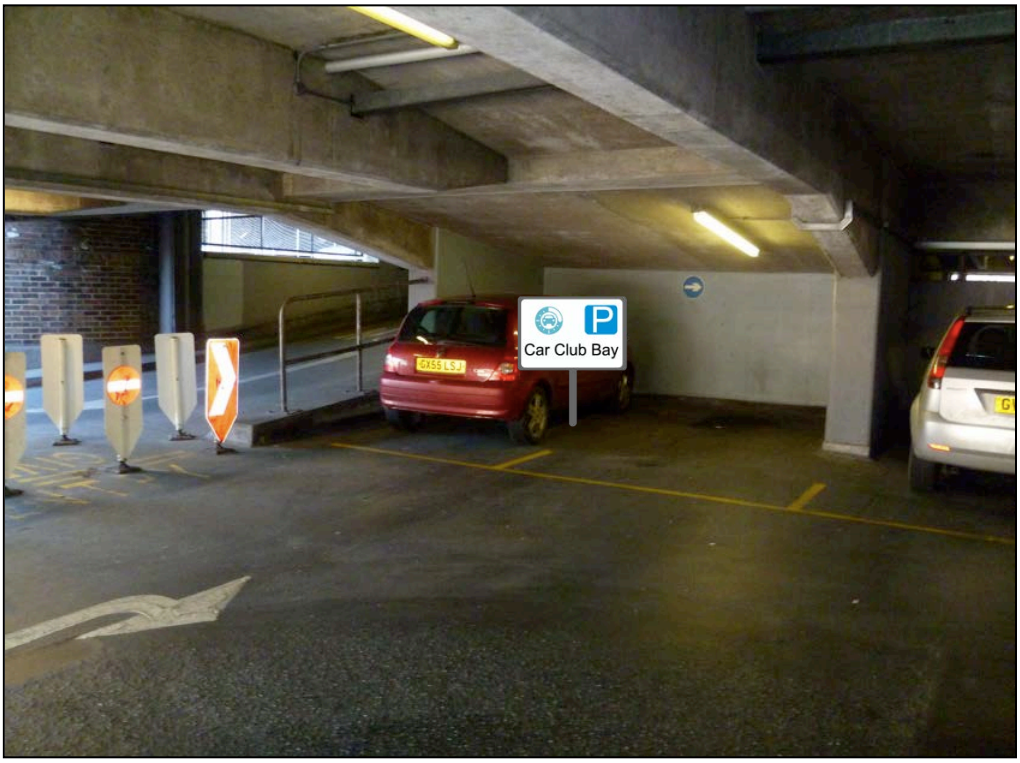


Figure C5 - Purley Car Park

General Information:
The Purley Car Park is a multi-story car park right near the Purley district center. Flats, apartment buildings, and residential houses directly surround the car park. Also near the location are a number of businesses, ranging from office buildings to retail stores. The car park is busy, with a steady flow of pedestrians and vehicles passing through. At the time of the audit, there appeared to be roughly 50 percent of the spots taken. The proposed location for the bay inside the park is directly in front of the main entrance. This will give maximum visibility to the vehicle. Overall the car park had some relatively tight parking spots which could make maneuverability difficult. It is important to note that an annual pass for the car park costs £510.

Safety of Location:
The location appeared to be very safe. There is CCTV coverage of the car park. There was lighting in the car park, but it did seem a bit weak. There was no apparent sign of vandalism in the car park.

Surrounding Businesses:

1. Venture House
2. Firstassist
3. Plan Insurance
4. Computershare
5. Streeter Marshall
6. Nordic House
7. United Reformed Church
8. Maple House

Pros	Cons
• Very busy and great visibility • Safe area • Many office buildings nearby	• Tight parking spots • Weak lighting

EVCP Compatible?
No.

Additional Pictures:

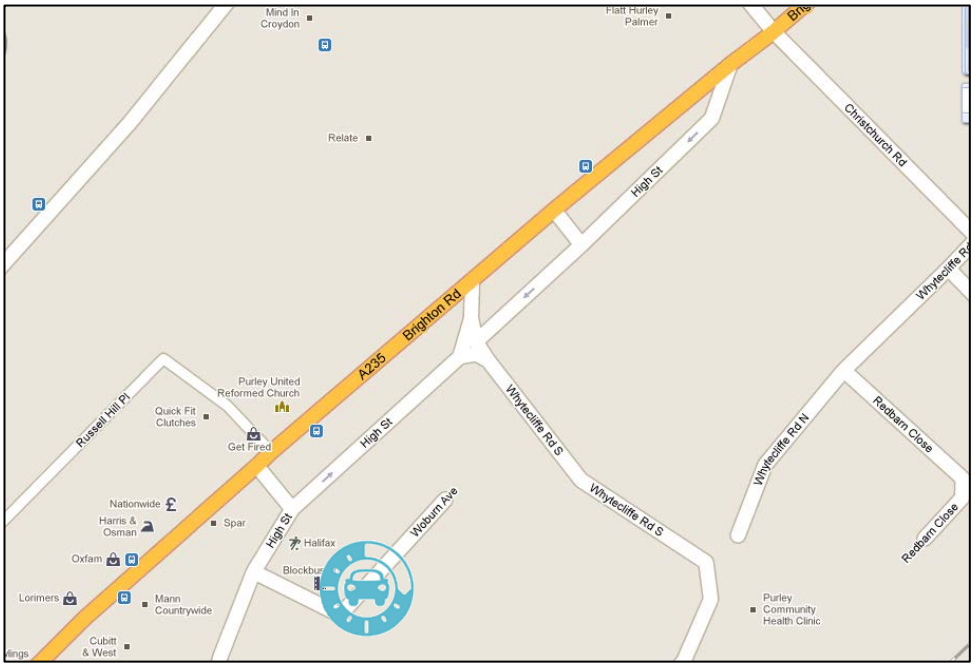


Figure C6 - Purley Car Park Audit Map

Lion Green Car Park – DD5
Car Park
Done By: Calvin Lam and Rick Tombarelli
Overall Rating (1-5): 3.6
CPZ: Yes

Figure C7 - Lion Green Car Park

General Information:
The proposed bay location is an outdoor car park, off of Lion Green Road., which is right off of the main road, Brighton Road. This car park is located right between a district center, and rotary connecting different roads to other towns and areas, including the Coulsdon rail station. The majority of spots were filled at the time of audit, roughly 80%. There were minor signs of street clutter, with a movie poster, road signage, and estate agency signs. There was a moderate amount of traffic travelling on Lion Green Road, as people were trying to get between the Coulsdon town center and the rotary. In addition, cars were also driving in and out of the car park with some frequency. The road width of the car park is very wide, enforcing a one direction flow through the car park. The roads are wide enough for two cars to drive through. The closest form of public transportation is the bus stops which litter the area. In addition, the Coulsdon rail station is within a 5 minute walk. Surprisingly, at the time of the audit, pedestrian flow was very low. This is probably due to the frequent number of bus stops in the area, and that this is a side street to the main street. Even so, the visibility of the car club bay is high as it is in plain sight of the semi busy road, and in a highly used car park.

Safety of Location:
The lighting in the area is average. The closest streetlamp to the bay is blocked by trees on either side of it. The next streetlamp is probably 25 yards away. There was no visible CCTV coverage. There is a pub and a betting store down the road towards the district center, but they are out of sight of the car park. There is a dedicated attendant at the car park though; walking around making sure everything was alright. In addition, this is a very nice area/neighborhood, so chances of something bad happening are lower. There was no sign of vandalism in the area. Overall the area was very clean.

