Expansion of Kingsgate Primary School and Redevelopment of Liddell Road

Transport Assessment

Submitted in support of
Application 01 for Phase 01
Application 02 for Phase 02
December 2014

Camden

London Borough of Camden
Kingsgate Primary School

Expansion of Kingsgate Primary School and Redevelopment of Liddell Road

Transport Assessment

Prepared for

London Borough of Camden

November 2014

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Issued 04th December 2014

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Contents

1.0 Introduction

Alan Baxter & Associates LLP have been appointed by Maccreanor Lavington as movement and transport advisors to support the proposals for a mixed use development at Liddell Road, West Hampstead. This Transport Assessment (TA) and supporting Framework Travel Plan has been prepared to accompany two separate detailed planning applications for the regeneration of Liddell Road, to be submitted by Tibbalds. The TA sets out the policy and baseline movement context, describes the development and its transport impact together with the mitigation measures. For the purposes of this TA both planning applications are considered and are to be represented in the form of Phase 1 (School), Phase 2 (Residential and Commercial), and Phase 1 + 2 (the masterplan).

The redevelopment proposals include 106 residential units, 3729m^2 commercial space, and a four-form entry (4FE) infant school. The proposed school will form part of an expansion of the existing Kingsgate School on Kingsgate Road, south of the site. The new infant school will become part of the existing Kingsgate School which will then operate over two sites.

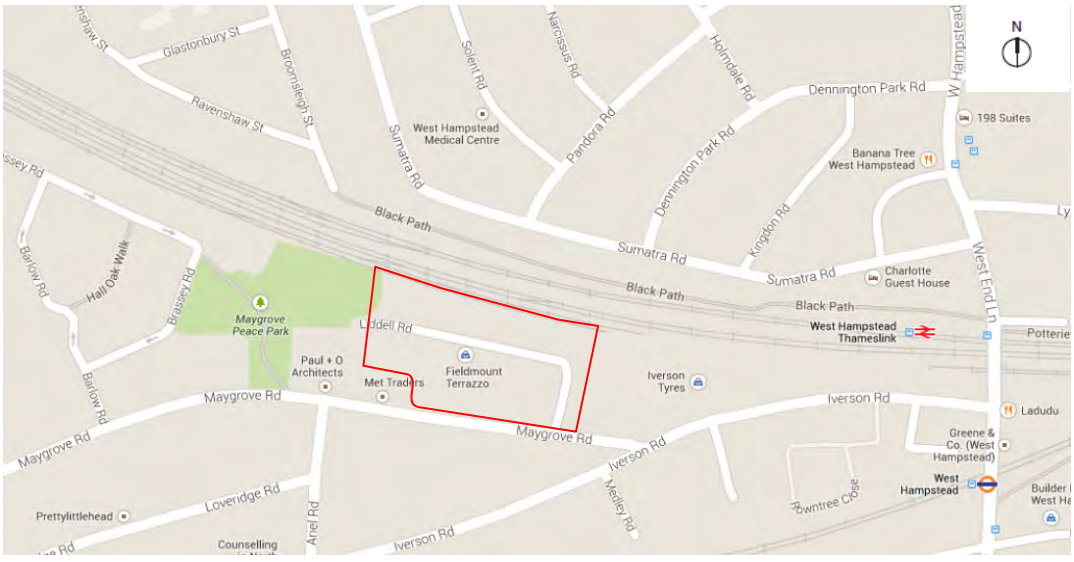
A Scoping Study was prepared prior to commencing the TA which set out the approach to be taken in preparation of the TA and Framework Travel Plan for discussion and approval with transport officers from London Borough of Camden (LBC).

Liddell Road is located in West Hampstead, North West London in the Borough of Camden and is situated to the west of West Hampstead Thameslink Station (see **Figure 1.1** below). The wider area of the site is largely residential with retail and community facilities located on West End Lane to the east and Kilburn High Road to the west. Immediate to the site, the area is predominately residential but within close proximity to many local amenities such as a public library, police station, and several places of worship.

The site is bounded by rail lines to the north, a light industrial estate to the east, Maygrove Road to the south and Maygrove Peace Park to the west. The existing site has a single point of access via Maygrove Road and provides no access through to Maygrove Peace Park.

The site has excellent access to public transport as it is within walking distance to London Underground, Overground and Thameslink stations on West End Lane and Iverson Road. Similarly regular bus services run from West End Lane and Kilburn High Road connecting the site to surrounding neighbourhoods and Inner and Outer London.

Figure 1.1 - Site Location



Liddell Road is a private road which forms the spine of the site itself, providing access to the small light industrial estate (GDO use class B2/B8) which currently occupies the site, known as Liddell Road Industrial Workshops. Three large warehouse units accommodate approximately 33 units / workshops. The units are set back approximately 10m from the road creating a large forecourt area on either side. The forecourt areas accommodate the operational needs of each unit and provide a large area for parking.

2.0 Policy Context

There is a range of national, regional and local policy and guidance documents that outline the planning policy framework for the proposed development within Camden. A brief summary of the most relevant documents and policies is outlined below.

2.1 National Policy

The national planning policy documents relevant to the transport aspects of this development include the following:

- National Planning Policy Framework (2012)
- White Paper 'Creating Growth, Cutting Carbon, Making Sustainable Local Transport Happen, (2011)
- DfT Guidance on Transport Assessment (March 2007)
- Manual for Streets (2007)
- Manual for Streets 2 (2011)

An overarching aim of all these documents is to encourage a more sustainable approach to transport that reduces the negative environmental impacts associated with private car use.

2.2 Regional Policy

The regional planning policy documents relevant to the transport aspects of this development include the following:

- The London Plan (2011)
- Mayor's Transport Strategy (2010)

The London Plan (2011)

Revised Early Minor Alterations to the London Plan (2013)

The London Plan is the overall spatial development strategy for Greater London, setting out an integrated economic, environmental, transport and social framework for the development of the city over the next 20-25 years. The document brings together the geographic (although not development specific) aspects of the Mayor's other strategies, including those dealing with transport.

The Mayor recognises that transport plays a fundamental role in addressing the whole range of his spatial planning, environmental, economic and social policy priorities. It is recognised that poor or reduced accessibility can be a major constraint on the success and quality of places, and their neighbourhoods and communities. He is particularly committed to improving the environment by encouraging more sustainable means of transport, through a cycling revolution, improving conditions for walking, and enhancement of public transport.

Policy 6, Transport, sets out to encourage patterns and nodes of development that reduce the need to travel, especially by car. It seeks to improve the capacity and accessibility of public transport, walking and cycling, promoting greater use of low carbon technology so that carbon dioxide and other contributors to global warming are reduced. It aims to promote walking by ensuring an improved urban realm.

New developments must ensure that 1 in 5 car parking spaces provide an electrical charging point to encourage the uptake of electric vehicles, provide parking for disabled people, meet the minimum cycle parking standards and provide for the needs of businesses for delivery and servicing.

Car and cycle parking standards for Liddell Road's uses (for new development):

- For recreational and leisure: one car parking space per disabled member of staff plus 6% of the total capacity
- For D2 use: 1 cycle parking space per 10 staff plus 1 per 20 peak period visitors.

Mayor's Transport Strategy 2010

The Mayor's Transport Strategy (MTS) is a statutory document and presents an integrated package of measures that are designed to improve transport, enhance London's environment and foster its development as part of a strategic policy framework over the next 20 years. The MTS deals with both the issues of improving public transport and also examines how best to tackle congestion.

This sets six thematic goals, which link to the six themes of the London Plan:

- Supporting economic development and population growth
- Enhancing the quality of life for all Londoners
- Improving the safety and security of all Londoners
- Improving transport opportunities for all Londoners
- Reducing transport's contribution to climate change, and improving its resilience
- Supporting delivery of the legacy of the London 2012 Olympic and Paralympic Games

The MTS notes that major planning applications meeting certain criteria are referable for the Mayor's consideration and for these TfL will provide advice on transport impacts and mitigation. Major referable applications will need to include comprehensive transport assessments, travel plans, delivery and servicing plans (DSPs) and construction logistics plans (CLPs), prepared in accordance with TfL's best practice guidance. The proposals for Liddell Road do not, however, constitute a major referable application.

2.3 Local Policy

The local planning policies relevant to the transport aspects of this development are set out in the Camden Borough Council's Local Development Framework and its supplementary documents:

- London Borough of Camden Core Strategy (November 2010)
- London Borough of Camden Development Policies (November 2010)
- London Borough of Camden Local Implementation Plan (August 2011)
- London Borough of Camden Planning Documents Guidance

Core Strategy (November 2010)

The Local Development Framework is a collection of planning documents which sets out a strategy for managing growth and development within the borough. The lead document is the Core Strategy, which sets out the key elements of the Council's planning vision and strategy for the borough and contains strategic policies.

Four main themes have been identified in the LDF Core Strategy vision. These are:

- A sustainable Camden that adapts to a growing population
- A strong Camden economy that includes everyone
- A connected Camden community where people lead active, healthy lives
- A safe Camden that is a vibrant part of our world city

Within each of the four main themes, a series of objectives have been outlined to guide the delivery of the Strategy's vision. Subsequent Core Strategy Policies are developed to aid the implementation of each objective. Notable policies include:

- CS2 Growth Areas
- CS6 Providing quality homes
- CS10 Supporting community facilities and services
- CS11 Promoting sustainable and efficient travel
- CS13 Tackling climate change through promoting higher environmental standards
- CS14 Promoting high quality places and conserving our heritage
- CS16 Improving Camden's health and well-being
- CS19 Delivering and monitoring the Core Strategy of these policies CS2 CS11 and CS19 in particular are relevant

The key elements of CS2 are:

- West Hampstead Interchange has been selected as a Growth Area, where development in Camden to 2026 will be concentrated. West Hampstead Interchange had also been selected as an area for intensification in the London Plan.
- At West Hampstead Interchange the council expects improvements and supporting infrastructure to include a mix of land uses, improved transport accessibility and capacity with improved pedestrian/ cycle movement, substantially improved street environment around transport facilities, and development which respects and enhances the character and heritage of West Hampstead.

