

Croydon New Schools Demand Analysis: Impact on the Tram Network

1. Scope of Study

In order to meet the need for school places in Croydon the council is allocating a number of sites for primary and secondary schools. There have been two sites proposed on the New Addington branch of the Tramlink network as shown in Appendix 1:

Plot 636: Rowdown Fields, Lodge Lane, CR0 0QA

Plot 662: Coombe Road Playing Fields, Coombe Road, CR0 5RB

Each of the schools are planned to have a minimum of 900 pupils (11-16) with the possibility of a sixth form but these sizes would vary. This work aims to show whether the tram network can cope with the development of the two new schools without S106 funds as mitigation, whether both schools can come forward within the same five year period and whether any changes would need to be made to the school's operations such as staggered start times.

2. Methodology

In order to determine the likely impact on the tram network an estimation of the school catchment has been made based on census zones and journey time mapping (explained in 2.1). Expected trip rates were then applied to the population aged 0-15 in each of the census zones that lie in the new schools catchments to forecast the expected demand by mode.

2.1. Identifying Catchment Area

There are no permanent defined catchments for existing or the new schools and the distance an applicant is from the school only comes into play as part of the sifting process when there is oversubscription. Therefore the catchment, or the distance the furthest applicant that is successful, changes from year to year. Given this the decision was made to use time mapping (TIM) through the Web-based Connectivity Assessment Toolkit (WebCAT)¹. TIM uses the best estimate of connectivity based on the service information available in order to determine how long it takes to travel to/from a selected location. The area surrounding the school which is accessible within 30mins via public transport was highlighted as being the possible catchment area; this is considered a reasonable maximum travel time to school.

After applying TIM to determine possible catchments these were modified further to prevent overlap between different catchments in order to allow for population analysis. The modified catchments including the new schools are shown in Figure 1. They follow the lines of 2011 Census LSOA zones and from this the population aged 0-15 can be inferred and therefore the possible pool of students available to fill the

¹ <https://tfl.gov.uk/info-for/urban-planning-and-construction/planning-with-webcat>

places of the school. It should be noted that private/specialist/faith schools have not