Surrounding Businesses:
1. Sentinel House Offices
2. Daniel Adams Real Estate (020-8763-8878)
3. Bang & Olufsen

Pros	Cons
• Closely monitored car park • Nice neighborhood/area • High visibility • Close to both train and bus stops • Close to a district center	• Pub and betting store nearby • No CCTV coverage • No lighting directly over bay

EVCP Compatible?
No

Additional Pictures:

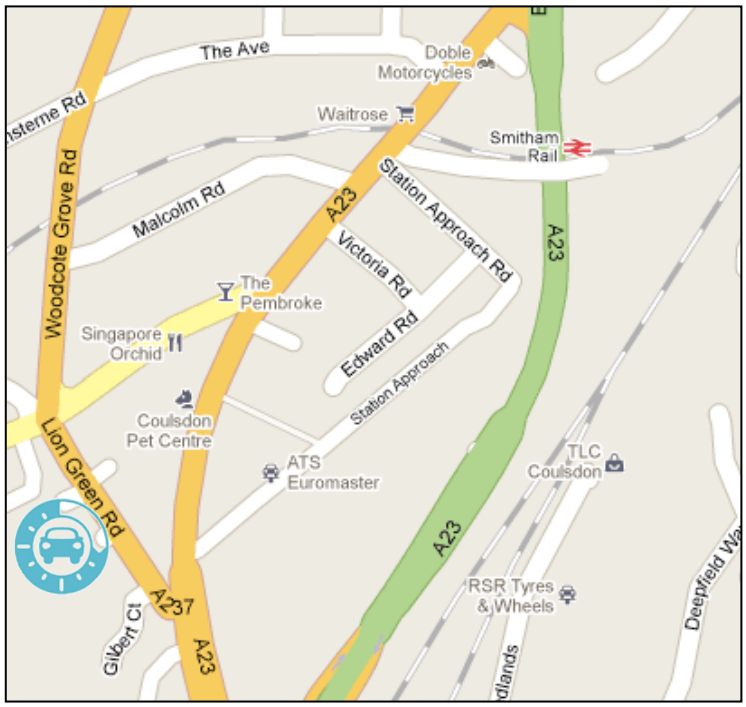


Figure C8 - Lion Green Car Park Audit Map

The group was informed that a new housing development is being built just North of Purley. This location was not considered based on the MOSAIC data but the demographic rating would change once the housing development is completed, therefore the group made the decision to pre-audit that location.

Sanderstead Road Car Park - U12
Car Park
Done By: Kevin Ducharme and Rick Tombarelli
Overall Rating (1-5): 3.8
CPZ: Yes

Figure C9 - Sanderstead Road Car Park

General Information:
Sanderstead Car Park is located directly next to a new housing complex. The car park is surrounded by small homes, businesses, and other apartment complexes. Sanderstead Roads runs along the car park so visibility of the bay is optimal. There is also a wall right next to the proposed bay location that can be used for promotional material. The bay itself is a good size and the car park is all one way driving so maneuverability in and out of the bay is very good. At the time of the audit both the vehicle and pedestrian traffic flow adjacent to the bay was medium. There were a few more cars than pedestrians due to Sanderstead Road being a main road. There were no bus stops within the general area of the bay, however, the Sanderstead train station is across the street and the Purley Cross train station is a short five minute walk away.

Safety of Location:
There are big flood lights throughout the car park; however, there is not one directly over the bay. This should not be a problem though because the flood lights in the car park seemed very powerful. The car park has no CCTV coverage but there were signs saying it is being monitored. There is also a pub along Brighton Road; however, it is far enough away from the car park that it should not have any effect

on it. No was no evidence of vandalism and overall the car park seemed very clean, safe, and well taken care of.

Surrounding Businesses:

1. The Bathroom Suite Company
2. Barnard Marcus Estate Agents
3. Maxibrown Estate Agents
4. Adam's Financial Solutions

Pros	Cons
• Car park is monitored frequently • Clean, safe, and well kept • Far enough away from pubs • Good maneuverability in car park. • Good mix of business and residential. • Good lighting. • Close to 2 train stations. • Good visibility from main road – wall for promotional material. • No Vandalism	• No CCTV coverage. • No big businesses. • No bus stops nearby.

EVCP Compatible?

Yes. There is an electrical box that powers the gate system for the housing complex that should be compatible for an EVCP.

Additional Pictures:

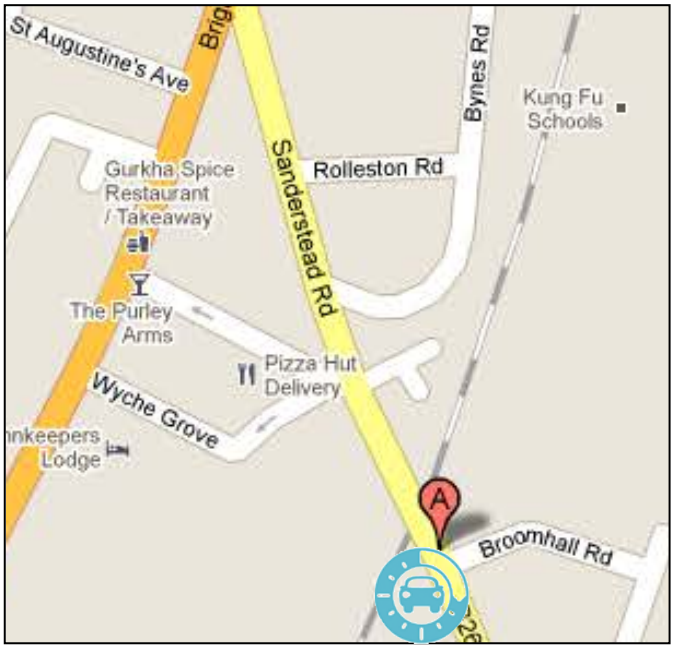


Figure C10 - Sanderstead Road Car Park Audit Map

Appendix D: Locations Found Inadequate for Car Clubs or EVCPs

E13
On Street
Done By: Rick Tombarelli and Adeola Otuyelu

Grid E13 is not adequate for a car club bay because:

- There is a lack of on street parking
- All of the potential parking is either unsafe on a busy road, or on a very steep side road

H10
On Street
Done By: Rick Tombarelli and Kevin Ducharme

H10 did not have any adequate locations for car club bays for the following reasons:

- No on-street parking bays that were suitable
- Less than optimal business surroundings

J15
On Street
Done By: Rick Tombarelli and Kevin Ducharme

No suitable site was found in the grid J15 due to the following reasons:

- Predominantly residential area 2-3 streets down from the main road.
- Very low pedestrian and traffic flow
- Most residents have private parking.
- Most parking spots are right in front of residential homes and this might lead to complaints if a bay is placed in.
- No parking on road adjacent to it, only bus stop lanes.

L9
On Street
Done By: Calvin Lam and Adeola Otuyelu

This spot was not valid for the following reasons:

- Completely main road
- Unsafe
    - Every off road was very close to a pub or club
    - Extremely poor lighting
    - Every street had some form of vandalism
- Litter and trash on ground every few steps

L10
On Street
Done By:

This spot was not valid for the following reasons:

- Completely main road
- Unsafe
    - Every off road was very close to a pub or club
    - Extremely poor lighting
    - Every street had some form of vandalism
- Litter and trash on ground every few steps

L12
On Street
Done By:

This spot was not valid for the following reasons:

- Completely main road
- Unsafe
    - Every off road was very close to a pub or club
    - Extremely poor lighting
    - Every street had some form of vandalism
- Litter and trash on ground every few steps

Q14
On Street
Done By: Calvin Lam and Kevin Ducharme

Reasons why Q14 did not have an audit conducted on any bays:

- Location had minimal on street parking
- Location had primarily single family, middle-upper class housing with garages and bays for each
- Not much public transportation, apart from Lloyd Park Tram Station

Appendix E: Current Streetcar Locations in Croydon

Location Name	Number of Cars
Whitehorse Road	1
Moreland Road	3
Addiscombe - Teevan Rd	1
Taberner House	3
Wandle Rd	15
Spices Yard	1
Church Road	1
Edridge Road	2
Mayday Road	2
Zion road	2
Thornton Road	1
Central Parade	3
Total	34

Table E1 - Current Streetcar Locations in Croydon

Appendix F: Streetcar Audits

Croydon Council- O12
Car Park
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 3.5
CPZ: Yes

Figure F1 - Croydon Council Car Park

General Information:
The Streetcar bay location is located directly in front of the Croydon Council. The car park that the bay is in has a private entrance that is connected to the Croydon Flyover, which is one of the main roads in the area. Being next to the main road makes visibility of the bay very high. The surrounding area is almost completely commercial, however, there is a small apartment complex and some homes on the other side of the Croydon Flyover. The bay itself is a good size but the car park that the bay is in is very tight. Maneuverability in and out of the bay could be difficult. Being surrounded by main roads there are many bus stops very close to the bay. The East Croydon train station is also a 10 minute walk from the bay. At the time of the audit the rate of pedestrian activity was average but the traffic level was very high due to all of the main roads.