Key elements of CS11 are:

- Improving strategic transport infrastructure to support growth
- Promoting sustainable travel
- Making private transport more sustainable
- Promoting the sustainable movement of freight

The key elements of CS19 are:

- Work with relevant providers to ensure necessary infrastructure is secured
- Use of planning obligations as a mechanism to support sustainable development and secure necessary infrastructure and mitigate the impact of development
- Work with neighborhood boroughs to co-ordinate delivery across boundaries
- Monitor implementation of Core Strategy against key indicators

Camden Development Policies (November 2010)

Camden Development Policies forms part of the Council's Local Development Framework (LDF) and contribute to delivering the Core Strategy by setting out detailed planning policies that the Council will use when determining applications for planning permission in the borough to achieve the vision and objectives of the Core Strategy.

The development policies relate to each of the Core Strategy Policies and have been set out in a series of themes which both documents use. These are:

- Location and management of Growth in Camden
- Meeting the needs of Camden – providing homes, jobs, facilities
- A sustainable and attractive Camden – tackling climate change and improving and protecting our environment and quality of life
- Delivery and monitoring
-

Relevant transport policies are:

- DP16 The transport implications of development
- DP17 Walking, cycling and public transport
- DP18 Parking standards and limiting the availability of car parking
- DP19 Managing the impact of parking
- DP20 Movement of goods and materials
- DP21 Development connecting to the highway network
- DP32 Air quality and Camden's clear zone

Camden's Transport Strategy – Camden's Local Implementation Plan (August 2011)

The Greater London Authority Act 1999 requires London Boroughs to produce a Local Implementation Plan (LIP), which demonstrates how each authority will deliver the MTS, and the Central and North Sub-Regional Transport Plans. In response to this requirement, Camden has developed the Camden Transport Plan. The plan sets out Camden's vision and policies for implementing projects that will improve the quality of the environment and access to transport within the Borough.

The five growth areas in Camden - King's Cross, Euston, Tottenham Court Road, Holborn and West Hampstead – are expected to contain the majority of Camden's future growth and redevelopment. These areas have been identified in the London Plan as being suitable locations for redevelopment and/or additional jobs or housing, and are based around interchanges where increased capacity is planned. The site at Liddell Road is located adjacent to the West Hampstead Growth Area.

Camden's transport policies are fundamentally in line with the MTS. The document contains a matrix demonstrating this on a policy-by-policy basis. In general terms, the key transport priorities included in the MTS that are relevant to the proposed development include the following:

- Reduce motor traffic levels and vehicle emissions to improve air quality, mitigate climate change and contribute to making Camden a 'low carbon and low waste borough
- Encourage healthy and sustainable travel choices by prioritising walking, cycling and public transport in Camden
- Improve road safety and personal security for people travelling in Camden
- Effectively manage the road network to reduce congestion, improve reliability and ensure the efficient movement of goods and people
- Develop and maintain high quality, accessible public streets and spaces and recognise that streets are about more than movement
- Ensure the transport system supports Camden's sustainable growth and regeneration as well as enhancing economic and community development
- Ensure the transport systems supports access to local services and facilities reduces inequalities in transport and increases social inclusion
- Ensure that the provision of parking is fair and proportionate by considering the needs of all users, whilst also encouraging sustainable travel choices

The document identifies Camden Council's commitment in promoting a shift toward sustainable modes of transport, such as walking and cycling.

Camden's Planning Guidance

Although they are not part of Camden's statutory development plan, the Planning Guidance Documents play an important role in making planning decisions. Camden Planning Guidance provides advice on how the Council applies all planning policies.

The Camden Planning Guidance - Transport (CPG7) (2011) provides information on all types of detailed transport issues within the borough and includes:

- Assessing transport capacity
- Travel Plans
- Delivery and Servicing Management Plans
- Car free and car capped development
- On-site car parking
- Vehicle access
- Streets and public spaces
- Cycling facilities
- Minicab offices

The guidance supports the policies in the Local Development Framework (LDF). It is therefore consistent with the Core Strategy and the Development Policies, and forms a document as part of the Supplementary Planning Document (SPD) which is an additional "material consideration" in planning decisions.

The guidance supports the following Core Strategy Policies:

- CS11 Promoting Sustainable and efficient travel
- CS16 Improving Camden's health and well-being

This guidance supports the following Local Development Framework policies:

- DP16 The transport implications of development
- DP17 Walking, cycling and public transport
- DP18 Parking standards and limiting the availability of car parking
- DP19 Managing the impact of parking
- DP20 Movement of goods and materials
- DP21 Development connecting to the highway network
- DP32 Air quality and Camden's clear zone

Most notably Policy DP18 states that the Council will seek to ensure that developments provide the minimum necessary car parking provisions. The Councils expect developments in West Hampstead Controlled Parking Zone that are easily accessible by public transport to be car-free developments.

3.0 Existing Conditions

3.1 Walking

General Context

The area around the site is generally characterised by a good walking environment. Pedestrian facilities are provided throughout the area. Pavements tend to be of the appropriate width in most instances and there are good crossing facilities, at signalised junctions or in the form of zebra crossings. Some specific places seem to suffer from poor maintenance, however overall the area consists of a pleasant walking environment, characteristic of a residential urban area.

Within a 10 minute walk, illustrated on **Figure 1 – Appendix 2**, the site has good access to the surrounding residential areas, shops on West End Lane and Kilburn High Road.

There are several key transport nodes within a 10 minute walk of the site - West Hampstead Thameslink Station, West Hampstead Overground, Kilburn Underground Station. Just beyond the 10 minute walking isochrones also lays West Hampstead Underground, and Brondesbury Overground stations, all contributing to the connectivity of the site.

Public Realm Assessment

The Scoping Note, included in **Appendix 1** and agreed with LBC, proposed undertaking a Pedestrian Environment Review System (PERS) Audit as part of the Transport Assessment. Subsequent to agreement of the scoping study, a Public Realm Assessment (PRA) undertaken by ABA was agreed with LBC as an alternative to undertaking a PERS audit. From previous experience of PERS Audits it has generally been found that they are not useful in highlighting the salient features of the pedestrian environment which relate to the development scheme. The PRA was undertaken in July 2014 providing a broad qualitative assessment of the area around the site and around Kingsgate School to the south. The full Public Realm Assessment is included in **Appendix 3**. Below are extracts of the streets within the immediate proximity to the site.

Liddell Road

As shown in **Figure 3.1**, the wide bell-mouth access to Liddell Road has large signage stating the site occupants. It exudes the image of a private industrial use which the pedestrian does not feel inclined to enter. The entrance has a gated access for both vehicle and pedestrian access. The pedestrian access is overgrown and shut, which causes the pedestrian to walk in the highway to navigate the entrance. The footway is in bad condition and uninviting to the pedestrian. The pedestrian is inclined to walk at the kerb line of the highway.

Figure 3.1 shows the properties are set back 10 to 15 metres from the carriageway. Similarly the footway is located immediately outside the properties 10-15 metres back from the kerb line, inviting the pedestrian to walk in the carriageway. The wide cul-de-sac of light industrial plots is not welcoming to the pedestrian and does not provide a route through to Maygrove Peace Park, although it is clearly visible at the western end of the road, as can be seen in **Figure 3.1** overleaf**.**

Figure 3.1 – Liddell Road

a) Liddell Road / Maygrove Road Junction

b) Liddell Road Streetscape

c) Liddell Road / Maygrove Peace Park Access

d) Maygrove Peace Park Access

Maygrove Road

A raised junction table encompasses the junction with Iverson Road. The junction layout shown in **Figure 3.2** overleaf, provides some level of pedestrian priority, accommodating two zebra crossings; one crossing Iverson Road and one across the mouth of Maygrove Road. The only other controlled crossing on Maygrove Road is at its western end where a pelican crossing is located at the junction with Kilburn High Road. Opportunities to cross in between these locations are in the form of dropped kerbs and a raised table at the junction with Fordwych Road.

Figure 3.2 - Maygrove Road

a) Iverson Road / Maygrove Road Junction

b) Linear Green Space

c) Maygrove Road

d) Maygrove Road / Fordwych Road

As shown in **Figure 3.1**, the mouth to Liddell Road is approximately 20m wide. Although the junction provides an opportunity to cross via dropped kerbs, it feels an uncomfortable distance for the pedestrian to traverse. The linear green space adjacent to Liddell Road is evidently maintained in places and adds to the pleasant atmosphere of the street. However there are sections which are overgrown and un-kept, particularly around the junction with Liddell Road. Three public benches are set within the open space, which creates a place for pedestrians to engage with the setting.

Continuing west along Maygrove Road the street immediately exudes a quieter residential atmosphere in comparison to Iverson Road. The highway is narrower and the thick undergrowth and high tree line immediately adjacent to the northern footway provides a sheltered and intimate pedestrian environment. The atmosphere continues along Maygrove Road beyond the junction with Liddell Road. The three storey terraced houses, set 1 to 2 metres back along the southern footway provide enclosure to the street. The sense of enclosure dissipates with proximity to Kilburn High Road as housing style changes, being further set back from road and with basement access. The increased width of the road and presence of on-street parking along both sides of the road creates a more vehicle dominated environment.