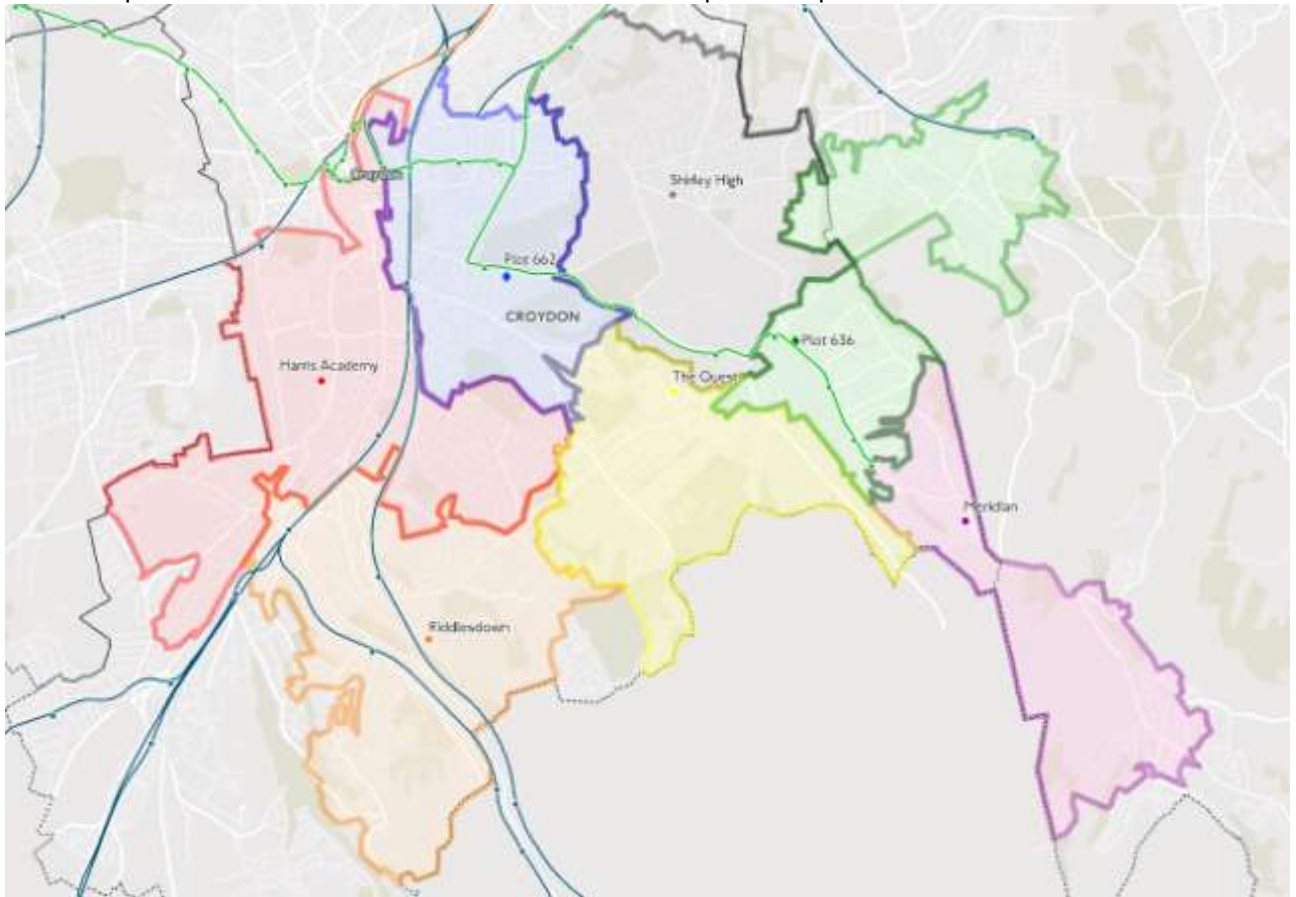


Figure 1: Catchment Areas for Schools (excl. private/specialist/faith). Apparent gaps in catchment such as for 636 are a result of large LSOA due to low housing density and high amount of green space.

been included.

2.2. Mode Share

In order to get an understanding of the number of trips that are likely to be generated by the school a database of validated, observed transport survey data known as TRICS² has been used for a school of similar size and location. This site was the Arts and Media Secondary School on Turle Road in Finsbury Park with a PTAL rating of 3. The characteristics of this London site make it the most appropriate of those available.

The peak time for arrivals at the site is expected to be 0800 – 0900 and from the survey the mode share for trips is calculated as shown in Figure 2 with bus/tram comprising the mode of the greatest number of pupils (42%). Given the nature of this site compared to the others and particularly with regards to rail mode share which is high due to the proximity of the Underground some changes have been made to

² <http://www.trics.org/>

account for the sites in Croydon. The same level of access to the national rail and underground network is not available for these Croydon sites. For plot 662 (Figure 3), 2% of the rail share has been maintained as a consideration of the line through Brighton Main Line running through Croydon and the remaining 12% has been split evenly between bus/tram and vehicles. For plot 636 (Figure 4), the entire rail share has been divided equally between bus/tram and vehicles as there are no national rail or