Safety of Location:
There are no lights in the car park but there are flood lights along the main roads. Since the car park is right next to the Croydon Council there is CCTV coverage and overall the car park is very safe with no evidence of vandalism at all. Also, the closest pubs are along High Street; however, High Street is far enough away where it should not affect the bay. The Croydon Council also does a good job of keeping the bay and car park very clean.

Surrounding Businesses:

1. Croydon Council
2. Nestle
3. Unitarian Church
4. Friends Meeting House
5. Many big businesses along main roads

Pros	Cons
• Good businesses • CCTV coverage • Clean and Safe • Good visibility • High visibility • Far enough away from pubs	• Poor lighting • Bad residential area • Poor maneuverability in car park

EVCP Compatible?

Yes. The electrical systems used by the Croydon Council should be compatible for an EVCP.

Additional Pictures:

Figure F2 - Croydon Council Car Park Audit Map

Wandle Road - O11
Car Park
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 3.3
CPZ: Yes

Figure F3 - Wandle Road Car Park

General Information:
The Streetcar bay location is located directly in the Wandle Road car park. There are a total of 14 Streetcar bays in the car park, and at the time of the audit 12 of the bays had Streetcars in them. The car park that the bay is in is directly under the Croydon Flyover and is one street down from High Street. Despite being next to and under a main road visibility of the bay is low. The surrounding area is almost completely residential who are all paying for on-street parking or for parking in the car park. Overall the bays are a good size and maneuverability in and out of the bay is easy because the car park allows for plenty of room. High Street, which is only about 300 meters away, has several bus stops on it going in all directions. At the time of the audit the rate of pedestrian activity was low but the traffic level was very high due to all of the main roads.

Safety of Location:
There are many big floodlights directly over the bays and throughout the car park. There is also CCTV coverage in the car park. However, there is a pub across the street from the bays and there are also a lot of pubs along High Street. There was also a small amount of graffiti on the wall near the bays. Overall the car park and bays are very clean and are kept in good condition.

Surrounding Businesses:
1. Logicalis
2. Lantern Hall Day Centre
3. There are a lot of small businesses on High Street.

Pros	Cons
• CCTV coverage • Very clean • Good maneuverability • Great lighting • Good residential area • Near a lot of bus stops	• Small amount of graffiti • Next to pub • Poor visibility • Businesses not optimal

EVCP Compatible?
No

Additional Pictures:

Figure F4 - Wandle Road Car Park Audit Map

Figure F5 - Wandle Road Car Park Image 2

Figure F6 - Wandle Road Car Park Image 3

Rees House – Moreland Road – L14
Car Park
Done By: Calvin Lam and Adeola Otuyelu
Overall Rating (1-5): 3.2
CPZ: Yes

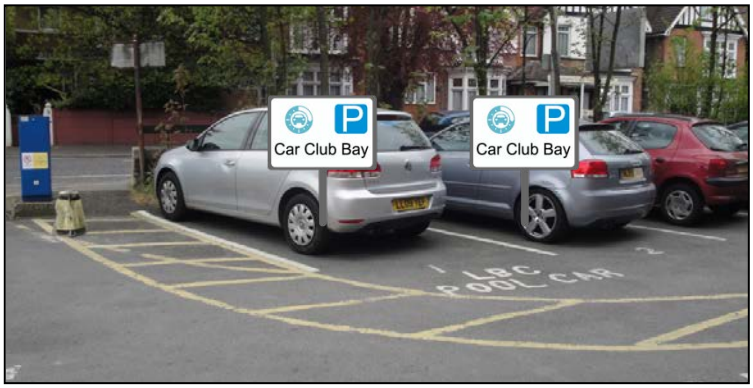


Figure F7 - Moreland Road

General Information:
This off street location is in the Rees House council owned business/ office building car park. The location of the streetcar bay, according to the Google map on their website, is right off of Gordon Crescent, which is one or two streets up from where the streetcars were found. The car park contained 2 streetcars. The main road, Lower Addiscombe, is right around the corner to the left when you exit the car park. At the time of audit, at least 90% of the provided parking bays were filled. There is a very low level of street clutter, so car club signs could be optimally placed in this area, unfortunately, the streetcar signs were placed low to the ground on a wall next to each car, so they were hard to see. The traffic on Moreland Rd was moderate to high at the time of the audit. Moreland is still a busy road with buses and many cars driving through, but it does not carry as much traffic as Lower Addiscombe does. The width of the road in the car park was average, enough room to back up and maneuver around. There are numerous bus stops close by to this location, the closest being right on the sidewalk outside the car park. Pedestrian flow was far less busy than vehicle traffic. The only people walking were people leaving the Rees House for a break. The visibility of the car club vehicles could be pretty high as they were the first parking spots entering the car park. A sign could definitely be put up to tell everyone that passes by on Moreland Rd that there are car club vehicles there. Unfortunately, the current locations of the signs are very low to the ground and on the car park side. Walking by on the sidewalk, it would be hard to notice unless you were actively looking for them. Also, the cars themselves were partially blocked by a low wall and small trees.

Safety of Location:
The lighting in and around the car park was average. No street lamps in the car park and the street lamps on Moreland Rd were a bit farther away from the car club

vehicles than desired. There is CCTV coverage due to the Rees House being a council office building. This location is also not close to any betting shops or pubs, but instead close to a dental practice, an old folk's home, and a small hospital. These are signs of a safe neighborhood. The streets and the car park were also very clean. Not even litter on the sides of the roads or gum on the sidewalk.

Surrounding Businesses:

1. Rees House

Pros	Cons
• Safe neighborhood • Right next to a council building • Many residential houses nearby • CCTV coverage • No pubs or betting shops • Next to many bus stops	• Poor lighting • Not on main road • Signs and cars are currently partially hidden

EVCP Compatible?

No

Additional Pictures:

Figure F8 - Moreland Ave Audit Map

Mayday Road - K9
Car Park
Done By: Kevin Ducharme and Rick Tombarelli
Overall Rating (1-5): 3.1
CPZ: No

Figure F9 - Mayday Road

General Information:
The Streetcar bay location is located directly next to/under an apartment complex on Mayday Road. Mayday road connects to London Road, which is the main road in the area. The surrounding area is comprised of a mix of nice residential homes and a small district center. The bay itself is a decent size. It is relatively easy to move in and out of the car park. The closest bus stop is about 200 meters away on London Road. At the time of the audit the rate of pedestrian activity was average as there was a fair amount of shops around the apartment complex. Also at the time of the audit there was an average level of traffic flow because Mayday road leads into a district center.

Safety of Location:
In the car park there are lights surrounding the bay so the lighting is good. Mayday road also has basic street floodlights spaced about 50 yards apart on both sides of the street. There was no sign of CCTV coverage in the car park; however, being next to an apartment complex there may be some CCTV cameras around the bay. There was also no evidence of vandalism near the bay. Overall the general appearance and cleanliness of the area is good.