The junction at Fordwych Road / Maygrove Road has a raised table junction, as shown in **Figure 3.2** which allows the pedestrian to informally assert a degree of priority over the motorist. Footway build-outs and bell kerb bollards are used at the junction with Ariel Road as a traffic calming measure and to reduce crossing distances for pedestrians. Overall there is inconsistency with traffic calming measures and crossing strategies.

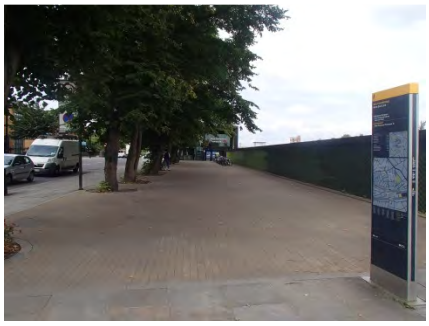
Iverson Road

As **Figure 3.3** illustrates, at the junction with West End Lane Iverson Road has a generous 10 to 12 metre footway on the northern side leading to the Thameslink Station entrance, approximately 60 metres west along Iverson Road. The highway forms a large raised surface adjacent to the station, however no form of tactile paving is provided to delineate the edge of carriageway.

Approaching the Thameslink station from West End Lane on the northern footway, large mature trees set 2 to 3 metres back from the kerb line act as a screen between the highway and the expansive footway. Beyond the tree line, the footway is surfaced with tarmac. The area is bounded by a 2 to 3 metre high wall, behind which the topography falls away to the rail-lines. Fifteen Sheffield Cycle Stands are provided outside the station, which is the only street furniture in the vicinity of the station. The space feels oversized to the pedestrian but does accommodate a farmers market and food stalls on occasion.

Figure 3.3 - Iverson Road

a) Iverson Road / West Hampstead Station



b) West Hampstead Thameslink Station

c) Speed Cushions

Iverson Road accommodates a mix of residential, light industrial and light commercial units. Opposite the station is a small industrial estate of two-storey residential style units. A retaining wall lines the southern, 1.5 to 2 metre wide footway which retains ten two-storey terraced houses and their front gardens. The footway is generally to a good standard, level and trip free.

Speed cushions are utilised as traffic calming measures. However, the road has on-street parking along both sides of the road. This means that two of the three speed cushions are situated within the parking bays and as a result the single speed hump in the centre of the road becomes in effective.

3.2 Cycling

The site sits in a fairly central location within London, where many local facilities on West End Lane and Finchley Road are easily accessible including; multiple strategic public transport nodes, Kilburn High Road; and several residential areas. The cycling isochrone in **Figure 2 –Appendix 2** illustrates the range of cycling amenities within a 15min cycle.

There is a good provision of cycle parking near West Hampstead Thameslink and Underground stations, which is heavily used. Closer to the site, two Sheffield stands adjacent to 81 Maygrove Road provide the only formal cycle parking.

The TfL cycle map for the area shows that there are only a few signed routes for cyclists **(**see **Figure 3 - Appendix 2)** and that most of the network actually relies on cyclists' recommendations to use quieter routes rather than formal cycle facilities.

The cycle environment is generally poor on the primary roads in the area with low priority given to cyclists. West End Lane has narrow carriageways and heavy traffic flows with little segregation from traffic. No advisory cycle lanes are present, although ASLs are provided at traffic signals. Similarly Kilburn High Road does not have any advisory cycle lanes but does have cycle logos on the carriageway which increases driver-cyclist awareness. Finchley Road has very high traffic flows, is generally three lanes wide in either direction and frequently does not provide the cyclist with any priority.

The residential roads within the area are relatively quiet and offer a safer route to cycle than the main roads in the area. However the majority of the residential roads in the area have cars parked on either side of the road, narrowing the carriageway and forcing the cyclist to take up a central position in the road.

Although the immediate vicinity of Liddell Road is generally flat, the wider topography of the area is relatively undulating. The topography rises up from the Iverson Road to West End Lane and from Fordwych Road to Mill Lane. The rising topography continues to rise to the North towards Hampstead.

3.3 Public Transport Accessibility

Liddell Road is located in a residential area between Kilburn and West Hampstead with excellent proximity to national rail, overground, underground and bus services. The development site has a Public Transport Accessibility Level (PTAL) of 5 (Very Good) based on the methodology set out by TfL, (source: www.webptals.org.uk). The PTAL system assesses all underground and rail services within 960m of the site, and all bus services accessible within 640m of the site. A summary report of the PTAL calculations is included in **Appendix 4**.

3.4 Buses

Within a 10 minute walk, the site benefits from a good public bus network. **Table 3.1** below summarises the services within the area.

Table 3.1 - Local Bus Services

Stop	Route	Destination	Service	Peak Hour Frequency
West Hampstead Station	C11	Brent Cross Archway	18HR	8 9
	139	Golders Green Chelsea Worlds End	24HR	9 9
	328 / N28 / N31	West Hampstead Waterloo	24HR	7 7
Kilburn Station	16 / N16	Victoria Cricklewood Broadway	24HR	6 6
	32 / N16	Edgware Kilburn Park	24HR	10 10
	189	Oxford Circus Brent Cross	24HR	9 7
	316	White City Cricklewood Broadway	19HR	7 7
	332	Paddington Brent Park Neasdon	18HR	8 8

These services connect surrounding residential neighbourhoods to West Hampstead station as well as other Overground and Underground stations in the wider area. Further afield, they link the site to several destinations within Central and Outer London.

3.5 London Underground and Overground

The site benefits from good Underground and Overground connections to Inner London and parts of Outer London. West Hampstead Underground and Overground stations are situated within 50m of each other on West End Lane, providing a valuable modal interchange.

The Overground provides links to areas to the west and north-east of London. There are regular services (3 per hour) throughout the day to Clapham Junction, Richmond, and Stratford, as summarised in **Table 3.2** overleaf.

Table 3.2 - Local London Overground Services

Destination	Service	Peak Hour Frequency
Richmond	06:00 – 00:00	4
Clapham Junction	06:00 – 23:00	4
Stratford	06:00 – 00:00	8

These are complemented by the Jubilee Line Underground service, which has services terminating at Stanmore to the northwest and Stratford to the east providing direct connections to Waterloo and London Bridge. The Jubilee line services are summarised in **Table 3.3**.

Table 3.3 - Local London Underground Services

Destination	Service	Peak Hour Frequency
Stanmore	05:00 – 01:00	28
Stratford	05:00 – 00:30	28

Other onward journeys to Outer London and national destinations can be reached from services departing Waterloo and London Bridge.

3.6 National Rail

Located within 10 minutes' walk of the site, West Hampstead Station provides regular Thameslink and Southeastern services (three per hour) to the north and south of London. To the north services run to St Albans, Luton and Bedford; and to the south services run to Sutton and Brighton. **Table 3.4** summarises the services from West Hampstead.

Table 3.4 - Local National Rail Services

Destination	Peak Hour Frequency (mins)	Journey Time (mins)
Sutton (Surrey)	10-15	60
Brighton	30	90
Bromley South	15-20	50
Seven Oaks	30	80
St Albans	10	15
Bedford	30	60
Luton	10-15	40

The services running south provide a direct route into Central London and key strategic destinations such as St Pancras International, Blackfriars, Farringdon and Gatwick Airport.

3.7 Highway Network

The site generally benefits from good access to both the local and strategic road networks. With its location on Maygrove Road and proximity to Iverson Road which provides access to West End Lane and Kilburn High Road. It has good connections to other residential areas of north and west London, such as Chalk Farm, Finchley, Harrow, Royal Oak and Notting Hill.

It also benefits from rapid access to the network of A roads in the area. These in turn connect the site to central London and cities and towns beyond the capital's boundaries, via the M1 to the north and the M4 to the west. A map of the strategic and local network is provided **Figure 4 -Appendix 2.**

3.8 Parking

The site and the surrounding streets are covered by Controlled Parking zones (CPZs). Maygrove Road is in CPZ zone CA-Q; variations of CA-Q are located south of the Thameslink Line, west of West End Lane and north of Quex Road. CA-Q operates Monday to Saturday 08:30 – 18:30.

To the east and north of the site are zones CA-R and CA-P. A map of the Camden CPZ zones is provided in **Figure 5 - Appendix 2.**

Immediately adjacent to the site on Maygrove Road along the northern kerb line are combined Pay and Display and resident permit parking bays. Elsewhere on Maygrove Road, Ariel Road and Iverson Road there are generally resident permit holder bays.

3.9 Car Ownership Levels

The Liddell Road area has a high level of accessibility to public transport and local facilities, which will encourage low car ownership. Additionally London Borough of Camden and the Mayors' Transport Strategy are committed to increasing sustainable travel through lowering car use in urban centres. **Table 3.5** below shows the proportion of car ownership levels within West Hampstead taken from 2011 Census Data. Approximately 60% of households do not have access to a car or van, with 40% of households reporting to have access to at least one vehicle.

Table 3.5 - Car ownership Levels in West Hampstead

Level of Ownership	Percentage
No cars or vans in household	59%
1 car or van in household	35%
2 cars or vans in household	5%
3 cars or vans in household	1%
4 or more cars or vans in household	0%

3.10 Accident Analysis

In the 36 months to the end of December 2013, 112 accidents occurred in the vicinity of Liddell Road. The full accident reports are contained in **Appendix 5**, along with a plan drawing showing the locations of the accidents.