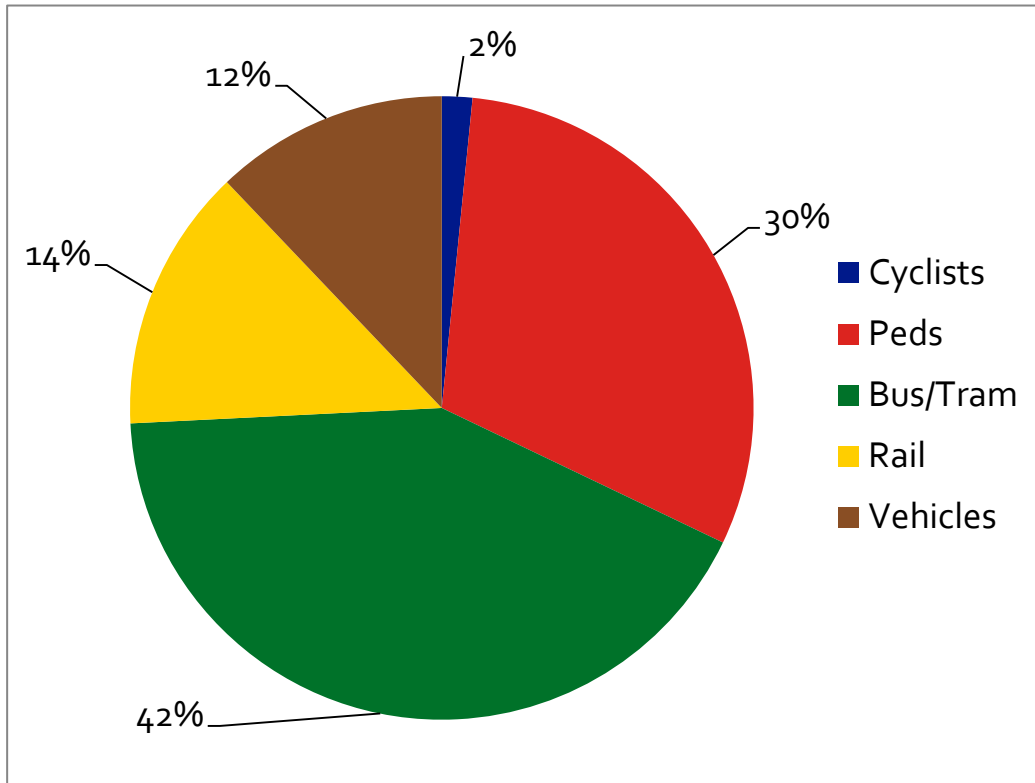


Figure 2: Arrivals Mode Share from TRICS survey at Finsbury Park Site (0800-0900hrs)

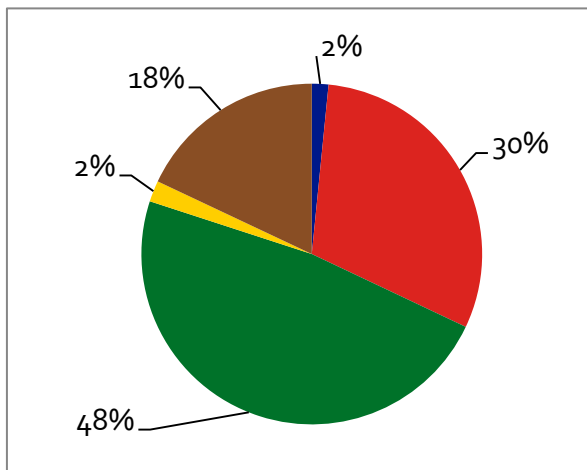


Figure 3: Arrivals Mode Share for Plot 662

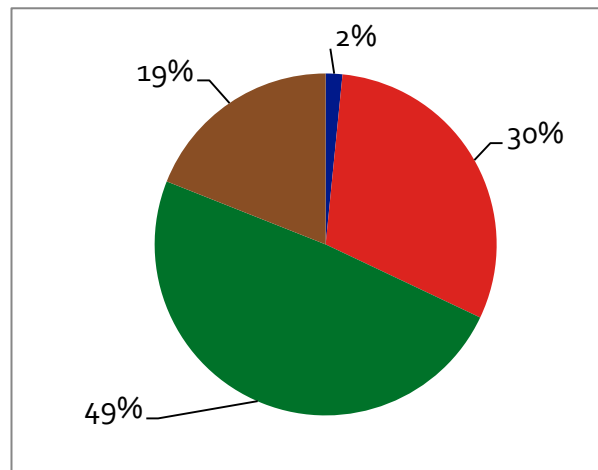


Figure 4: Arrivals Mode Share for Plot 636

underground stations in the school catchment.

The mode shares shown in Figure 3 and Figure 4 have then been applied to the population aged 0-15 in the LSOAs that fall within their associated catchments. A school size of 900 pupils has been assumed and the population used to calculate the distribution. Table 1 and Table 2 show the trip generation per pupil on the LSOA level. Note that LSOA numbers all start with 'E0100____' but this has been omitted from the tables below.

LSOA	Nearest Stop	Population 0-15	0800 to 0900 School Trips by Mode			
			Cyclists	Peds	Bus/Tram	Rail

0760	N/A	275	1	10	16	0	6
0761	N/A	336	1	12	20	0	8
0768	N/A	284	1	10	17	0	6
0838	N/A	263	0	10	15	0	6
0839	N/A	284	1	10	17	0	6
0840	N/A	202	0	7	12	0	5
0841	N/A	291	1	11	17	0	7
1051	Addington Vil.	454	1	17	27	0	10
1052	Addington Vil.	486	1	18	29	0	11
1053	King Henry's	412	1	15	24	0	9
1054	Fieldway	438	1	16	26	0	10
1055	Fieldway	371	1	14	22	0	8
1056	Fieldway	705	1	26	41	0	16
1057	Fieldway	705	1	26	41	0	16
1065	Addington Vil.	170	0	6	10	0	4
1077	King Henry's	283	1	10	17	0	6
1078	New Addington	374	1	14	22	0	9
1128	N/A	486	1	18	29	0	11
1130	N/A	673	1	25	40	0	15
TOTAL		7492	16	275	442	0	169

Table 1: Plot 636, 2011 Census LSOAs, population aged 0-15 and their trip generation per pupil.