Surrounding Businesses:
1. Croydon Health Authority
2. Metis Physio Center
3. Croydon University Hospital

Pros	Cons
• Good mix of residential/commercial • No Vandalism • Clean and safe area • Good lighting	• No CCTV coverage evident • Businesses may not be optimal

EVCP Compatible?
No

Additional Pictures:

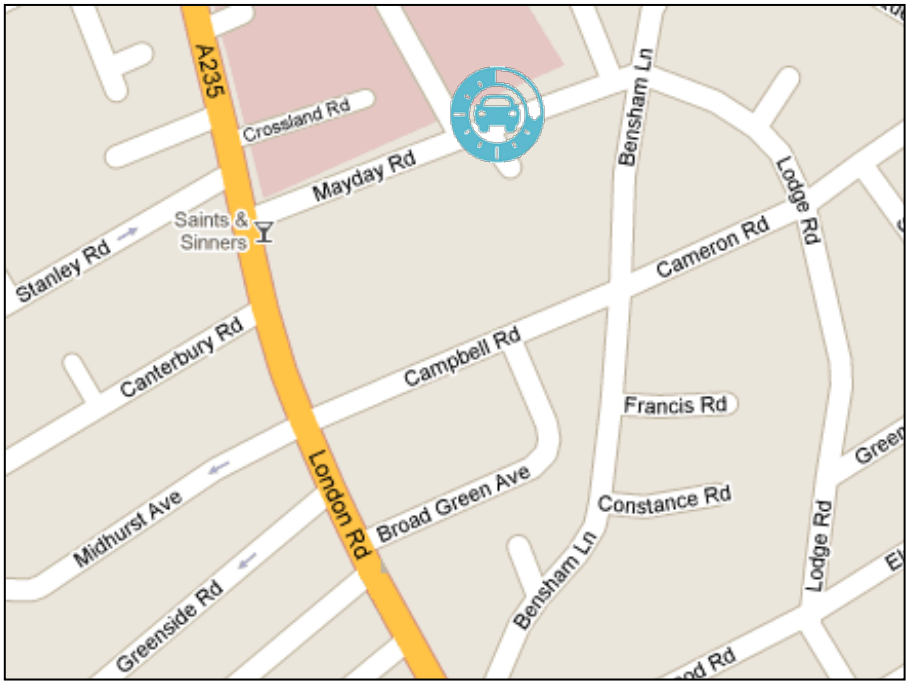


Figure F10 - Mayday Road Audit Map

Spices Yard - P12
Car Park
Done By: Kevin Ducharme and Adeola Otuyelu
Overall Rating (1-5): 3
CPZ: Yes

Figure F11 - Spices Yard Car Park

General Information:
The Streetcar bay location is located in a car park off the main road which is High Street. The visibility of the bay is very low as it is hidden in a private parking area in the car park. The surrounding area is very commercial, though there are a few apartment buildings around. The bay itself is a good size and the car park that the bay is in is very spacious. Maneuverability in and out of the bay is relatively easy. Since the car park is off a main road, there are many bus stops close to the bay. At the time of the audit the rate of pedestrian activity was very low and the traffic level was average on the main road.

Safety of Location:
There are lights in the car park and a flood right across the bay. The car park is right next to an office building and there is CCTV coverage. Overall the car park is very safe with no evidence of vandalism at all. Although there are some pubs along High Street, the bay is secured in a private area of the car park. The bay looks very clean and well taken care of.

Surrounding Businesses:
1. PCR Employment
2. Leaders
3. CMC

Pros	Cons
• Good businesses • CCTV coverage • Clean and Safe • Far enough away from pubs • Good maneuverability in car park.	• Low visibility. • Not so good residential area.

EVCP Compatible?
No

Additional Pictures:

Figure F12 - Spices Yard Car Park Audit Map

P11

Done By: Kevin Ducharme and Adeola Otuyelu

The Streetcar bay that is in grid P11 could not be found. The group walked around the entire area and looked in several car parks in the area and could find no sign of the Streetcar bay. This shows that Streetcar has to do a better job with promotional material and signs to identify the location of the bays.

L16

Done By: Calvin Lam and Adeola Otuyelu

The Streetcar bay that is in grid L16 could not be found. The group walked around the entire area and looked in several car parks in the area and could find no sign of the Streetcar bay. This shows that Streetcar has to do a better job with promotional material and signs to identify the location of the bays.

L12

Done By: Calvin Lam and Adeola Otuyelu

The Streetcar bay that is in grid L12 could not be found. The group walked around the entire area and looked in several car parks in the area and could find no sign of the Streetcar bay. This shows that Streetcar has to do a better job with promotional material and signs to identify the location of the bays.

Appendix G: Business and Residential Ratings Tables

Business Ratings

Grid	Location	Type of Parking	CPZ? Yes or No	Business Rating
N13	Fairfield	Car Park	Yes	5.0
X9	Purley	Car Park	Yes	4.5
B15	St. Aubyn's	On-Street	Yes	4.0
K7	Canterbury Road	On-Street	No	4.0
H16	Belgrave	Car Park	Yes	4.0
L14	Moreland Ave	On-Street	Yes	4.0
DD5	Victoria Road	On-Street	Yes	4.0
X9	High Street	On-Street	Yes	4.0
DD5	Lion Green Road	Car Park	Yes	4.0
C15	Braybrooke Gardens	On-Street	No	3.5
I17	Denmark Road	On-Street	Yes	3.0
F11	Beulah Road	On-Street	No	3.0
H12	Garnet Road	Car Park	Yes	3.0
H17	Pembury Road	On-Street	Yes	3.0
J8	Harcourt Road	On-Street	No	3.0
M16	Barring Road	On-Street	Yes	3.0
K16	Malcolm Road	On-Street	No	3.0
J10	Woodcroft Road	On-Street	Yes	2.5
G11	Parchmore Road	On-Street	Yes	2.5
I8	Gonville Road	On-Street	No	2.5
H11	Bensham Manor Road	On-Street	Yes	2.5
Q13	Birdhurst Gardens	On-Street	Yes	2.0
L16	Sissinghurst Road	On-Street	No	2.0
H16	Clifford Road	Car Park	Yes	2.0
H8	Goldwell Road	On-Street	No	2.0
M13	Leslie Grove	On-Street	Yes	2.0
G12	Woodsville Road	On-Street	Yes	2.0
K7	Aurelia Road	On-Street	No	2.0
J17	Belmont Road	On-Street	No	2.0
M16	Ashburton Road	On-Street	Yes	2.0

Grid	Location	Type of Parking	CPZ? Yes or No	Business Rating
E12	Burlington Road	On-Street	No	2.0
H11	Stuart Road	On-Street	Yes	2.0
H17	Harrington Road	On-Street	Yes	2.0
G8	Warwick Road	On-Street	No	2.0
I10	Lakehall Road	On-Street	No	2.0
I9	Frant Road	On-Street	No	1.5
M14	Canning Street	On-Street	Yes	1.5
I12	Saxon Road	On-Street	No	1.5
B13	Harold Road	On-Street	No	1.0
N14	Lebanon Road	On-Street	Yes	1.0
A13	Oxford Road	On-Street	No	1.0
N15	Havelock Road	On-Street	Yes	1.0
M15	Outram Road	On-Street	Yes	1.0
H9	Malvern Road	On-Street	No	1.0
G14	St. Mary's Road	On-Street	No	1.0
K15	Beckford Road	On-Street	No	1.0
G17	Lonesdale Road	On-Street	No	1.0
F12	Buller Road	On-Street	No	1.0
K11	Hartley Road	On-Street	Yes	1.0
G9	Wiltshire Road	On-Street	No	1.0
M14	Lebanon Road	On-Street	Yes	1.0
K9	Cambell Road	On-Street	Yes	1.0
R13	Dornton Road	On-Street	Yes	1.0
L11	Thronhill Road	On-Street	Yes	1.0
H7	Lonsdale Gardens	On-Street	No	1.0
I16	Merton Road	On-Street	Yes	1.0
H10	N/A	N/A	Yes	0.0
L9	N/A	N/A	Yes	0.0
L10	N/A	N/A	Yes	0.0
L12	N/A	N/A	Yes	0.0
Q14	N/A	N/A	Yes	0.0
E13	N/A	N/A	No	0.0
J15	N/A	N/A	No	0.0