The majority of the accidents (39) occurred along Kilburn High Road with the most frequent (7) of those around the junction of with Netherwood Road. Nine accidents occurred on Iverson Road; six at the junction with West End Lane and three at Kilburn High Road. Three accidents were recorded along Maygrove Road; two at the junction with Kilburn High Road and one accident recorded at the junction of Liddell Road and Maygrove Road.

Of the accidents, 18 of them involved cars colliding with one another and the injury of a passenger or driver; one involved a motorbike; one involved a bus; one involved a cyclist; and in four accidents a pedestrian was hurt.

As seen in **Table 3.6**, twelve of the 112 accidents resulted in serious injury (with one accident resulting two casualties), all at junctions with West End Lane or Kilburn High Road. One accident at West End Lane / Cotleigh Road resulted in a fatality due to a vehicle mounted the kerb hitting a pedestrian.

Table 3.6 - Liddell Road Area Casualty Information

Mode of Travel	Serious	Fatal	Totals
Pedestrian	2	1	3
Car	11	0	11
Totals	13	1	14

3.11 Transport Survey Summary

Traffic and parking surveys were undertaken within the vicinity of the site and at the existing Kingsgate School in early July 2014 which were sub-divided into five survey types; Manual Turning Counts (MTCs), Automated Traffic Counts (ATCs) / Vehicle Speed Surveys, Parking Beat Survey, Queue Surveys and Kingsgate School interviews. Below is a brief summary of the key results, with a full summary provided in **Appendix 6**.

Traffic Flows

Two-way traffic flows for peak hours are summarised in **Table 3.7** below for Liddell Road, Maygrove Road and Iverson Road.

Table 3.7 - Two-way Traffic Flow Summary

	Period	Total Trips (Mon-Fri)
Liddell Road	AM (08:00–09:00)	28
	PM1 (15:30–16:30)	24
	PM2 (17:00–18:00)	24
	12HR (07:00-19:00)	325
Iverson Road	AM (08:00–09:00)	405
	PM1 (15:30–16:30)	395
	PM2 (17:00–18:00)	389
	12HR (07:00-19:00)	4603
Maygrove Road	AM (08:00–09:00)	151
	PM1(15:30–16:30)	130
	PM2 (17:00–18:00)	129
	12HR (07:00-19:00)	1519

The maximum queue length at any of the junctions surveyed in the peak period is 2 vehicles. Queues occur infrequently and probably clear within 30s as a maximum.

Parking

The total parking capacity across the area surveyed is 233 spaces; the average parking occupancy is a maximum of 75%. On Maygrove Road in the AM peak, PM peaks and during the evening there is an average of 5 pay and display spaces unoccupied. In the AM peak there are 21 residential parking spaces unoccupied; in the PM peaks 26 are unoccupied and 18 are unoccupied in the evening. Similar patterns of occupancy are demonstrated in Ariel Road and Iverson Road. In the evening there are between 50 and 60 spaces available across the three streets surveyed. At 12:30am there are 50 residential spaces available, 13 pay and display spaces.

School Travel

In total, there were 198 family group responses to the questionnaire representing 330 children, representing an average of 1.7 children per family group. Fifty-five of the families who responded have children in both the infant grouping and the junior grouping, representing 27%.

The modal split of family groups travelling to school is summarised in **Table 3.8** below. A total of 86% of trips are by sustainable modes, using walking as the final mode. Of those travelling by car, the majority live in the West Hampstead area and are within 15-20 minute walk of the school. The majority of those travelling by car, 62% had children attending reception and/or nursery and 27% had three or more children attending the school.

Table 3.8 - Family Group Modal Split

Car	Pedestrian	Public Transport
14%	74%	12%

A survey of staff travel to school (conducted by the school on 04/11/14) is summarised in **Table 3.9** below. Similar to the pupils, 12% arrived by car and 88% arrive by sustainable modes with 81% walk as their final mode.

Table 3.9 - Staff Modal Split

Car	Cycle	Walking	Public Transport
12%	6%	33%	48%

3.12 Committed Developments

There are a number of potential developments within the vicinity of site. As is normal practice within Transport Assessments, developments that have planning permission are classed as being committed. Sites that have outline development proposals or have been submitted for planning and are being determined by the planning authority are not considered to be committed.

This section sets out the developments that have been considered and the assumptions that have been made regarding whether they are committed or not. **Figure 6 – Appendix 2** illustrates the locations of the sites discussed.

Hampstead Garden Centre, Iverson Road

Planning permission was granted in December 2012 for the construction of a new residential development at 163 Iverson Road, currently a 0.138ha vacant garden centre site. The scheme is currently being constructed and is considered to be a committed development.

Proposals are for a part four and part five-storey building plus a lower ground floor. The development will comprise of 33 flats and 3 three-storey town houses, following the demolition of the existing garden centre.

The scheme is 'car free' in accordance with Council policy, which requires new residential development schemes in areas within Controlled Parking Zones (CPZ) to be 'car free'. The site is located within Kilburn CPZ. Disabled parking is to be accommodated by the existing on-street parking adjacent to the site.

The site benefits from very good public transport accessibility and it is therefore envisaged that future residents will travel by public transport and/or cycle. Future residents will not be issued with on-street parking permits.

As no TA was produced for the site, it is assumed that the proposed development's trip generation will not have a detrimental impact on the local highway network and public transport.

159 – 161 Iverson Road

The proposals at 159 – 161 Iverson Road are for the demolition of the existing tyre sales centre and the erection of two buildings ranging between one and six storeys, comprising of 19 residential units and 162m^2 of employment floor space. The 0.09ha development was granted planning permission in February 2014 and is considered a committed development.

Again as the site is located within Kilburn CPZ, the scheme is 'car free' in accordance with Council policy. Disabled parking is to be accommodated by the existing on-street parking adjacent to the site. Future residents will not be issued with on-street parking permits. No vehicular access will be provided to the site other than for cycles.

The site benefits from very good public transport accessibility and it is therefore envisaged that future residents will travel by public transport and/or cycle.

The Transport Statement produced by Vectos estimated that 121 additional trips per day are to be generated by the development, all of which will be taken by sustainable modes of transport. The statement concludes that the proposals adhere to LBC policy and will not have a detrimental impact on the surrounding highway and public transport network.

65 & 67 Maygrove Road

Situated to the west of Liddell Road, the existing 0.32ha site at 65 & 67 Maygrove Road are two mid-20th century three-storey and four storey buildings which are currently office use, with three residential flats provided in no. 67. The proposals are for the demolition of no. 65 and 67 and the construction of a building comprising of a basement, ground floor and four upper storeys to provide 91 residential units, with the provision of 10 car spaces for disabled persons, 2 car club spaces and 120 cycle spaces. Planning permission was granted for the redevelopment in February 2013, considered to be committed.

The TA produced by Paul Mew Associates estimates the development to generate a total of 472 trips/day, 151 of which to be by car. It concludes that it is estimated that the development will have no impact on local traffic levels and that sustainable trip generation would not have an impact on local public transport service provision.

59 Maygrove Road

The proposals at 59 Maygrove Road are for the erection of a part four, part five storey building to provide 15 single bedroom supported housing units and 14 self-contained flats, all affordable housing, following the demolition of the existing two-storey building previously used as a car repair workshop. The scheme is proposed to be car-free, other than three disabled spaces serving the development, in-line with LBC policies.

The Design and Access Statement produced by Peter Taylor Associates states that a traffic impact analysis was not considered necessary as the number of parking spaces, and car journeys generated by the future site uses will be reduced compared to the sites existing use.

Planning permission was granted for the development in January 2010, it is therefore considered to be a committed development. As no TA is produced for the site, it is assumed that the proposed development's trip generation will be included as part of the background growth and will not have a detrimental impact on the local highway and public transport network.

1-7 Mill Lane

Planning permission was granted in 2009 for the demolition of all existing residential buildings on site and the erection of a four-storey main building and a two-storey detached building comprising 28 residential units with associated car and cycle parking, amenity space and landscaping. The development is completed and fully operational.

The scheme proposes to provide a total of 20 off-street parking spaces to serve the development, including seven disabled spaces. An additional two spaces dedicated to car-clubs are to be provided on-street, adjacent to the development. A total of 45 cycle parking spaces are provided and up to 11 motorcycles can be accommodated. Access to the site is proposed via Mill Lane.

Royal Haskoning produced a TA in support of the planning application, demonstrating that the proposals adhere to LBC and GLA policies and that traffic generation associated to the site is "not considered significant enough to create adverse impacts on the existing network on Mill Lane".

187-199 West End Lane

The proposals at 187-199 West end Lane are for the redevelopment of the 0.9ha site currently commercial and retail properties with associated parking. The demolition of the existing properties makes way for the creation of seven new buildings between five and twelve storeys in height to provide 198 residential units, retail, financial and professional services, and flexible employment/healthcare floor space, with an associated energy centre, storage, parking, landscaping and a new open space. Planning permission was granted to the proposals in March 2012, with construction on site already underway.

Located within a CPZ and adhering to LBC policies, the site is proposed as 'car-free', only providing 15 residential disabled spaces, and two spaces for office use. 20% of car parking spaces will have electric vehicle charging points and a further 20% will have passive electric vehicle parking points. 230 cycle parking spaces are provided for the residential element, three spaces for office use and 20 visitor spaces. WSP produced a TA for the scheme, estimating that the trip generation from the development can be accommodated by the surrounding public transport services and transport infrastructure.

