8 General traffic

8.1 Where do we want to be?

Definition & context

General traffic includes all private car, van, lorry and taxi vehicles and whose efficient operation depends on how well the road network performs. A road network unable to accommodate general traffic demand leads to; vehicles delays (economic dis-benefit); poor air quality (damage to the environment and human health); and road safety concerns (discourages pedestrian and cycle trips). Air quality and road safety issues have previously been addressed so this chapter focuses on reducing delays by making the road network operate more efficiently.

The vision

The top priority for Croydon's road network is to provide a safe and efficient system for which to move people and goods. It should do so without creating levels of congestion which cause unacceptable delays, environmental or road safety conditions. Key aspirations for Croydon's road network should include:

- maximise the people and goods carrying capacity of the Transport for London Road Network (TLRN);
- reduced levels of congestion and delay through better infrastructure and effective real time traffic management systems – this provision should allow the road network to cope more efficiently with the demands from peak hour commuter traffic flows, access to retail areas, pedestrian crossing movements and access to schools;
- well managed roads able to cope with periodic and one-off instances such as road traffic accidents or emergency utility works;
- well signed routes to local and strategic destinations to reduce unnecessary vehicle mileage on the network;
- direct and accessible car parks from the main road network whose location and access arrangements do not impact negatively on bus, tram, pedestrian or cycle movements;
- safe roads which do not cause excessive severance within neighbouring communities;
- a system to ensure coordinated road works that cause least disruption to the movements of people and goods.

Through a combination of design, construction and intelligent control the road system should be able to balance road user demands across the network to reduce congestion bottlenecks and keep traffic moving.

While these objectives are immediately recognised as beneficial, consideration to the sustainability of any intervention should be carefully assessed. Any improvement to the capacity of the road network is likely to generate demands for road based travel which over time will only cancel out the congestion, air quality and road safety benefits initially gained. Improvements to the highways network should therefore be integrated with the travel demand management initiatives as described in the Chapter 5 of this report.

8.2 Where are we now?

8.2.1 Provision & level of service

Overview

There are four broad components to the highway network that define the level of service it provides for general traffic; the road network (links & junctions); traffic signals; car parks and major infrastructure items such as flyovers, underpasses and bridges.

Road network (junctions and links)

Roads within the Greater London area are managed under a three-tier structure:

- the Transport for London Road Network (TLRN) or more commonly known as red routes;
- the Strategic Road Network (SRN); and
- the local distributor or local access roads.

Figure 8-1 shows the distribution of these three networks across the Borough.

The TLRN forms the key routes or major arterial roads in London and is made up of roads that are owned and maintained by Transport for London (TfL). Only 4 per cent of the roads in London form part of this network but they carry 29 per cent of the city's traffic.

Within the Borough the TLRN is formed of the A22, A23 and A232. The A232 provides an east-west route skirting the southern side of the CMC and linking the Borough with its neighbours in Sutton and Bromley. The A23 stretches in a north-south direction across the Borough passing just to the west of the CMC. It is a particularly important arterial route as it connects Croydon to central London and the south coast (via the M25 and Gatwick Airport).

There are several Borough roads designated by the Secretary of State as forming part of the Strategic Road Network. The SRN comprises roads that are intended to provide for movements within the Borough and to and from adjoining Boroughs. Boroughs retain overall responsibility for these roads but they must notify TfL through the Network Assurance process of any layout or operational changes that alter the performance of the road.

The SRN in Croydon includes part of the A235 London Road and A236 Roman Way/ Mitcham Road to the north of the CMC; the A212 Wellesley Road/ Whitehorse Road connecting the CMC with Crystal Palace via Norwood; and the A222 to the east of the Borough.

All other roads are owned and maintained by Croydon Council. This road network consists of local distributor roads (roads intended to provide access to local destinations and for movements within local areas) and local access roads (intended to provide access to property and also important routes for cyclists).

Traffic signals

At locations where roads meet, junctions facilitate conflicting traffic movements. At junctions where conflicting demands are high, traffic signals are used to ensure the management of vehicle flows and pedestrian crossing demands are undertaken in a safe, controlled and efficient manner.

The locations of traffic signal controlled crossings and junctions are shown in Figure 8-2 which illustrates seven main clusters of signal control within the Borough. These are located along the A23 (focused on the Fiveways junction and in Purley); the A212 Park Lane and Wellesley Road in central Croydon; the A236 Roman Way; South End and High Street to the south of the CMC, A23 London Road north of Thornton Heath Pond and along Thornton Heath High Street.

Car parks

The main locations for car parking[9] are within the CMC and those associated with the retail and business parks along the A23 such as IKEA, Costco and Valley Park. There are also a number of large supermarkets within local centres that provide parking for the store but also the nearby shops. Figure 8-3 illustrates the locations of car parking provision across the Borough.