Table G1 - All of the potential bay locations in order of their business ranking

Residential Ratings

Grid	Location	Type of Parking	CPZ? Yes or No	Residential Rating
L16	Sissinghurst Road	On-Street	No	5.0
N14	Lebanon Road	On-Street	Yes	5.0
N15	Havelock Road	On-Street	Yes	5.0
K15	Beckford Road	On-Street	No	5.0
F12	Buller Road	On-Street	No	5.0
K11	Hartley Road	On-Street	Yes	5.0
R13	Dornton Road	On-Street	Yes	5.0
L11	Thronhill Road	On-Street	Yes	5.0
H12	Garnet Road	Car Park	Yes	4.5
J10	Woodcroft Road	On-Street	Yes	4.5
Q13	Birdhurst Gardens	On-Street	Yes	4.5
B13	Harold Road	On-Street	No	4.5
A13	Oxford Road	On-Street	No	4.5
H9	Malvern Road	On-Street	No	4.5
X9	High Street	On-Street	Yes	4.5
I17	Denmark Road	On-Street	Yes	4.0
B15	St. Aubyn's	On-Street	Yes	4.0
F11	Beulah Road	On-Street	No	4.0
K7	Canterbury Road	On-Street	No	4.0
H16	Belgrave	Car Park	Yes	4.0
G11	Parchmore Road	On-Street	Yes	4.0
H17	Pembury Road	On-Street	Yes	4.0
H8	Goldwell Road	On-Street	No	4.0
I8	Gonville Road	On-Street	No	4.0
M13	Leslie Grove	On-Street	Yes	4.0
K7	Aurelia Road	On-Street	No	4.0
I10	Lakehall Road	On-Street	No	4.0
G14	St. Mary's Road	On-Street	No	4.0
G17	Lonesdale Road	On-Street	No	4.0
M14	Lebanon Road	On-Street	Yes	4.0
K9	Cambell Road	On-Street	Yes	4.0
H16	Clifford Road	Car Park	Yes	3.5
C15	Braybrooke Gardens	On-Street	No	3.5
J8	Harcourt Road	On-Street	No	3.5
M15	Outram Road	On-Street	Yes	3.5

Grid	Location	Type of Parking	CPZ? Yes or No	Residential Rating
H11	Bensham Manor Road	On-Street	Yes	3.5
G12	Woodsville Road	On-Street	Yes	3.5
J17	Belmont Road	On-Street	No	3.5
E12	Burlington Road	On-Street	No	3.5
H11	Stuart Road	On-Street	Yes	3.5
I9	Frant Road	On-Street	No	3.5
G9	Wiltshire Road	On-Street	No	3.5
I12	Saxon Road	On-Street	No	3.5
DD5	Victoria Road	On-Street	Yes	3.5
N13	Fairfield	Car Park	Yes	3.5
L14	Moreland Ave	On-Street	Yes	3.0
M16	Barring Road	On-Street	Yes	3.0
K16	Malcolm Road	On-Street	No	3.0
M16	Ashburton Road	On-Street	Yes	3.0
H17	Harrington Road	On-Street	Yes	3.0
M14	Canning Street	On-Street	Yes	3.0
G8	Warwick Road	On-Street	No	3.0
I16	Merton Road	On-Street	Yes	3.0
X9	Purley	Car Park	Yes	3.0
DD5	Lion Green Road	Car Park	Yes	3.0
H7	Lonsdale Gardens	On-Street	No	2.5
H10	N/A	N/A	Yes	0.0
L9	N/A	N/A	Yes	0.0
L10	N/A	N/A	Yes	0.0
L12	N/A	N/A	Yes	0.0
Q14	N/A	N/A	Yes	0.0
E13	N/A	N/A	No	0.0
J15	N/A	N/A	No	0.0

Table G2 - All of the potential bay locations in order of their residential ranking