4.0 Development Proposals and Access Strategy

4.1 Development Proposals

The proposed development comprises removal of the existing light industrial estate to enable a new mixed use development to be constructed. The new development will comprise the following elements:

School (D1 use): 4FE infant school (Nursery, Reception, Year 1 and Year 2) with up to 400 pupils and a floor area of 2392 sqm (GFA). The new infant school will become part of the existing Kingsgate School which will then operate over two sites.

Residential (C3 use)**:** 106 units comprising a block fronting onto Maygrove Road (66 units) and a block within the site (40 units).

Commercial space (B1 use): Up to approximately 3700 sqm (GIA), some of which has the potential to be a light industrial use.

It is proposed that the development will be brought forward in two phases;

- **Phase 1 –** Kingsgate Infant School
- **Phase 2 –** Residential and Commercial Uses

A plan of the site proposals and phasing is included in **Figure 7 - Appendix 2**. Separate planning applications have been prepared for each phase of development. For the purposes of this Transport Assessment both planning applications are considered in the form of Phase 1, Phase 2, and Phase 1 + 2.

4.2 Public Realm and Traffic Calming Proposals

To accommodate the new development, a series of public realm and traffic calming measures are proposed to mitigate the transport impacts the development, particularly movement to and from the school. The proposals are illustrated in **Figures 8-9 – Appendix 2** and are summarised below:

- Reducing pedestrian crossing distances
- Relocation of the existing zebra crossing on Iverson Road
- Additional dropped kerbs and tactile paving on Maygrove Road
- Widening of footways
- Increasing signage
- Additional raised junction tables
- Additional speed tables

4.3 Walking

As a car-free development, arriving to the site on foot will be the primary mode of access. The masterplan for the development aims to allow for the safe and easy access of pedestrians around and through the site. Two access points to the development proposed; the first on Maygrove Road at the western end of the site and the second from Maygrove Peace Park. Theses access points will improve site permeability and walking connections to the west. **Figure 9 - Appendix 2** identifies the key walking routes that link and integrate the development with the surrounding area.

As part of a multi-modal journey, the majority of trips will be to strategic transport nodes located on West End Lane. Two pedestrian crossings are currently provided along Iverson Road; a formal signal controlled crossing with pedestrian facilities at the junction of West End Lane and a zebra crossing to the west of junction with Maygrove Road. The zebra crossing would be relocated to the east of Maygrove Road to better facilitate the desire lines of pedestrian movement to and from West End Lane. Dropped kerbs and tactile paving are proposed at Maygrove Road / Ariel Road to facilitate uncontrolled crossing.

Additional raised junction tables are proposed within the vicinity of the site to provide greater pedestrian priority and a means of traffic calming. The locations of which are illustrated in **Figures 8**-9-**Appendix 2** and summarised below:

- Liddell Road / Maygrove Road
- New site Access / Maygrove Road

It is also proposed to widen the northern footway on Maygrove Road by up to two metres at two locations illustrated on **Figures 8-9** - **Appendix 2**; approximately a 60 metre length between the proposed western access and Ariel Road, and 40 metres between Liddell Road and Iverson Road.

There will also be a pedestrian path in front of the proposed mansion block fronting Maygrove Road, providing residents access to the block but will also be available for use by all users of the development.

Inter-School Travel

It is anticipated that many of the school's pupils/parents/carers are to travel between the two sites on foot. There is no direct route between the sites, and the pedestrian must take a number of streets to make this trip.

The most convenient pedestrian route between the two sites is illustrated in **Figure 9** -**Appendix 2** and summarised below:

Kingsgate Road > Sherriff Road > West End Lane > Iverson Road > Maygrove Road

The route is 0.7 miles in length, approximating to a 15 minute walk. Alternative routes through the residential streets in the vicinity of Kingsgate School are available (running parallel to Sherriff Road) and have no appreciable impact on journey length or time.

The physical boundary constraint that the Jubilee Underground and London Overground lines dictates that travel between the two school sites requires use of West End Lane. Although in recent years Camden Council reduced the speed limit from 30mph to 20mph, it is this section of the route which is the most uncomfortable to walk along. Mitigation of the environment is restricted by the cross section of the street, particularly at rail over bridges.

It is recommended that pedestrian way-finding along these routes be improved through enhanced signage, designed in a manner sympathetic to the natural surroundings. **Figures 8-9 - Appendix 3** shows proposed routes and signage locations.

Currently the only signage between the two sites and along the route is existing Legible London monoliths along West End Lane and outside West Hampstead Station on Iverson road. It is proposed to introduce a series of site specific way-finding measures which are informative for an adult but stimulating for the school pupils. Additional directional signage is proposed at key locations displaying information of distance or approximate travel time to inform parents or carers travelling between the two school sites.

A range of options have been discussed with Lorraine Hinds (School Travel Plan Officer) and Shelley Dunbar (Kingsgate School) and are discussed in greater detail within the Draft School Travel Plan which can be discussed and developed in co-ordination with Kingsgate School and Camden Council.

4.4 Cycling

Bicycle users of the development benefit from access to many facilities within a 5 minute cycle ride (800 meters). This includes Salusbury Road and Kilburn Lane and South Kilburn where a large number of shops are located, two parks, a library, a police station, two schools and Kilburn Park Underground Station.

The encouragement and support of cycling is as much about the provision of physical facilities as it is about promotion and raising awareness. Initiatives such as education for both adults and young people, together with personalised travel planning are common approaches for encouraging cycling that would be implemented at the development and are discussed in the Draft Travel Plans.

Secure cycle facilities, in accordance with the London Plan would be provided as an integral element of all the new blocks on the site. These would be for use by residents, office workers and employees of businesses located on the site. Cycle parking is discussed further in Section 4.5.

Within the public realm of the development a number of cycle stands would be provided in the key public spaces and at other important locations around the site, for example in the vicinity of the junction of the new site access for use by visitors to all the different facilities located at the development.

It is assumed that the majority of children travelling to school on bikes will do so on the footway. Improvements to the walking environment will be relevant for children on bike journeys. There is potential for some children to be brought to school by bike i.e. children carriers fixed to an adult bike. This is possible for nursery, reception and perhaps year 1 aged children. West End Lane is a signed route but presents the most uncomfortable environment for cycling. Other quieter routes; Maygrove Road, Hemstal Road and Sherriff Road are recommended by cyclists.

4.5 Public Transport

Being a car-free development, the majority of access to and from the site will be by public transport. As stated in Section 3.3, the site benefits from a good access to the public transport network. Both the walking and cycling strategy propose an improved connection to West Hampstead stations which would be the main bus and train hub for users of the site, approximately five minutes walk away.

The three stations and the public transport options they provide to the surrounding area are of value to the site. However, at peak times of the day in the morning and evenings the pavements between the three stations are at capacity due to the constraints of the rail over-bridge. This can present difficulties in moving through the area and as a gateway to the town centre as a whole. LBC have maintained a strategy of public realm improvements in the area including; removing street clutter, widening the footway where feasible, and extending crossings widths.

There are current proposals for the redevelopment of the West Hampstead Overground station completion of which is anticipated in 2015. The proposals include:

- Longer platforms to accommodate the new 5-car trains
- Greater number of ticket gates to ease congestion
- Step-free access from street level to platform level
- Wider platforms to ease circulation for passengers boarding and alighting trains
- Footway on West End Lane to be doubled in width creating a safer walking route for the public - and passengers changing between the West Hampstead Stations
- Additional sheltered space at platform level
- A footbridge across railway with lifts to both platforms
- Increased width of staircases allowing for higher number of passengers
- Longer platforms to accommodate the new 5-car trains
- Greater number of ticket gates to ease congestion
- Step-free access from street level to platform
- Wider platforms to ease circulation for passengers boarding or alighting trains
- Footway on West End Lane to be doubled in width, creating a safe walking route for the public and passengers changing between West Hampstead Stations
- Additional sheltered space at platform level
- A footbridge over the railway with lifts to both platforms
- Increased staircase widths allowing for higher number of passengers

Currently the bus stands at West End Lane, approximately 400m from the site, consist of flag and route timetabling but provide no shelter or lighting. The southbound stop does not provide the opportunity for a shelter or lighting due to the footway width and proximity to building. However the northbound stand adjacent to the Thameslink station does have the capacity to incorporate a bus shelter with seating and real-time information.

Both the stops at Kilburn Lane Station are sheltered, have seating, and provide both timetable and real-time information.

4.6 Parking

Vehicle Parking

It is intended that new residents of the development will not be eligible to apply for parking permits from the LBC to park within CPZs on surrounding local streets. To establish this measure, it is intended that the planning application be accompanied by a unilateral undertaking (or included in any associated S106 planning obligation) exempting future occupiers of the development from being able to obtain a parking permit from London Borough of Camden.

Based on advice in Camden's SPD, and various pre-application meetings the following parking provisions for each land use are set out overleaf.

Table 4.1 - Commercial Parking Standards

Land Use Type	Commercial (B1)		
User Group	Disabled Staff	Disabled Visitor	Operational
Camden SPD Minimum Space Requirements (unless stated)	1 per disabled employee or per 20,000 sqm m	From a threshold of 2,500 sqm m, a minimum of 1 plus any additional spaces needed to bring total provision to 5% of visitors	Maximum of 1 Space per 1500 sqm m in a low parking area
Proposed Provision	1	1 (shared with the school)	0

Table 4.2 - Residential Parking Standards

Land Use Type	Residential (C3)	
User Group	Wheel Chair Housing	General Housing
Camden SPD Minimum Space Requirements (unless stated)	1 per residential unit with dimensions suitable for use by people with disabilities	1 space per 20 units with dimensions suitable for use by people with disabilities
Proposed Provision	Wheel chair housing will be located in the block fronting onto Maygrove Road. 1 dedicated on-street parking bay on Maygrove Road adjacent to the property will be provided in the CPZ Zone.	The block within the site could generate the requirement for up to an additional 9 disabled spaces. These will not be provided initially but should a disabled parking bay be required in the future, on-street bays on Maygrove Road will be converted to Blue Badge bays following an application to Camden Borough Council.