The CMC has five NCP car parks providing a total of 4,373 spaces. They are located on Dingwall Road (near to the East Croydon rail station), Dingwall Avenue (Allders), the Whitgift centre, Fairfield Halls and Wandle Road. All five car parks provide disabled parking and 3 out of the 5 have CCTV surveillance. A further 2,546 and 423 car parking spaces are also available in privately and Borough operated car parks respectively.

The average cost of parking in the CMC ranges from £10 to 15 a day but with the majority of these car parks being privately owned, the Council has little influence over pricing tariffs.

Car parking facilities outside the CMC are mainly provided by on-street pay & display bays with larger supermarket sites such as Sainsbury's in Selsdon; Tesco in Purley, Elmers Green and Thornton Heath; and ASDA in Waddon open to the public and free to use for short stays.

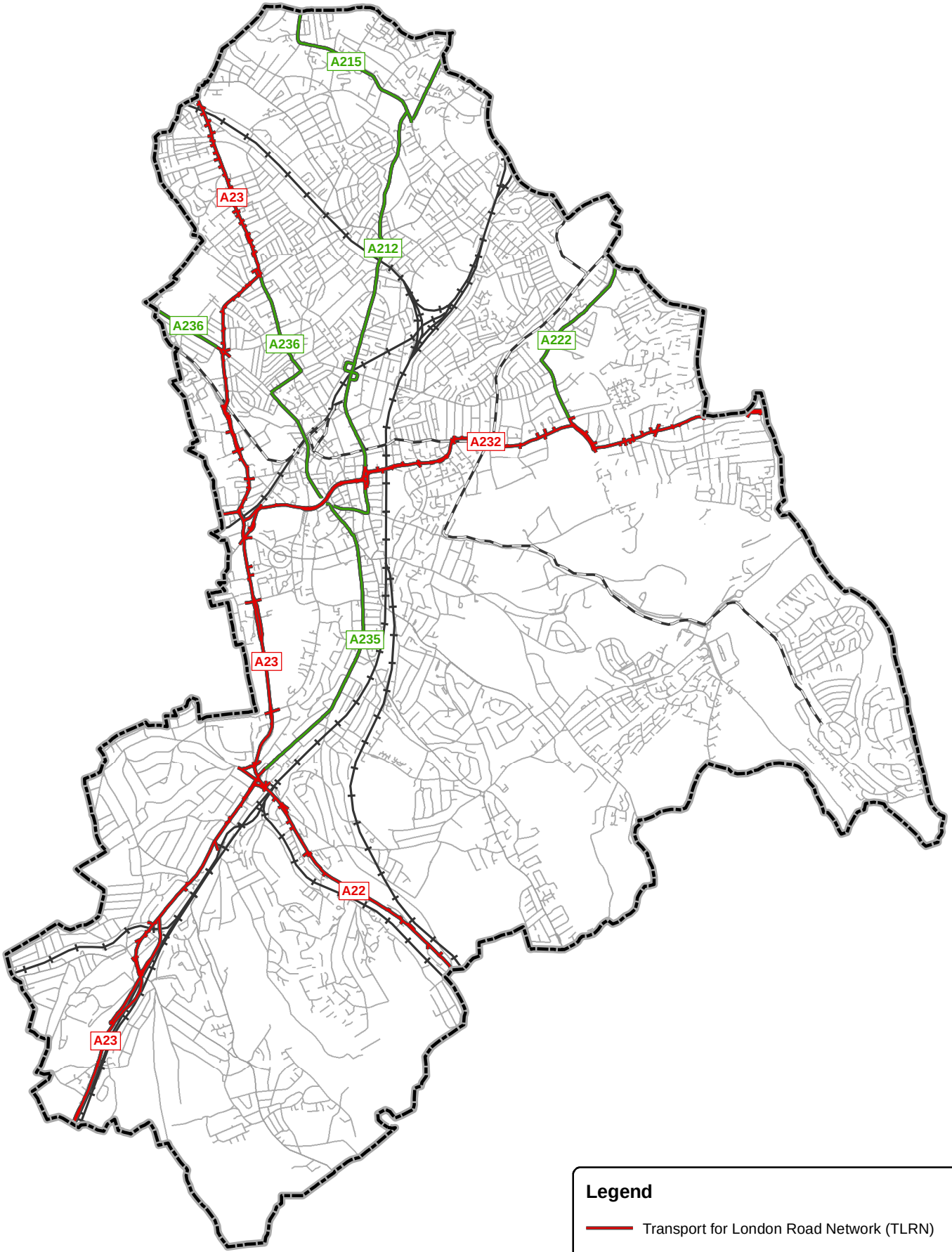
Major highway infrastructure

Croydon's road network is made up of some significant infrastructure feature designed to bypass the extensive rail network, overcome rivers/ stream and topography, allow major routes to intersect and manage the conflict between general traffic and Tramlink services. Key features include:

- along the A23 with major junctions at Purley Cross, Fiveways, Croydon Road, the Lombard roundabout, Thornton Heath Pond and railway bridges at Smitham, Waddon and Norbury stations.
- grade separation along the A232 (Croydon flyover) and A212 (Wellesley Road);
- major complex junctions at the Park Lane, Newgate/ Hogarth Crescent and NLA gyrator's, Old Town roundabout and the Whitehorse Road/ Windmill Road junction.
- junction on Addiscombe Road with Chepstow Road/ Clyde Road and Radcliffe Road where general traffic and tramlines converges;
- numerous road bridges over railway/ tram tracks e.g. Spring Lane (Woodside), Coombe Lane (South Croydon), Arnhem Bridge on Barclay Road; and
- numerous road carriageway underpass to railway lines e.g. Portland Road (in Norwood), London Road (in Norbury), Selsdon Road and Cromer Road (South Croydon).

These major infrastructure features are essential to ensuring the connectivity of the road network but represent a significant maintenance liability to their owners which will only increase as these features approach the end of their design life.

[9] Car parking is a cross cutting theme in this Strategy. Its inclusion within this General Traffic section relates only to parking's impacts on the road network which tend to relate to capacity, location and access.



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Croydon Borough Wide Transport Strategy

Borough,Strategic and TfL road networks

Date	May 2010
Scale	1:65,000 @ A4
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Figure Number	**Figure 8-1**

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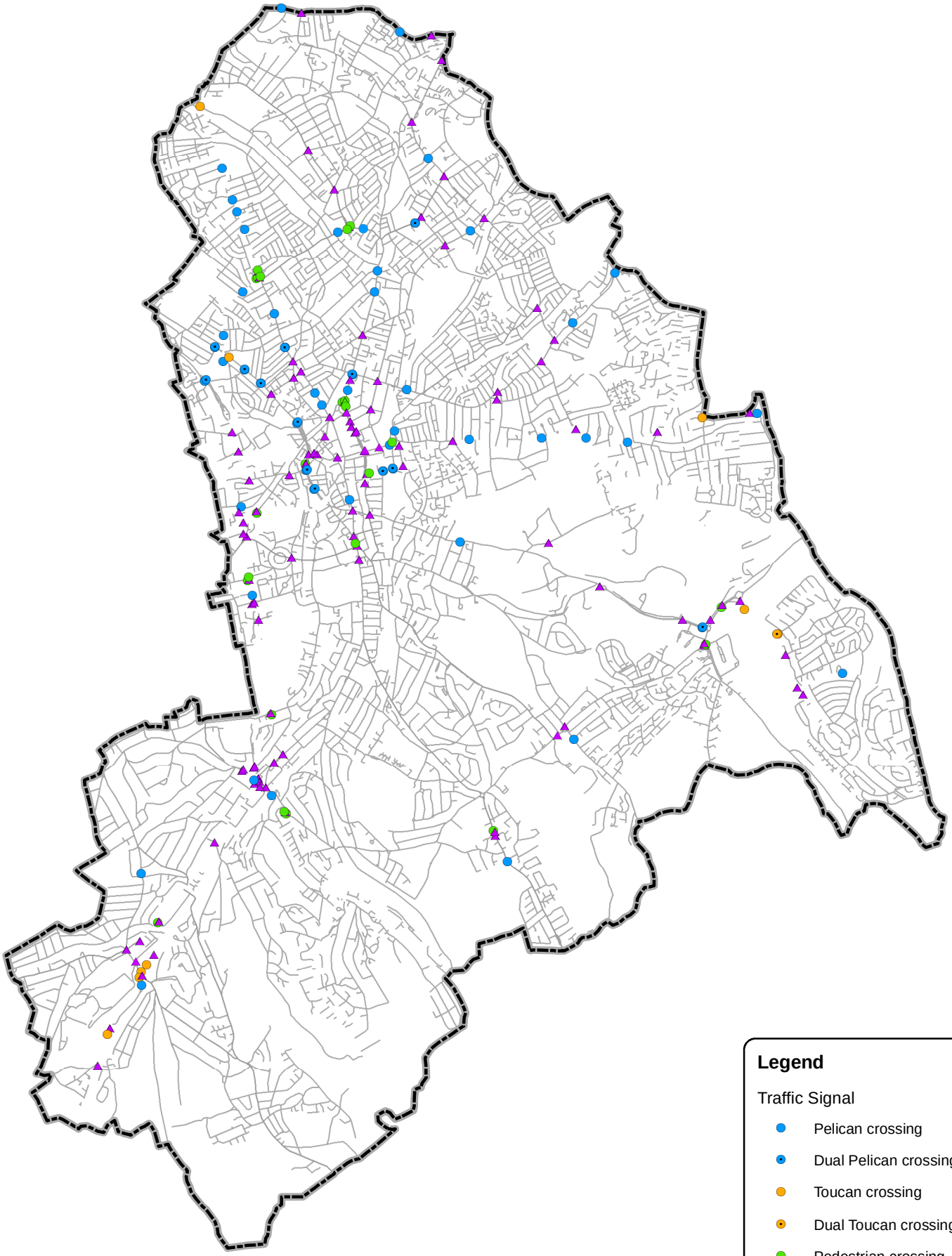