Appendix H - Promotional Material: Brochures

Residential Brochure

Figure H1 – Residential Brochure Outside

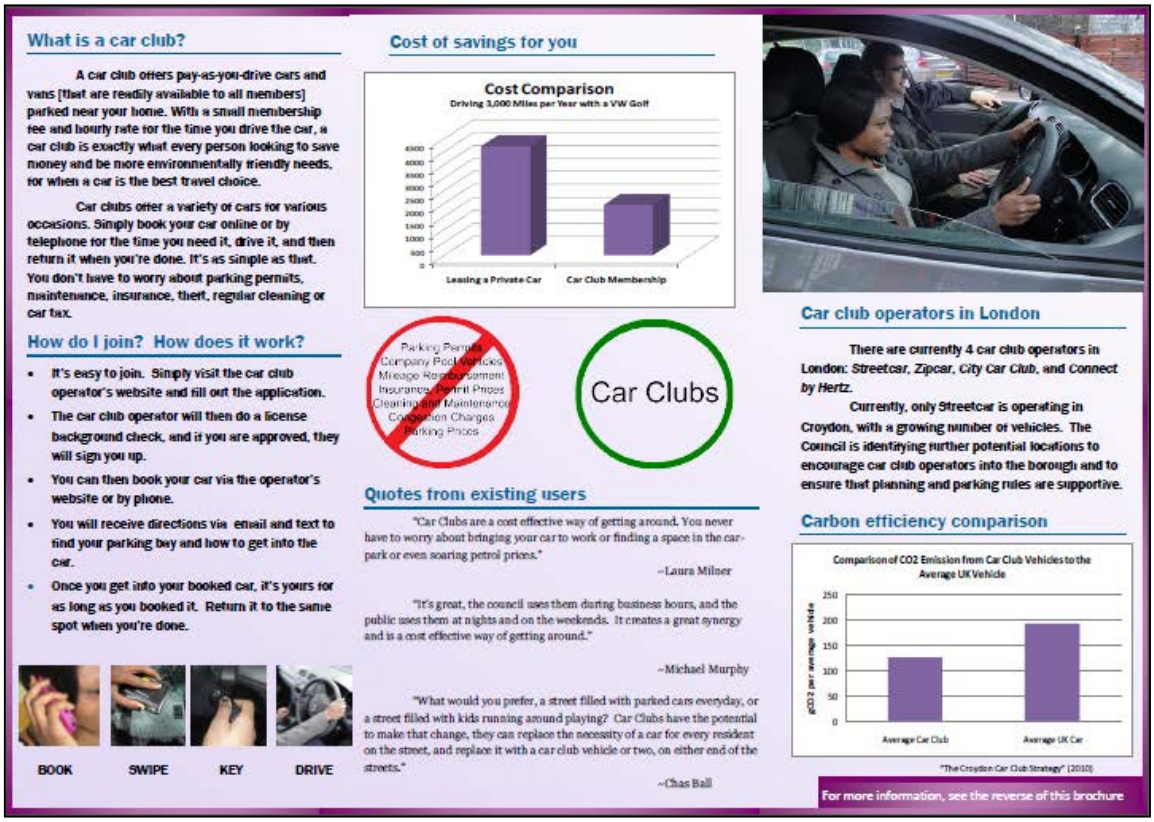


Figure H2 – Residential Brochure Inside

Business Brochure

Figure H3 - Business Brochure Outside

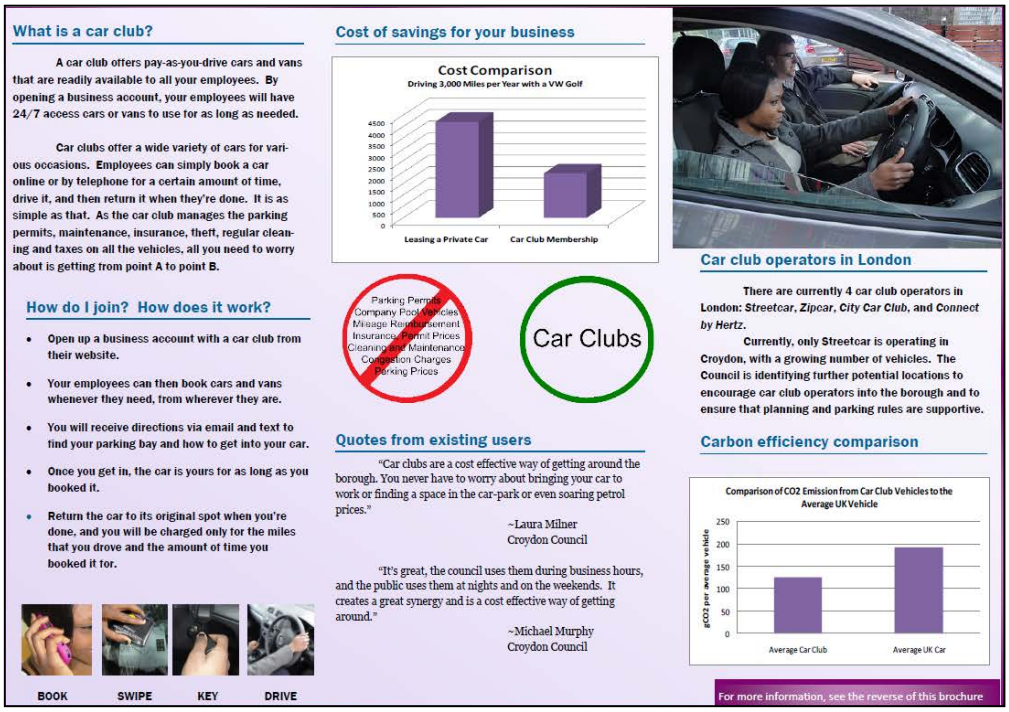


Figure H4 - Business Brochure Inside

Appendix I - Promotional Material: Posters and Signs

Accessibility Poster

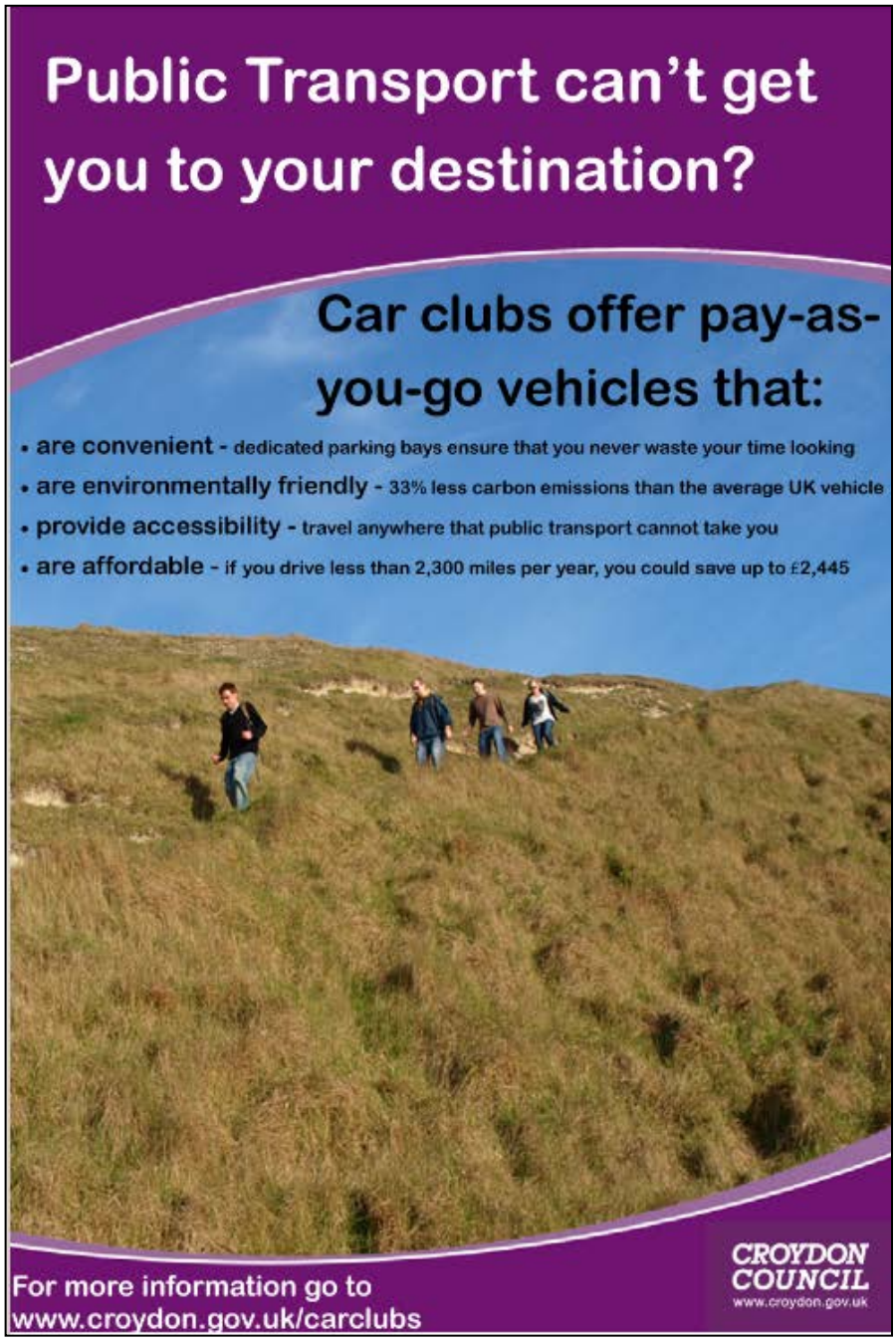


Figure I1 - Accessibility Poster

Affordability Poster

Figure I2 - Affordability Poster

Convenience Poster

Figure I3 - Convenience Poster

Bay Location Sign

Figure I4 – Bay Location Sign Back

Figure I5 – Bay Location Sign Front

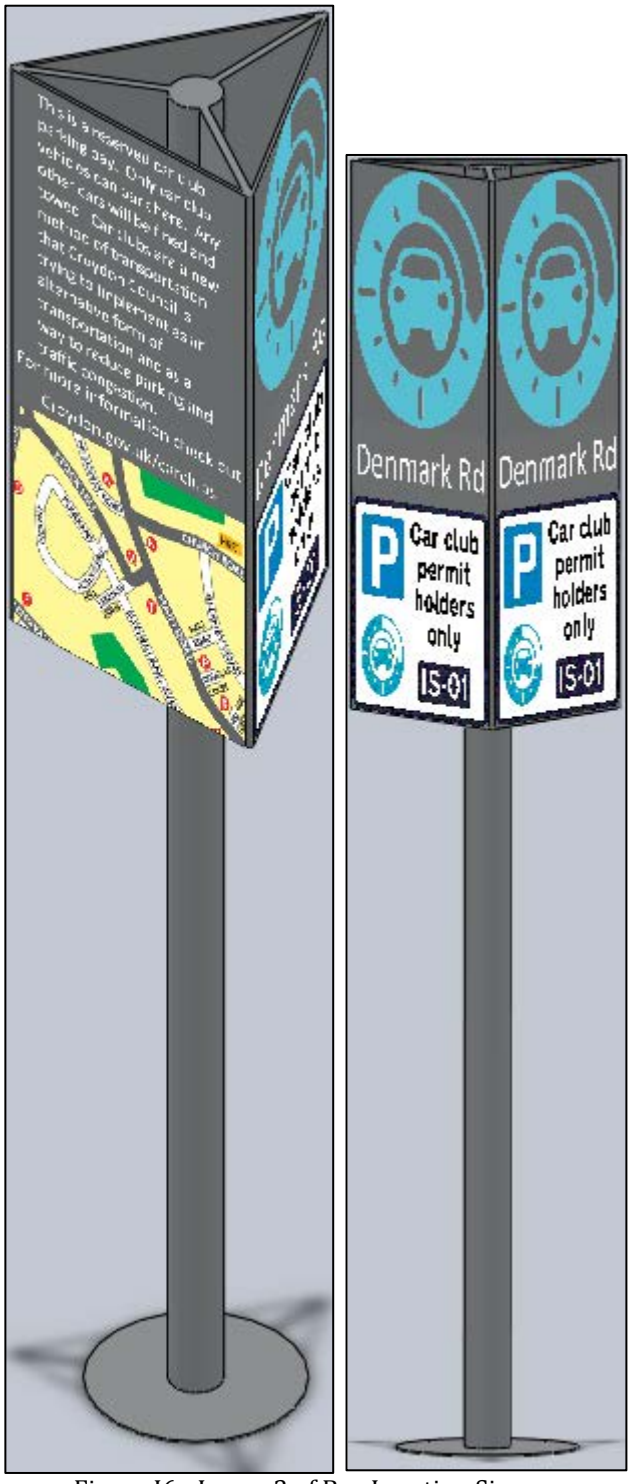


Figure I6 - Image 3 of Bay Location Sign

Appendix J - Promotional Material: Website Outline

Car Clubs in Croydon

What is a Car Club?