Table 4.3 - School Parking Standards

Land Use Type	School / Non Residential Institution (D1)		
User Group	Disabled Staff	Disabled Visitor	Operational
Camden SPD Minimum Space Requirements (unless stated)	1 (from a threshold of 2,500 sqm m)	1 space per 500 sqm (from a threshold of 2,500 sqm m)	Maximum of 1 Space per 1500 sqm
Proposed Provision	1	1 (shared with the commercial use)	2 spaces

The operational parking for the school is above what the standard permits as a maximum but is necessary in order for the school to function across two physical sites. A statement from the Head of Kingsgate School is provided in **Appendix 7** which explains why the two operational spaces are necessary.

To accommodate the access of refuse and emergency vehicles at the proposed western access, six parking spaces have been removed opposite the site accesses; four at the western access and two at Liddell Road, as shown in **Figures 8-9 - Appendix 2**. As a result the number of parking bays immediately adjacent to the site between Arial Road and Iverson Road has been reduced from 43 to 37, excluding disabled bays. The Transport Survey Summary in **Appendix 6** demonstrates that the demand on Maygrove Road is such that six spaces could be removed without there being overspill onto nearby streets. Within the same area the number of disabled bays would increase from 2 to 3.

Cycle Parking

The cycle parking requirements in accordance with Camden Development Polices (2010) and proposed provision for the site are set out in **Table 4.4** below. It should be noted that in addition parking for children's scooters will also be provided within the school grounds.

Table 4.4 - Cycle Parking Provision

Land Use Type	Minimum Cycle Parking Standards*		Proposed		
	Off Street	On Street	Area / No. Units / No. People	No Spaces required	
				Off Street	On Street
C3 – Residential 1 / 2 bed unit	1 per unit	1 per 40 units	90 units (Tower + Terrace)	90	3
C3 – Residential 3+ bed units	2 per unit	1 per 40 units	16 units (Tower + Terrace)	32	1
B1 - Business Offices	1 per 10 staff + Showers & lockers/changing rooms		295 staff estimated	30	6**
D1 - Primary School	1 per 10 staff	N/A	400 pupils, 50 staff	30***	10
			Total	182	20

* From the Highest of The London Plan, Camden SPD, Bream NC and Code for Sustainable Homes; achieving for 1 credit for residential and 2 credits for Business and School.

** Split between staff and visitors are not specified in regulations and are based upon our previous experience.

*** Comprising 10 spaces for staff and 20 spaces for pupils. At the request of Kingsgate School, 60 scooters spaces would also be provided.

4.7 Vehicular Access

The primary access to the development would be from a new access on Maygrove Road at the western end of the site. This will act as the primary vehicle access to the different elements of the development for servicing, refuse collection, drop off/pick up and to disabled/visitor disabled parking spaces. It is proposed that the new access be managed using a dropped bollard which will restrict traffic during school hour pick up and drop off times. Raising and lowering of the bollard will be the responsibility of school staff. An outline design of the access is illustrated in **Figure 10 - Appendix 2.**

Secondary access to the site is via the existing Liddell Road access. School operational parking would be located on this access and it will also be used for occasional vehicle access into the school playground public realm. A sliding gate is proposed to segregate the access from the school playground public realm.

In addition to the raised junction tables discussed in Section 4.2, additional speed tables are proposed on Maygrove Road between Ariel Road and Barlow Road as illustrated on **Figures 8-9 - Appendix 2**, continuing the traffic calming strategy along Maygrove Road.

A school on Maygrove Road would require the introduction of a series of warning signs and road markings. Pedestrian warning signs would be located along Iverson Road and Maygrove Road on the approach to the site and road markings to enforce parking restrictions should be introduced at both site accesses in agreement with LBC.

4.8 Delivery and Servicing Strategy

Servicing of the site is to be mainly for deliveries and refuse collection. The broad strategy is for this activity to be undertaken from the western public realm space within the site with access from Maygrove Road. Methods to inform suppliers of delivery instructions and locations will be produced as part of occupier's individual Travel Plans. A formal delivery and servicing plan will be produced post consent, secured by condition. Some servicing particularly for the Mansion Block will be undertaken on Maygrove Road.

An assessment of the likely daily servicing requirements has been undertaken. The following has been estimated:

- Residential - 4 Deliveries (based on 2 per 50 units)
- Commercial – 10 Deliveries (based on 0.28 per 100m^2)*
- School - 5 Deliveries (based on servicing levels at the existing Kingsgate School see **Appendix 7**)

*Value taken from the comprehensive set of delivery vehicle survey data provided in the research paper 'Business, goods and service vehicle trip generation at office developments' produced by JMP Consultants. Trip rate takes into account Central London sites only.

Assuming all of these deliveries are to take place between 9am and 5pm and each delivery took 15 minutes, then on average there would be just over two vehicles servicing within an hour.

Tracking Analysis

A preliminary tracking analysis for servicing routes within the development has been undertaken for a 7.5m fire tender and an 11.3m refuse truck. The tracking analysis is shown in **Appendix 9**.

Drawing 1665-90-10 - Appendix 9 demonstrates a refuse vehicle entering and exiting the site using the western access from both the east and west of Maygrove Road. As can be seen body overhangs of the vehicle would over run the carriageway to the footway, but the tyre runs are all within the designated carriageway.

Drawing 1665-90-11 – Appendix 9 shows a fire tender entering and exiting the site via the Liddell Road entrance. Option 1 demonstrates a fire tender accessing from the west, but requires the vehicle to run into the oncoming lane on Maygrove Road. Option 2 illustrates the vehicle arriving from the east.

Drawing 1665-90-12 - Appendix 9 demonstrates a standard car vehicle entering and exiting the school playground public realm via Liddell Road to represent the turning of vehicles using the operational parking spaces.

5.0 Trip Generation

An assessment of the transport impact of the development has been undertaken for 2016 when it is expected that the development will be complete. A Transport Survey was carried out in June 2014 to establish a base level of traffic flow.

The assessment has considered trips by pedestrians, car drivers, car passengers, cyclists, and public transport users (including London Underground, National Rail and buses). The assessment has also considered the capacity of related infrastructure and the associated improvements to supporting sustainable modes of transport. The trip generation has been estimated for a 12 hour period and three peak periods; Peak AM (08:00-09:00), Peak PM1 (15:30-16:30) due to school operational hours, and Peak PM2 (17:00-18:00).

5.1 School

Trip generation for Kingsgate School has used a "first principles" methodology based on movement patterns associated with the existing Kingsgate School. **Table 5.1** summarises the expected school population in terms of pupils, parents / guardians and staff. The number of parents / guardians per pupil identifies the number of family groups travelling to and from the school and is based on data from the existing Kingsgate School. **Table 5.2** sets out the expected arrival and departure profile. It can be seen that 10% of pupils are assumed to attend before school 'Breakfast Club' and 10% after school clubs or play centre.

Table 5.1 - Proposed School Population

Number of Pupils	Infant Nursery	360 40	400
Number of Parents / Guardians	Adults per Pupil	0.59	236
Number of Staff			50

Table 5.2 - School Arrival / Departure Profile

	Time	Pupils		Staff
	(Mon-Fri)	Infant	Nursery	
Morning	0730-0800	0%	0%	70%
	0800-0845	10%	0%	30%
	0845-0900	90%	100%	0%
Afternoon / Evening	1530-1545	90%	100%	20%
	1545-1700	5%	0%	40%
	1700-1800	5%	0%	40%

Conservatively it has been assumed that the school will have 100% attendance from pupils and staff. Based on these assumptions, the trips expected to be generated by the school, are set out in **Table 5.3**.

Table 5.3 - School Trip Generation

	Time (Mon-Fri)	Family Group		Staff	
		Arr	Dep	Arr	Dep
Morning	0730-0800	0	0	35	0
	0800-0845	21	21	15	0
	0845-0900	215	215	0	0
Afternoon / Evening	1530-1545	215	215	0	10
	1545-1700	11	11	0	20
	1700-1800	11	11	0	20
Period Total		236	236	50	50

The peak hours can be seen to be 08:00 – 09:00 in the AM and 15:30 – 16:30 in the PM, with the large majority of Family Group trips to and from the site occurring in a 15 minute window either side of the school hours. The Staff trips have a broader spread across each period, with a peak occurring outside of the Family Group peak.

Table 5.4 below summarises school travel modal split determined as a result of the Transport Surveys discussed in Section 0, for both staff and family groups.

As can be seen in **Table 5.5** overleaf, the majority of trips to school will be by sustainable modes with only car 31 trips being made in each peak period, with 28 of those trips occurring in the 15minute peak either side of school hours. It should be noted that **Table 5.5** shows the modal split per Family Group. The actual number of non-car trips will be greater than that shown as a Family Group comprises more than one individual.

As the staff at the new Kingsgate School will not be able to drive to school, the 12% of staff who currently drive to school has been proportionally added to other modes.