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Croydon Borough Wide Transport Strategy

Location of traffic signals

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Figure Number	**Figure 8-2**

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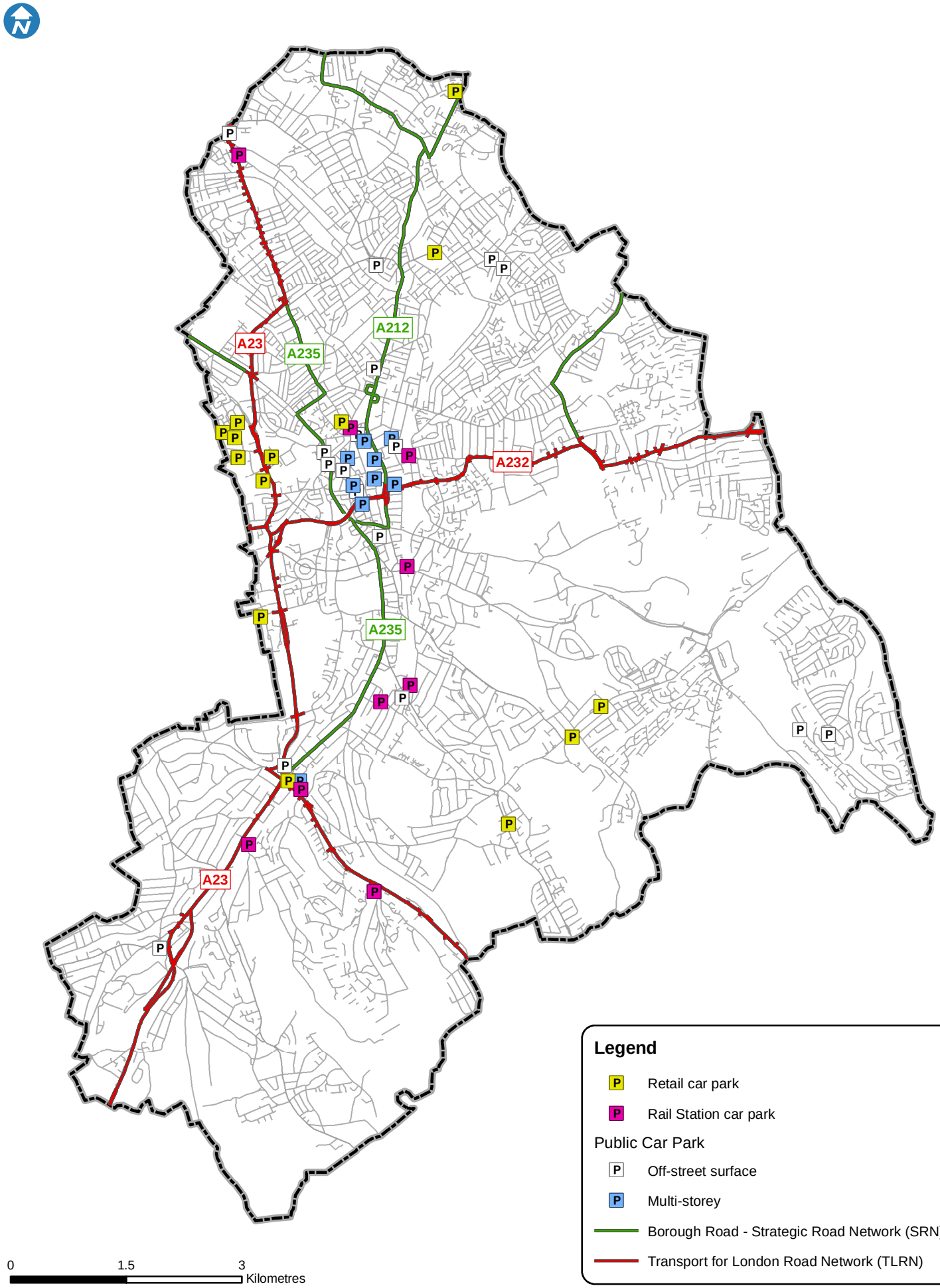

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Location of car parks

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Figure Number	**Figure 8-3**

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8.2.2 Performance

Road network (Junction capacity)

Traffic Master data provides an indication of where and when road traffic congestion occurs within the Borough. Much of this congestion is linked to bottlenecks in the road network caused by insufficient junction capacity, poorly co-ordinated traffic signals, competing demands from pedestrian crossing or on-street parking activity. The Traffic Master data illustrated congestion hotspots within the Borough as illustrated in Figure 8-4 and summarised in the 'Issues & Solutions' spreadsheet found in Appendix D.