LSOA	Nearest Stop	Population 0-15	0800 to 0900 School Trips by Mode				
			Cyclists	Peds	Bus/Tram	Rail	Vehicles
0975	East Croydon	269	1	16	25	1	9
0976	East Croydon	355	1	21	33	1	12
0977	Sandilands	252	1	15	23	1	9
0978	Lebanon Road	264	1	16	24	1	9
0979	Lebanon Road	280	1	16	26	1	10
0986	Addiscombe	331	1	19	31	1	12
1035	Lloyd Park	249	1	15	23	1	9
1036	Lloyd Park	241	1	14	22	1	8
1038	Lloyd Park	257	1	15	24	1	9
1039	N/A	264	1	16	24	1	9
1044	Lloyd Park	330	1	19	31	1	11
1045	East Croydon	245	1	14	23	1	9
1046	Lebanon Road	324	1	19	30	1	11
1047	N/A	241	1	14	22	1	8
1049	Sandilands	219	1	13	20	1	8
1050	Lebanon Road	284	1	17	26	1	10
1122	Coombe Lane	253	1	15	23	1	9
TOTAL		4658	17	274	430	17	162

Table 2: Plot 662, 2011 Census LSOAs, population aged 0-15 and their trip generation per pupil.

In this analysis it is the Bus/Tram that is of greatest interest with the peak for arrivals being between 0800 and 0900. These modes generate the greatest demand of all available modes for both plots adding 275 and 274 trips for plots 636 and 662 respectively.

Figure 5 shows the distribution of trips and their origin based on the percentage of the population aged 0-15. Areas with a higher population of this age will see more trips generated. It can be seen that for plot 636 the highest number come from the New Addington estate (LSOAs 1056 and 1057) where the closest tram stops are King Henry's Drive and Fieldway. These are one or two stops away respectively from Addington Village which would serve the new school.

For plot 662 there are a greater number of Tramlink stops in the catchment so the demand is more spread across stops. The new school would be served by the nearest stop Lloyd Park and those stops seeing the greatest school related demand would be Sandilands, Addiscombe and Lebanon Road. Much of the demand will be in the counter peak direction for Tram passengers with the exception of Coombe Lane. Coombe Lane generates a small number of trips (23) so does not add significantly to the peak level of demand in the morning.