Table 5.4 - School Modal Split

	Walking	Bus	Car	Cycle	Underground	Rail	Taxi
Family Group Modal Split	74%	9%	13%	1%	1%	2%	1%
Staff Modal Split	33%	9%	12%	6%	39%*	N/A	N/A
Adjusted Staff Modal Split	37%	10%	0%	7%	46%*	N/A	N/A

Table 5.5 – Base Case School Modal Split

Family Group Modal Split

	Time (Mon-Fri)	Walking		Bus		Car		Cycle		Underground		Rail (Ex. Underground)		Taxi		Total	
		Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Morning	0730-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0800-0845	16	16	2	2	3	3	0	0	0	0	0	0	0	0	21	21
	0845-900	159	159	20	20	28	28	2	2	1	1	3	3	1	1	215	215
Afternoon / Evening	1530-1545	159	159	20	20	28	28	2	2	1	1	3	3	1	1	215	215
	1545-1700	8	8	1	1	1	1	0	0	0	0	0	0	0	0	11	11
	1700-1800	8	8	1	1	1	1	0	0	0	0	0	0	0	0	11	11
Period Total		175	175	21	21	31	31	2	2	1	1	4	4	1	1	236	236

Staff Modal Split

	Time (Mon-Fri)	Walking		Bus		Car		Cycle		Underground *		Rail (Ex. Underground)		Taxi		Total	
		Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Morning	0730-0800	13	0	4	0	0	0	2	0	16	0	0	0	0	0	35	0
	0800-0845	6	0	2	0	0	0	1	0	7	0	0	0	0	0	15	0
	0845-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Afternoon / Evening	1530-1545	0	4	0	1	0	0	0	1	0	5	0	0	0	0	0	10
	1545-1700	0	7	0	2	0	0	0	1	0	9	0	0	0	0	0	20
	1700-1800	0	7	0	2	0	0	0	1	0	9	0	0	0	0	0	20
Period Total		19	18	6	5	0	0	4	4	23	22	0	0	0	0	50	50

* Underground and Rail combined

Inter-Site Travel

The trip generation in **Table 5.5** is based on existing movement patterns but does not take account of some Family Groups having children in both the infant and junior schools which will be on separate sites. The opening hours of the different sites will be staggered to facilitate movement between the two.

The number of pupils at the junior school is expected to be 480, giving a total population across the whole school of 880 pupils, represented by approximately 518 Family Groups. From the Transport Survey it has been identified that approximately 25% of Family Groups will have children attending both the infant and the junior schools. This equates to 130 Family Groups.

From the Transport Survey it has been identified that from all the Family Groups 12% stated that they had access to a car as an alternative mode.

It is likely that the split in the two school sites will result in some additional car trips. It has been assumed that 10% of the 130 Family Groups affected by the split would choose to use a car instead of a sustainable mode. This would generate an additional 13 car trips and it is assumed a corresponding reduction in walking trips.

Table 5.6 overleaf sets out a Worst Case Family Group modal split, which comprises Base Case vehicle modal split plus an additional 13 inter-site vehicle trips within the 15 minute peak period.

Table 5.6 – Worst Case Family Group Modal Split

Family Group Modal Split

	Time (Mon-Fri)	Walking		Bus		Car		Cycle		Underground		Rail (ex. Underground)		Taxi		Total	
		Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Morning	0730-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0800-0845	13	13	2	2	3	3	0	0	0	0	0	0	0	0	21	21
	0845-0900	146	146	20	20	41	41	2	2	1	1	3	3	1	1	215	215
Afternoon / Evening	1530-1545	146	146	20	20	41	41	2	2	1	1	3	3	1	1	215	215
	1545-1700	7	7	1	1	1	1	0	0	0	0	0	0	0	0	11	11
	1700-1800	7	7	1	1	1	1	0	0	0	0	0	0	0	0	11	11
Period Total		146	146	21	21	44	44	2	2	1	1	4	4	1	1	236	236

5.2 Commercial

Trip rates for the commercial element of the development have been obtained from the TRICS database for the sites outlined and agreed with LBC as part of the Transport Assessment Scoping Note. The full TRICS data is provided for information in **Appendix 10. Table 5.7** below sets out the desired site profiles within TRICS database and **Table 5.8** provide a summary of the sites selected based on the site profiles.

Table 5.7 - Commercial Site Profile

Land Use Type	Commercial B1
Approximately Size	GFA of 2500 sqm – 4000 sqm
Parking	Essential Parking Only
Type	Inner London Borough Preferred
PTAL	3 - 6
Survey Date	Post 2004

Table 5.8 - Commercial Sites Selected

Ref	Type	Location	Parking	Date of Survey	GFA (sqm)	Date of Survey	PTAL
BT-02-A-02	Office	Wembley, Brent, (Outer London)	43	08/2010	4750	08/2010	5
IS-02-A-01	Office	Islington (Inner London)	21	01/2009	5500	01/2009	6
SK-02-A-02	Office	Rotherhithe Southwark (Inner London)	30	09/2011	2371	09/2011	5
WH-02-A-02	Office	Battersea, Wandsworth (Inner London)	0	07/2012	1215	07/2012	5

Due to the parking free nature of the development, the car driver vehicle trip rates have been proportionally distributed to other sustainable modes of transport. However, car passenger trips have been maintained. The detailed methodology of this is included in **Appendix 10.**

To account for the variation in public transport facilities' available in the local vicinity of each site, modal split for public transport modes have been determined based on 2001 Travel to Work Census data for people employed in the West Hampstead Ward set out in **Table 5.9** below. It should be noted 2011 Travel to Work Census data for people employed in West Hampstead is currently unavailable.

Table 5.9 - Public Transport Travel to Work Modal Split (Census 2001)

Public Transport Mode	Proportion of Public Transport Trips
Rail (including Underground)	90%
Bus	10%

Taking these assumptions into account, the trips generated by the 3729m^2 commercial element of the development are summarised in **Table 5.10** below. Details of the trip generation exercise are provided in **Appendix 10**

Table 5.10 - Commercial Trip Generation

	Cyclists			Car Passengers			Pedestrian			Bus			Rail (Inc Underground)			Total People		
	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
AM	2	0	2	0	4	4	21	2	23	4	0	5	41	4	46	72	7	80
PM1	0	1	1	5	8	8	16	24	40	1	2	4	13	20	34	34	52	86
PM2	1	4	5	12	13	13	3	22	25	1	5	6	7	45	52	13	87	100
12HR	10	9	19	42	89	89	248	226	474	21	19	39	191	174	364	514	468	982

As shown, the commercial element of the development will generate a total of 982 trips over a 12 hour period, with 80 trips in the AM peak, 86 in PM1 peak, and 100 trips in the PM2 Peak.

The modal split of the commercial trips is summarised in **Table 5.11** below. Over 50% of trips are expected to use rail services.

Table 5.11 - Commercial Modal Split

	Cycle	Car Passenger	Pedestrian	Bus	Rail (Inc Underground)
AM	3%	1%	30%	7%	58%
PM1	1%	10%	47%	4%	39%
PM2	6%	9%	26%	7%	53%
12HR	3%	5%	49%	5%	38%

5.3 Residential

Residential trip rates for the site have been obtained via the TRAVL database for the sites outlined and agreed with LBC as part of the Transport Assessment Scoping Note. The full TRAVL data acquired is provided for information in **Appendix 10.** As only 4 of the 106 units are to be affordable housing, residential trip generation has assumed all properties are private.

Table 5.12 below sets out the desired site profiles within the TRAVL database and **Table 5.13** overleaf provides a summary of the sites selected based on the site profiles.

Table 5.12 – Desired Residential Site Profiles

Land Use Type	Residential
Approximately Size	120 Units (Flats)
Parking	Essential Parking Only
Type	Inner London Borough Preferred
PTAL	3 - 6
Survey Date	Post 2004

Table 5.13 - Residential Sites Selected

Name	Type	Ref	Location	Parking	Units	Date of Survey	PTAL
Winchester Mews	Flats	649	Camden (Inner London)	0	22	09/2008	3
Albion Wharf (Affordable)	Flats	417	Battersea, Lambeth (Central London)	0	45	04/2005	4
Swainson Road	Flats	888	Shepherds Bush, Ealing (Outer London)	24*)	78	12/2009	3
St Georges Wharf	Affordable	467	Vauxhall, Lambeth	76	173	05/2006	6

*17 for disabled and car club vehicles

Similar to the commercial trips, car driver vehicle trip rates are considered to be negligible and have been ignored. However, car passenger trips have been maintained.

To account for the variation in public transport facilities at the selected sites, modal split for public transport trip rates provided by TRAVL have been determined based on 2001 Travel to Work Census data for residents of the West Hampstead Ward is set out in **Table 5.14**.

Table 5.14 - West Hampstead Resident Travel to Work (Census 2001)

Mode	Modal Split	Equivalent Split
Underground	55%	79%
Rail	14%	21%
Total	69%	

Details of the trip generation exercise are provided in **Appendix 10**. The trips generated by the 106 residential properties are summarised in **Table 5.15** below. As shown, a total of 353 trips across a 12 hour period, with 58 trips in the AM peak, 30 in the PM1 peak and 53 trips in the PM Peak.

Table 5.15 - Residential Trip Generation

	Car Passenger			Walk			Cycle			Bus			Underground			Rail			Total		
	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
AM	0	2	2	4	22	26	1	2	3	1	2	2	8	12	20	2	3	5	16	42	58
PM1	0	0	0	13	4	17	1	0	1	2	0	2	4	3	7	1	1	2	22	8	30
PM2	0	0	0	18	9	28	2	0	2	2	0	2	8	9	16	2	2	4	32	20	53
12HR	1	4	6	83	88	171	5	9	14	3	4	7	60	63	123	16	17	33	168	184	353

The modal split of the residential trips is summarised in **Table 5.16** below. The majority of residential trips generated by the development will be either on foot or by London Underground and Overground services.