TfL's key concern with the performance of the TLRN relates to the A23 and the critical junctions of; the Purley Cross gyratory **[GT.01]**, Fiveways **[GT.02]**, the Croydon Road junction **[GT.03]**, the Lombard roundabout **[GT.04]** and the Thornton Heath Pond roundabout **[GT.05]**. TfL also has future concerns related to the impact of proposed development within the CMC on the performance of the A232 route, particularly the j/w A212 Park Lane **[GT.06]**.

Other problem areas on the TLRN include the A22 Godstone Road j/w Down's Court Road **[GT.07]**, the section of A235 London Road near Norbury railway station **[GT.08]** and the A23 Coulsdon bypass with Lion Green Road **[GT.09]**.

Within the Borough road network (but predominantly on the SRN) there is an indication of serious traffic queuing along the major distribution routes and exiting blocking of junctions leading to potential network grid lock. The area most at risk includes those roads and junctions just to the north of the CMC, namely:

- Windmill Road (A213) j/w Whitehorse Road (A212) **[GT.11]**
- Roman Way (A236) j/w Derby Road (A235) **[GT.12]**
- London Road (A235) j/w Sumner Road (A213) **[GT.13]**
- Mitcham Road (A236) j/w Sumner Road (A213) **[GT.14]**
- Wellesley Road (A213) j/w Station Road **[GT.15]**
- St. James's Road (A222) j/w Whitehorse Road (A212) or Newgate gyratory **[GT.16]**

There is also an area to the east of the CMC (i.e. along the Addiscombe Road and Lower Addiscombe Road corridors) where the local road network suffers congestion and delay. These junctions are in close proximity to the tram lines and it is suspected that the combination of people getting dropped off at tram stops and the conflicting demands of trams, general traffic and pedestrian crossing movement create congestion at the following junctions.

- Addiscombe Road gyratory **[GT.17]**
- Addiscombe Road (A232) j/w Chepstow Road **[GT.18]**
- Lower Addiscombe Road (A222) j/w Shirley Road (A215) **[GT.19]**
- Lower Addiscombe Road (A222) j/w Cherry Orchard Road (A222) **[GT.20]**

Another group of congested junctions occurs to the south of the CMC. These are listed below each with a description of the site specific causes of congestion.

- Southbridge Road j/w Lower Coombe Street (nr Old Town roundabout) is a mini-roundabout currently acting as a heavy converging point of traffic flows. The lack of capacity leads to severe queuing on Brighton Road and Coombe Road. **[GT.21]**

- George Street j/w Wellesley Road & Park Lane (despite the underpass) experiences severe congestion as it tries to balance high general traffic, bus and pedestrian crossing activity with tram movements. This junction is also an identified high risk for accidents. **[GT.22]**

- Brighton Road j/w Sanderstead Road is a priority junction unable to cope with the level of demand from side road traffic (Sanderstead Road) and pedestrians using the Zebra crossings on Brighton Road. **[GT.23]**

- Brighton Road j/w Southbridge Road experiences delays on the southbound approach as vehicles try to join Brighton Road. **[GT.24]**

The final group of congested junctions are located in north Croydon, namely:

- Brigstock Road j/w High Street (Thornton Heath) is a junction that was required to serve conflicting movements between local traffic, traffic on the orbital route and town centre pedestrian crossing demands in Thornton Heath. **[GT.27]**