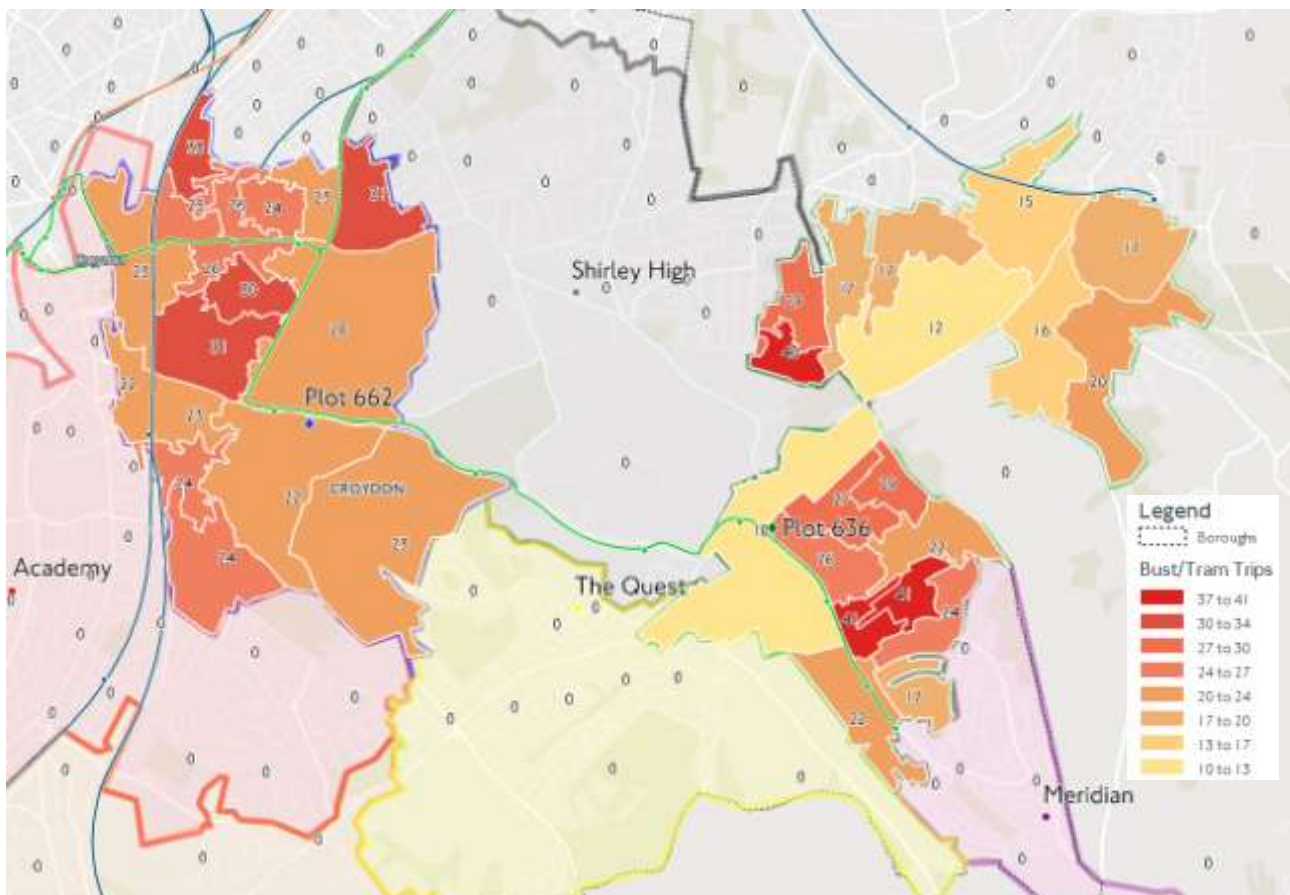


Figure 5: Trip Rates per Pupil for Bus/Tram in the two new catchments during the peak 0800-0900hrs

3. Overall Impact on Tram Network

3.1. Trip Generation

Tables 1 and 2 show a total of 442 bus/tram trips for plot 636 and 440 bus/tram trips for plot 662 are expected to be added to the public transport network. For plot 662 these are likely to originate from Lebanon Road, East Croydon and Sandilands if using tram and be travelling in the contra peak direction of travel.

For plot 636 even though the additional school related demand will be travelling in the peak direction of travel this is at the end of the route where some spare capacity exists. Fieldway and King Henry's Drive are the tram stops most likely to see the greatest number of additional trips.

These trip figures take a 'worst case' scenario where all bus/tram trips become tram trips for those LSOAs that have a tram stop close to them and both sites are developed. A summary of additional school related trips by tram by the origin stop is shown in Table 3.

Tram Stop	Additional Trips
Fieldway	130
King Henry's Drive	41
East Croydon	83
Lebanon Road	106
Sandilands	43
Addiscombe	31

Table 3: Additional Trip Origins in 'Worst Case'

3.2. Crowding

As mentioned earlier many of the trips will be travelling in the counter peak direction and if not at the end of the New Addington branch. Trams operating at 0800-0900hrs calling at the stations of interest in

Table 3 and in the appropriate direction of travel have no issue with crowding and spare seats are available. Both schools being developed at the same time would not present an issue. In addition there will in some areas be a reduction in journeys to existing schools in the area due to change in catchment, however school spaces and hence demand will overall increase.

3.3. Additional Road Vehicle Impact on the Tram Network

Both sites are expected to generate an additional 169 (plot 636) and 162 (plot 662) pupil car vehicle trips. This is unlikely to have an adverse impact on the tram

network as for most of the route the tram is segregated from the road and in any case may be an overestimate as some degree of car sharing will occur. Local roads give opportunities for parking away from the tram network which are likely to be the favoured locations where children are dropped off.

4. Conclusions

The overall impact on the tram network is not deemed to be significant for the following reasons:

- The number of trips expected to use the tram network is small even in a more optimistic demand scenario.
- Of the trips that could be generated to use the Tramlink network there is spare capacity at existing frequencies to accommodate these schools reflecting the contra peak nature of many of the trips and location at the end of the route.
- Both school sites being developed concurrently would be within the capacity of the network and staggered start times would not be required.
- Possible additional road trips would not impede tram reliability.
- This analysis has made assumptions about catchment and mode share and were these to turn out different in practice the demand impact would alter. However, even a significant change is unlikely to lead to a change in conclusion of no significant impact upon Trams.

Appendix 1 – Potential School Location