A car club offers pay-as-you-drive cars and vans that are readily available to all members. With a small membership fee and an hourly rate for the time you drive, a car club is exactly what every person looking to save money, travel easier, and be more environmentally friendly.

Car clubs offer a wide variety of cars for various occasions. Simply book your car online or by telephone for the time you need it, drive it, and then return it when you're done. It's as simple as that. You don't have to worry about parking permits, maintenance, insurance, theft, regular cleaning, roadside rescue or taxes as the car clubs takes care of all of it.

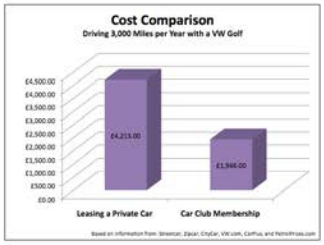
Car Club Benefits

Car clubs have a number of benefits including:

Convenience: Car Clubs are convenient to use as they have dedicated parking bays so the user never has to drive around to find an open spot to park. In addition, car clubs provide a variety of vehicles, from BMW 1 & 3 series, to the VW Golf, to transport vans. This allows for the use of car club vehicles for a variety of events and occasions.

Environmentally Friendly: Car club vehicles are typically much less carbon emissive than typical private cars, up to 33% more efficient, making them much more environmentally friendly. They also reduce traffic congestion and parking pressure on local parking. In addition, they encourage healthier habits such as walking and cycling.

Accessibility: Car clubs provide accessibility to the user. They allow the user to easily bring home groceries or move heavy furniture from one location to another. Car clubs can even help you travel to destinations that are normally unreachable by public transportation.



Affordability: Owning a private vehicle has a lot of costs associated with it, such as insurance, maintenance, congestion charge, etc. In addition, any time that a private vehicle sits in a parking bay unused is money being wasted. With a car club, you only pay for the amount time used and driving done, so you do not waste money.

For example, driving 3,000 miles a year with a VW Golf using a car club vehicle can save you around £2250 compared to leasing a private vehicle. Due to the much lower cost associated with car clubs, they can give more households access to a vehicle.

How does it work?

To join all you have to do is:

- Visit the car club operator's website and fill out an application to open an account
- The car club operator will do a license background check, if you are approved, then they will sign you up
- The car club will mail you your membership card, which you will use to book and enter your car club vehicle
- You will also set up your pin number, which you will use when logging on the website to check your account

Every month you will receive a monthly itemized invoice, totaling the exact number of miles and hours you travelled

To access a vehicle:

- Book you car via the operator's website or by phone
- You will be sent directions to find the parking bay by text and/or email
- Once you get your booked car, swipe in with your membership card
- Retrieve the keys, typically by typing your pin number into the lock securing the car ignition key
- You can drive the car around for as long as you booked it
- Return the car to the same spot when you are done

Current Car Club Operators in Croydon

Currently there are a total of 31 car club vehicles in 11 locations in the borough of Croydon. Streetcar is the only operator in Croydon at the time. For information on specific vehicle locations, and about joining with Streetcar visit:

- Streetcar

For more information on car clubs visit:

- Carplus

For more information on alternative forms of travel visit:

- Transport for London

Figure J1 - Website Outline

Appendix K – Business Tables

Businesses Found During Audits

Company	Grid	Telephone	Email
Croydon Park Hotel	N13	020-8680-9200	info@croydonparkhotel.com
First Church of Christ Scientist, Croydon	N13	020-8681-3457	
Chartis - Research	N13	020-7321-3852	info@chartis-research.com
City Link/Tolley House	N13		
Mantells Plumbing and Central Heating Engineers	I17	020-8654-7808	
Delta Services- Electrical Contracting Engineers	I17	020-8654-1272	
London Plumbing and Heating Merchants	I17	020-8656-1211	
DSP Estate Agents	B15	020-8653-8881	info@dspestateagents.co.uk
Abode	B15	0843 4701 287	info@abodelondon.co.uk
Betty's Pastry Shop	B15		
Edward James Florist	B15	020-8670-8877	
Servicing and Repairs	F11	020-8239-6961	
Snow White Dry Cleaners	F11	020-7607-4598	
Lombard House Office Building	K8		
Tool Station	K8	01278 421 200	info@toolstation.com
Red Properties - Estate Agents	H16	020-8653-5000	info@redproperties.co.uk
Townends - Estate Agents	H16	0800 074 0095	info@townends.co.uk
Home Castle Estate Agents	H16	020-8771-1448	
Nursing Home Barrington Lodge	L14	020-8654-9136	info@lrh-homes.com
Reese House Business Building	L14	020- 8239-4200	
Morland Road Clinic	L14	020-8656-6722	
Moreland Surgery	L14	020-8688-0434	
Oasis / Foyer Croydon Community Center	H12	020-7921-4200	fundraising@oasisuk.org
Home LETS	H12	020-8684-3456	homelets@tiscali.co.uk
Kingsbury Estate Agents	H12	020-8689-0808	
Trev Leonards Estate Agents	H12	020-8665-1007	info@trevleonardsestates.com
Zone Estate Agents	H12	020-8684-1123	enquiries@zone-uk.com
Croydon Health Authority	J10	020-8401-3900	
Metis Physio Center	J10	020-8664-1720	
Croydon University Hospital	J10	020-8401-3000	comms@mayday.nhs.uk
Parchmore Church youth and community center	G11	020-8653-9837	

St Pauls Church	G11	020-8680-4705	stpaulsurc@btinternet.com
London City Mission Hill Church	H17	020-7407-7585	
South Park Hotel	Q13	020-8688-5644	reception@southparkhotel.co.uk
Spice n Ice restaurant	Q13	020-8688-5644	info@spicenicerestaurant.co.uk
Folly's end Christian school	Q13	020-8649-9121	
AMS PC solutions- Computer repair	H16		
CONNECT PC repairs and Internet Café	H16		
BM Photographic Studios	H16		
Habitat Property Services - Estate Agents	H16		
Crystal Palace Tower Hotel	C15		
Upper Norwood Group Practice	C15	020-8771-6050	
Queens Hotel	C15		
LivingHands Nursery School	H8		
Pharmacy HHS	H8		
Primary Care Centre	H8		
St Jude St Pidon Church	I8		
Red Gables Family Center	J8	020-8680-0699	
Croydon House Business Center	J8		
Roman Catholic Church of the Virgin	A13		
Stephens of Addiscombe - Garden and Pet	M16		
Albion Windows and Conservatories	M16		
Sullivan's Florist	M16		
Haart Real Estate	H11	020-8681-8017	summerfields.lettings@haart.co.uk
St John's Congregational	H11		
BarkerHibbert	M13		
Tyler Paris Estate Agents	M13	020-8686-0093	
Tanell Flowers	M13		
Church of the Nazarene	M13		
Benson and Partners	M13		
Hunting Homes	K7		
Day Lewis	I10		
Lyntons	I10		
Thornton Heath Evalengical Free Church	H9		
Christian Center- Woodside Green	K16		
Childrens Center - Woodside Green	K16		
Bed and Breakfast Inn	G14		
Stadium	G14		
Streets Ahead Estate Agents	M16	020-8655-4777	bob.hay@streetsahead.in

			fo
Acclaim Double Glazing	E12		
Drummonds Mortgage + Loans + Real Estate	H11	020-8683-2900	
Gordon and Keen's Estate Agents	H11		property@gordonandkeenes.com
The Potters House Christian Church	I9		
AMH Estate Agents	I9	020-8665-0489	
Graybank Construction	M14		
D.A. Lindsay and Sons Funeral Directors	M14		
Pawsons Road Baptist Church	I12		
Millers Estate Agent	I12	020-8665-7755	
Parish Church of St Stephens	G8		
Dickinson Residential Estate Agents	G8	020-8251-0555	

Table K1 - List of Businesses with Contact Information Found During Audits around Bay Locations