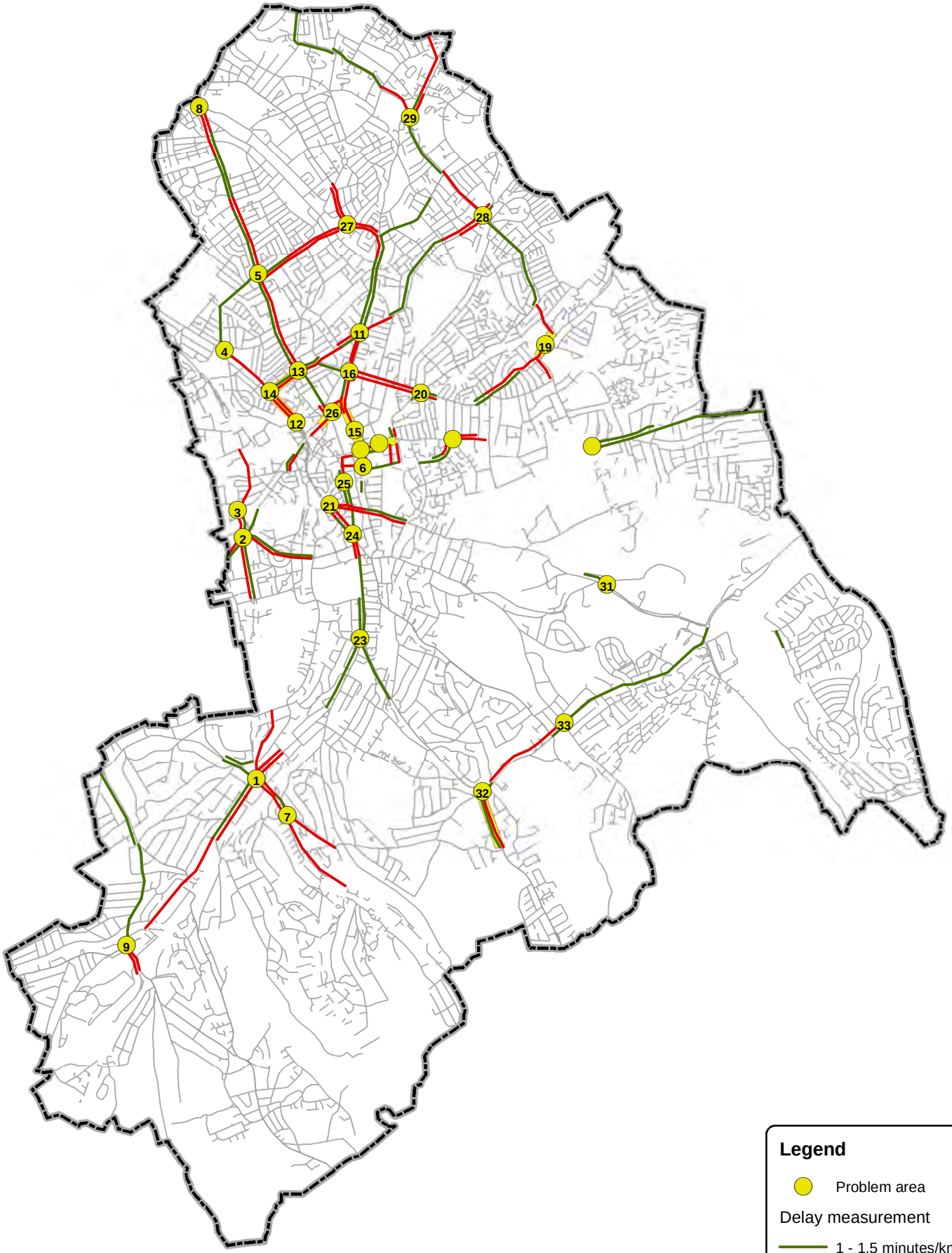
- South Norwood Hill j/w Portland Road suffers from highway capacity constraints, unable to accommodate the high level of traffic demand. **[GT.28]**

- South Norwood Hill j/w Beulah Hill suffers from highway capacity constraints, unable to accommodate the high level of traffic demand. **[GT.29]**

Road network (link capacity)

At locations where the downstream junction is not the constraining feature, options to improve traffic flows focus on removing temporary (e.g. parking) of fixed (e.g. narrow traffic lanes) obstructions. There may also be scope to reduce the number of signals but this must be balanced with the needs of pedestrians. The High Street through Thornton Heath was identified as a key area where link capacity needed to be improved. **[GT.34]**

Wellesley Road is the main vehicular route within the CMC. About half of the vehicles using Wellesley Road is through traffic (i.e. without an origin or destination within the CMC) while a further 3-10 per cent is circulating traffic (undertaking u-turning movements to access to or egress from the area). With the underpass and dual carriageway road layout there are few delays within the central lanes of Wellesley Road. Access to car parks and side roads do however cause long periods of congestion which contribute to a poor pedestrian environment and delay to bus services.



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Location of general traffic delay (2009)

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Figure Number	**Figure 8-4**

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Traffic signals

The Traffic Master data indicates locations where there is a high density of traffic signal controlled junctions or crossings, traffic speeds tend to be slower. This does not necessarily reflect the efficiency of the signal control but the level of conflicting demands being accommodated. This is particularly evident in town centre locations where signalised junctions are often inter-dispersed with controlled pedestrian crossings. **[GT.50]**

Car parks

The location of car parks within the CMC tend to lead to convoluted access/ egress arrangements which compound congestion levels on the local road network. The build up of queues on the approach to car parks can also disrupt to the operation of bus services and contribute to poor air quality, particularly along Wellesley Road. **[GT.51]**

The car parking facilities elsewhere in the Borough tend to be provided by the larger supermarkets which may not be designed for the convenience of access to other local amenities. Alternative parking facilities tend to be Pay & Display bays within the town and district centres, however the level of utilisation for these parking facilities is not be readily available, making it difficult to understand current levels of usage and demand. **[GT.52]**

Mayor highway infrastructure

It was observed that, at locations where flyovers or underpasses are used to relieve conflicting vehicle movements, congestion is a common feature in the surrounding network. Key examples include the Old Town roundabout under the Croydon flyover **[GT21]**; the George Street j/w Wellesley Road and Park Lane over the Croydon underpass **[GT.22]** and along Lion Green Road on the approach to the A23 Coulsdon bypass **[GT.09]**.

Another key constraint relates to the weight limit restrictions on many of the bridges owned by either the Council or Network Rail. These bridges either create a bottleneck to traffic flow by creating pinch points in road widths or forcing goods vehicles over a certain weight to travel along a longer diverted route. There are currently six Network Rail bridge structures that are programmed for strengthening/ replacing in the next 5 years. These bridges are restricted by an 18-20 tonne weight limit and include; Blackhorse Lane South **[MHI.02]**; Windmill Bridge/ St. James **[MHI.03]**; Spurgeons Bridge **[MHI.04]**; Woodplace Lane **[MHI.05]**; Coombe Road **[MHI.06]**; and Brigstock Road **[MHI.07]**. There are also two road bridges that require strengthening, namely Dunbar bridge **[MHI.08]** with a 3 metre span and 7.5t weight limit); and Tennison Road bridge **[MHI.09]** with a 12.5t weight limit.

The road bridge over railway tracks on Purley Way, north of the Fiveways junction is currently a bottleneck to traffic flow. The bridge is getting close to its designed life span and will require reconstruction in the near future however a recent cost benefit analysis showed a negative result. **[MHI.10]**

8.2.3 Common themes

High demand corridors

High traffic demand for the A23 is over saturating junctions and leading to high levels of congestion along this corridor but also the many approach roads which provide essential east-west connections across the Borough. Of particular concern are junctions at Purley Cross and Fiveways where vehicle turning demands combined with a high proportion of larger vehicles associated with access to the retail and industrial areas adjacent to the A23 disrupt through traffic movements.

Railway & tram network impacts

The extent of the railway in Croydon requires the road network to bypass these lines using a network of underpasses and over bridges. The convergence of roads at these locations can result in bottlenecks being created which in turn leads to periods of congestion and delay. The rail depot at Selhurst, the bridge near Waddon station and the Hogarth gyratory are three areas were deficiencies in the road infrastructure required to bypass the rail network causes problems.

A similar situation occurs when roads intersect with the tram network. With trams given absolute priority via 'hurry calls', general traffic can suffer significant delays at locations where there is an at-grade crossing on the road network with Tramlink. Key hot spots included those along Addiscombe Road but also near West Croydon station. There is no suggestion that this priority should be changed as Tramlink provides a much greater opportunity to provide the network capacity increases required to help facilitate growth within Croydon without further detriment to the environment from road traffic congestion. The issue therefore is for highway traffic and bus operations and how they are managed to operate around the trams.

Conflicting demands

Congestion at junctions within the CMC and local centres is often caused by the conflicting demands between general traffic and pedestrian crossing flows. The various forms of conflicting movements often require traffic signals to ensure all movements can be undertaken in a controlled environment but this often results in an unsatisfactory situation for both drivers and pedestrians. The data also indicates increased levels of congestion where there is a higher density of signal controlled junctions and crossings such as along Thornton Heath High Street.

Car parks

Many of the most popular car parks in the CMC connect to the local road network via Wellesley Road. Although these car parks are located almost adjacent to Wellesley Road the combination of high traffic flows and the grade separated layout can make them difficult to access and the resulting queues and u-turning movements has a negative impact on the movement of people along the corridor. There is potential to relocate the car park accesses in the town centre away from Wellesley Road onto alternative quieter roads to relieve the capacity problems.

Major highway infrastructure replacement

Croydon has some major highway infrastructure items related to either rail network or associated with the numerous flyovers, underpasses, gyratory or major traffic signal junctions. Many of these require strengthening works or are due for replacement which could have a significant impact on vehicular movements particularly for freight, if funding cannot be found to carry out these repairs.

8.3 What are the options for change?

8.3.1 Overview

The section discusses opportunities to improve the highway network in Croydon with reference to specific problems. These opportunities range from increasing junction capacity at key bottlenecks to improving traffic signal control and wider area demand management strategies to reduce travel by private car. Details of possible actions to tackle the problems identified can be found in the 'Issues & Solutions' spreadsheet in Appendix D.