Research Businesses

Company	Telephone	Email
Seccombe Builder Merchants	020 8689 4421	sales@seccombe.co.uk
Jewson Ltd	020 8688 2164	
Screwfix - Croydon Branch	020 8689 1878	
Topps Tiles Croydon	020 8684 1867	
Harrington Builders	020 8657 7734	john@harringtonbuilders.co.uk
M & D Building Contractors	020 8409 0791	info@md-building-contractors.co.uk
Mapleleaf Projects Ltd	020 8239 7211	tim@mapleleafprojects.co.uk
Onsite Developments Design & Constructions Ltd	020 8640 2242	onsdevelopments@btconnect.com
Rogers Construction Ltd	020 8657 6872	dan@rogersconstruction.co.uk
Carbon Calculated Ltd	020 8686 6372	hello@carboncalculated.com
Rafi Refurbishment Services	079 8858 7071	rafirefurbishment@yahoo.co.uk
Transworld Construction London Builders	020 8653 7171	info@transworldconstruction.co.uk
J and K Plastering	020 8405 9790	josephplastering@hotmail.co.uk
London Construction Company	020 8679 2727	info@progress2001.com
Construction London	07878 513419	constructionlondon.eu@gmail.com
Singleton Homes Ltd	020 8660 5353	info@singletonhomes.com
Scott Fleary Productions Ltd	0870 444 1787	matt@scottflearyltd.com
Meto Interiors	020 8141 3948	info@metointeriors.co.uk
Rogers Construction	020 8657 6872	
M Flannery Construction Ltd	020 8689 1551	
T P S Consult	020 8256 4000	info@tpsconsult.co.uk
4C Construction	020 8662 9555	
Dar-Al-Riyadh (UK) Ltd	020 8686 8681	
Apple Blossom	020 8688 1000	
Iris & Christine	020 8684 9412	
Mayday Flowers	020 8401 3666	
Mirabelle Communications Ltd	020 8681 5799	info@mirabelle.co.uk
The Creative Works Ltd	020 86813227	
Croydon Zone	020 86808700	
Lighthouse Adcomms LLP	020 86670084	
Fairfield Advertising Co	020 8680 9707	
Zmags Ltd	020 8604 8880	info@zmags.co.uk
Rodney Deitch Associates	0208 665 6886	
Bell Associates	020 8689 4696	design@bellassociates.co.uk
Flora Associates	020 8686 6663	tvflora@gmail.com
Markwick Architects	020 8686 2955	
P A Architects Ltd	020 8665 0836	

Apex Cloud	0845 643 5177	info@apexcloud.com
BDK Consultancy	0758 875 1555	contact@bdkconsultancy.co.uk
Perseus Recruitment Consultancy	0844 804 2601	recruit@perseusconsultancy.com

Table K2 - Businesses in Croydon that may use a Car Club

Businesses Currently Using a Car Club

Company	Location	Type of Company	Car Club
Hill Holliday	Boston, MA & New York, NY	Advertising agency	ZipCar
Clear Channel Radio Network	New York, NY	Radio network	ZipCar
Twitter	San Francisco, CA	Social Network	ZipCar
ATG LegalServe Inc.	Chicago, IL	Legal Services	ZipCar
Shepley Bulfinch	Boston, MA	Architectural Firm	ZipCar
Urban AdvenTours	Boston, MA	Bike tour company	ZipCar
Bicycle Coffee	San Francisco, CA	Coffee Company	ZipCar
Improv Asylum	Boston, MA	Comedy Club company	ZipCar
Swedish Medical Center	Seattle, WA	Medical Center	ZipCar
Poopbags.com	Chicago, IL	Pet Waste Products	ZipCar
Lucy	Portland, OR	Designs Apparel	ZipCar
Smedvig Capital	London	Financing firm	Streetcar
Arup	Leeds	Consulting Engineering	WhizzGo
Servite Thames	London	Housing Associations	ZipCar
Velvet Consultancy	London	Print Management Consultancy	Streetcar
XL Recordings	London	Record Label	Streetcar
The Water Delivery Company	London	Bottled water supplier	Streetcar
Trader Media Group	United Kingdon	Publishing company	Streetcar
Element Labs Inc.	London	Technology company	Streetcar
Comic Relief	London	Charity	Streetcar
BuildTeam	United Kingdon	Building Company	Streetcar
OnlyRoses	South-West London	Florist	Streetcar
WAX Agency	United Kingdon	Digital creative agency	City Car

Table K3 - List of Companies that Currently use a Car Club

Appendix L - Cost Analysis Data

Trip Details	
Average Mileage	2,400
Average Miles per Journey	48
Average Times out per Year	50
Gas Price £ per gallon	6.13
Gas Mileage mpg (2011 VW Golf)	27
Gas Mileage mpg (2011 BMW 318)	38
Average Journey Time (Hours)	4
Data from Carplus Publication, VW.com and PetrolPrices.com	

Table L1 – Cost Analysis: Trip Details

Car Club Operators				
	Streetcar	Zipcar	City Car Club	**Average**
Annual Fees	£59.50	£50	£50	£53.17
Hourly Rate (Medium Size Car)	£6.25	£5.50	£6.20	£5.98
Mileage	£0.23	£0.23	£0.22	£0.23
Free Mileage (miles)	20	40	0	20
Hourly Rate (Luxury Car)	£8.95	£7.50		£8.23
Data from Streetcar.co.uk, Zipcar.co.uk, CityCarClub.co.uk				

Table L2 – Cost Analysis: Car Club Operators

Car Club Cost by Year (VW Golf)			
Mileage	**Usage Factor**	**Private Vehicle**	**Car Club**
1000	1	£3,692.37	£684.00
2000	1	£3,952.74	£1,314.83
3000	1	£4,213.11	£1,945.67
4000	0.95	£4,473.48	£2,550.06
5000	0.9	£4,733.85	£3,141.22
6000	0.85	£4,994.22	£3,719.17
7000	0.8	£5,254.59	£4,283.89
8000	0.75	£5,514.96	£4,835.39
9000	0.7	£5,775.33	£5,373.67
10000	0.65	£6,035.70	£5,898.72
11000	0.64	£6,296.07	£6,468.73
12000	0.63	£6,556.44	£7,036.10
13000	0.62	£6,816.81	£7,600.82
14000	0.61	£7,077.19	£8,162.90
15000	0.6	£7,337.56	£8,722.33
16000	0.59	£7,797.93	£9,279.12
17000	0.58	£8,258.30	£9,833.27
18000	0.57	£8,718.67	£10,384.77
19000	0.56	£9,179.04	£10,933.62
20000	0.55	£9,639.41	£11,479.83
21000	0.54	£10,099.78	£12,023.40
22000	0.53	£10,560.15	£12,564.32
23000	0.52	£11,020.52	£13,102.60
24000	0.51	£11,480.89	£13,638.23
25000	0.5	£11,941.26	£14,171.22

Table L3 - Car Club Cost by Year (VW Golf)

Car Club Cost by Year (BMW 318)			
Mileage	**Usage Factor**	**Private Vehicle**	**Car Club**
1000	1	£3,626.65	£870.81
2000	1	£3,952.74	£1,688.44
3000	1	£4,213.11	£2,506.08
4000	0.95	£4,473.48	£3,297.28
5000	0.9	£4,733.85	£4,075.25
6000	0.85	£4,994.22	£4,840.00
7000	0.8	£5,254.59	£5,591.53
8000	0.75	£5,514.96	£6,329.83
9000	0.7	£5,775.33	£7,054.92
10000	0.65	£6,035.70	£7,766.78
11000	0.64	£6,296.07	£8,523.59
12000	0.63	£6,556.44	£9,277.77
13000	0.62	£6,816.81	£10,029.29
14000	0.61	£7,077.19	£10,778.18
15000	0.6	£7,337.56	£11,524.42
16000	0.59	£7,797.93	£12,268.01
17000	0.58	£8,258.30	£13,008.96
18000	0.57	£8,718.67	£13,747.27
19000	0.56	£9,179.04	£14,482.93
20000	0.55	£9,639.41	£15,215.94
21000	0.54	£10,099.78	£15,946.32
22000	0.53	£10,560.15	£16,674.04
23000	0.52	£11,020.52	£17,399.13
24000	0.51	£11,480.89	£18,121.57
25000	0.5	£11,941.26	£18,841.36

Table L4 - Car Club Cost by Year (BMW 318)