8.3.2 Road network

Junction capacity

Many of the junctions on Croydon's road network have insufficient capacity to accommodate the level demand placed upon them by general traffic, bus, tram and pedestrian flows. This Strategy has identified a number of problem junctions where there is a need for an operational and layout review to establish opportunities to increase capacity. Any additional capacity this process may realise will need to be carefully distributed amongst the competing demands as the risk of a wholesale increase to general traffic capacity will only generate vehicle trips and over time return the network to its current unsatisfactory state.

The scope to increase junction capacity will vary with some requiring only small changes to signal control or approach lanes while others road widening potentially requiring statutory utility diversions or third party land acquisition. Any justification to increase junction capacity should be based on the importance of the junction to achieve the many cross cutting aims of this Strategy.

A priority should be to ensure TfL fast tracks ***A23 capacity improvements*** with the aim of reducing congestion along the main road but also the approach roads which can suffer disproportional delays. Approach road delays at the Fiveways junction is a key disincentive to orbital movements across the Borough. The improvements should consider the corridor as a whole as improving capacity for general traffic at one junction will exacerbate problems at the downstream junctions. Key junctions for consideration include Purley Cross gyratory [GT.01], Fiveways [GT.02], Purley Way j/w Croydon Road [GT.03] and the Lombard Road roundabout [GT.04].

The main orbital route through Croydon in the east-west direction is the A232, connecting Croydon with Bromley and Sutton. The A232 meets the main north-south route of A23 just to the north of the Fiveways junction. Proposals to improve the capacity of this and the Fiveways are presented in TfL's Network Management Plan [Transport for London, 2007] for the A232 which presents a number of short and long term improvements. These include:

- Introduce bus lanes on the Stafford Road approaches.
- Create a new relief road linking Croydon Road directly to Duppas Hill Road thereby allowing east-west traffic to bypass the Fiveways junction.
- Introduce a five lane approach to the Five Ways junction which requires land acquisition on the Land of Leather site.
- Remove an arm from the junction to simplify the signal plan. TfL also investigated removing one of the arms to the junction.

Link capacity

Key sources of link congestion relate to poorly located parking/ loading bays, bus stops, the over provision of controlled pedestrian crossing's, heavy side road movements and permanent pinch points in the road carriageway. Many of these problems occur in district and town centre high streets where the conflicting needs of pedestrians, through traffic and waiting & loading activity causes a break down in traffic flows, leading to congestion and increased poor air quality.

8.3.3 Traffic signals

There are some signal controlled junctions where performance could be improved by adjustment to signal timings/ co-ordination, driver lane discipline or reducing kerbside waiting and loading activities.

SCOOT is an urban traffic control system that performs real time optimisation of traffic signal timings based upon traffic demands at junctions in a local road network. It is a Mayoral priority to upgrade existing traffic signal sites to SCOOT technology to improve traffic flow progression. Priorities for SCOOT should include the A23 and A232 corridors.

To smooth traffic progression on congested corridors, there may be scope to reduce the number of traffic signals but this must be balanced with the needs of pedestrians.

8.3.4 Car parks

There is significant opportunity within the emerging CMC Masterplan proposals for a restructuring of parking provision to ensure access routes are more conveniently located off the main road network and do not require vehicles routing through sensitive parts of the central area. An infrastructure and operational review of parking within the CMC has already been proposed in the Travel Demand section of this Strategy.

Outside the CMC a review of parking provision in local centres should be undertaken with potentially new parking areas in local centres to the south of the Borough. This again has been suggested in the Travel Demand section of this report.

8.3.5 Roadwork co-ordination and management

The TfL Road works permit scheme will be introduced from 11th January 2010. The permit scheme would require utility companies to pay a rental charge for every day that they are performing road works on a street in London, rather than paying the one-off fee that is currently in place.

Permitting will enable better coordination of road works and providing better opportunities for multiple companies to work on the same sections of road simultaneously. Not only would the scheme reduce the occurrence of road works, it would also encourage utilities companies to undertake better planning for their construction works, reducing the duration of disruptions to general traffic.

An alternative scheme is the lane rental plan under which utility companies would have to pay a charge for the time they occupy the road when conducting street works. The options is seem as providing a much simpler way of reducing time road works take to complete but is less affective and being able of co-ordinate road works.

8.3.6 Major highway infrastructure

The grade separation road arrangement along Wellesley Road has been identified as one of the infrastructure barrier to traffic growth within the town centre as well as the wider road network within Croydon. There are potentials to modify the carriageway layout on Wellesley Road (Borough section) and implement at grade access in the area.

Some of the carriageway widths were also restricted by the presence of the railway tracks, either positioned on a bridge over the carriageway or the carriageway was bridged over the railway track. Many of such locations are currently acting as bottlenecks within the existing road network; other locations will be a key constraint to accommodate traffic growth in the future. There are potentials to remove these bottlenecks from the local road network. However, such opportunity will require significant commitment in the form of funding and political support. The construction will also cause significant amount of disruption to the area, which may not be popular with local businesses and residents.