Table 5.16 - Residential Modal Split

	Cycle	Car Passenger	Pedestrian	Bus	Underground	Rail
AM	5%	3%	44%	4%	35%	9%
PM1	5%	3%	44%	4%	35%	9%
PM2	4%	1%	53%	4%	31%	8%
TOT	4%	2%	48%	2%	35%	9%

5.4 Summary

Table 5.17 below provides a summary of trips estimated to be generated by the development site. Phase 1 of the development can be seen to generate the majority of trips to and from the site, these are largely associated with the parents school run.

Table 5.17 - Development Trip Generation Summary

		Two Way Vehicle Trips (Mon – Fri)
Phase 1	AM	+88
	PM1	+82
	PM2	+4
	12HR	+174
Phase 2	AM	+6
	PM1	+8
	PM2	+13
	12HR	+95
Phase 1+2	AM	+94
	PM1	+90
	PM2	+17
	12HR	+269

6.0 Trip Distribution

6.1 School Trip Distribution

Assumed routes to and from the proposed development have been derived for vehicle, rail and bus trips.

As the school will attract pupils from all over the West Hampstead and Kilburn Area, it has been assumed that those travelling by car to the new school will arrive proportionally from each direction. This is illustrated in **Table 6.1** below.

Table 6.1 - School Vehicle Distribution

Direction of Travel to School	Vehicle
Iverson Road (E)	33%
Iverson Road (W)	33%
Maygrove Road / Fordwych Road	33%

In terms of bus trips, an even split between Kilburn High Road and West End Lane has been assumed.

It is assumed that those travelling to site by rail services including Overground, Underground and National Rail services will all arrive or depart from the three West Hampstead Stations on West End Lane. Journeys to and from stations on Kilburn High Road are assumed to be negligible as Kilburn and West Hampstead Stations are on the same lines. Therefore it is assumed that those travelling to the site would use West Hampstead Stations due to their closer proximity to the site.

For walking trips an even distribution between Iverson Road (E), Iverson Road (W) and Maygrove Road / Fordwych Road has been assumed.

6.2 Residential Trip Distribution

Within the 2001 Census, journeys to work (by ward) have been recorded for residents of the West Hampstead ward of Camden. These journeys have been separated by the main mode used to travel to the destination.

Based on these trips, assumed routes to and from the proposed development have been derived for vehicle, rail and bus trips. The full distributions are contained in **Appendix 11** and a summary is reproduced in **Table 6.2** - **Table 6.4** below.

It should be noted that the National Rail and London Underground census trips data have been combined to generate an overall Rail distribution.

It is assumed that those travelling to site by rail services including Overground, Underground and National Rail services will all arrive or depart from the three West Hampstead Stations on West End Lane. Journeys to and from stations on Kilburn High Road are assumed to be negligible as Kilburn and West Hampstead Stations are on the same line. Therefore it is assumed that those travelling to the site would use West Hampstead Stations due to their closer proximity to the site.

For walking trips an even distribution between Iverson Road (E), Iverson Road (W) and Maygrove Road / Fordwych Road has been assumed.

Table 6.2 - Residential Vehicle Distribution

Direction of Travel to Work	Vehicle
Iverson Road / West End Lane (N)	34.8%
Iverson Road / West End Lane (S)	30.1%
Maygrove Road / Christchurch Avenue (SW)	11.3%
Maygrove Road / Shoot Up Hill (SE)	7.1%
Maygrove Road / Shoot Up Hill (NW)	16.8%

Table 6.3 - Residential Bus Distribution

Direction of Travel to Work		Bus
Bus Stop		Residential
N	C11 (N)	9%
W	C11 (S)	14%
W	139 (S)	42%
N	328 (N)	11%
W	328 (S)	23%

Table 6.4 - Residential Rail Distribution

Travel to Work		Rail
Station	Service	Residential
West Hampstead Thameslink	Thameslink (N)	1%
	Thameslink (S)	48%
West Hampstead London Overground	London Overground (E)	6%
	London Overground (W)	2%
West Hampstead London Underground	Jubilee (N)	3%
	Jubilee (S)	41%

6.3 Employment Trip Distribution

This trip distribution covers both employment at the commercial element of the development and at the school.

Within the 2001 Census, journeys to work (by ward) of people working in the West Hampstead ward of Camden have been recorded. These trips have been separated by the main mode used to travel to work.

Based on these travel patterns, assumed routes to and from the proposed development have been derived for vehicle, rail and bus trips to work. The full distributions are contained in **Appendix 11** and a summary is reproduced in **Table 6.5** -

Table 6.7 below.

It should be noted that the National Rail and London Underground data has been combined to generate an overall Rail distribution.

For walking trips an even distribution between Iverson Road (E), Iverson Road (W) and Maygrove Road / Fordwych Road has been assumed.

Table 6.5 - Employment Vehicle Trip Distribution

Direction of Travel to Work	Vehicle
Iverson Road / West End Lane (N)	13%
Iverson Road / West End Lane (S)	48%
Maygrove Road / Christchurch Avenue (SW)	7%
Maygrove Road / Shoot Up Hill (SE)	7%
Maygrove Road / Shoot Up Hill (NW)	25%

Table 6.6 - Employment Bus Trip Distribution

Direction of Travel to Work		Bus
Bus Stop		Commercial / School Staff
N	C11 (N)	40%
W	C11 (S)	18%
W	139 (S)	11%
N	328 (N)	26%
W	328 (S)	6%

Table 6.7 - Employment Rail Trip Distribution

Travel to Work		Rail
Station	Service	Commercial / School Staff
West Hampstead Thameslink	Thameslink (N)	7%
	Thameslink (S)	12%
West Hampstead London Overground	London Overground (E)	30%
	London Overground (W)	7%
West Hampstead London Underground	Jubilee (N)	13%
	Jubilee (S)	30%

7.0 Transport Impact Assessment

7.1 Vehicle Trips

To reflect the two detailed planning applications trips generated by the proposed development Phase 1 and Phase 2 are considered separately, then cumulatively. Because of the school the following peak periods have been identified; Peak AM (08:00-09:00), Peak PM1 (15:30-16:30) and Peak PM2 (17:00-18:00).

Supplanted trips from the existing site uses on Liddell Road have been determined from the Transport Survey results.

Phase 1 - School

Table 7.1 below demonstrates when considering the school element of the development only with the Worst Case Family Group Modal Split, there will be a net increase during the peak hours of approximately 60 vehicle trips in the AM and PM1 peak hours. It should be noted that much of this increase occurs in a 15 minute period around the school drop off/pick up time. There will however be a net reduction of 151 vehicle trips across a 12 hour period.

Table 7.1 - Phase 1 Vehicle Impact Assessment

		Two Way Trips (Mon – Fri)
Phase 1	AM	+88
	PM1	+82
	PM2	+4
	12HR	+174
Supplanted Trips	AM	-28
	PM1	-24
	PM2	-24
	12HR	-325
Net	AM	+60
	PM1	+58
	PM2	-16
	12HR	-151

Phase 2 – Residential and Commercial

Considering the residential and commercial element only, **Table 7.2** below demonstrates that there will be a net reduction of 230 vehicle trips across a 12 hour period with a reduction of up to 22 vehicles in the identified peak hours.

Table 7.2 - Phase 2 Vehicle Impact Assessment

		Two Way Trips (Mon – Fri)
Phase 2	AM	+6
	PM1	+8
	PM2	+13
	12HR	+95
Supplanted Trips	AM	-28
	PM1	-24
	PM2	-24
	12HR	-325
Net	AM	-22
	PM1	-12
	PM2	-11
	12HR	-230

Cumulative – School, Residential and Commercial

Considering Phases 1 and 2 of development cumulatively, **Table 7.3** below demonstrates that the will be a net reduction of 56 vehicle trips. There will be a net increase of 66 vehicle trips in both the AM and PM1 peak hours and a reduction of 7 vehicle trips in the PM1 peak hour.

Table 7.3 - Cumulative Vehicle Impact Assessment

		Two Way Trips (Mon – Fri)
Phase 1+2	AM	+94
	PM1	+90
	PM2	+17
	12HR	+269
Supplanted Trips	AM	-28
	PM1	-24
	PM2	-24
	12HR	-325
Net	AM	+66
	PM1	+66
	PM2	-7
	12HR	-56

7.2 Parking

As the scheme is proposed as a car-free development, the impact on parking within the vicinity of the site will only be as a result of vehicles visiting the site. Although the variation of CPZ zones discussed in Section 3.8 limits the geographical area from which people will be able to drive and park within the vicinity of the site, it is assumed as a worst case scenario that all vehicle trips generated by the school element of the site will have the appropriate permit to park within the area. Vehicle trips associated with the residential and commercial elements are assumed to be drop off and pick up only and so there would be no requirement for parking.

From the parking survey results discussed in **Appendix 6** and summarised below in **Table 7.4**, there is a total of 299 residential, disabled and pay and display spaces within the vicinity of the site. This allows for the removal of 6 resident bays and the conversion of 1 resident bay to a disabled bay on Maygrove Road in order to facilitate delivery vehicle access to the development. Existing parking on Liddell Road ifs effectively private and has therefore been ignored. The operational and disabled visitor spaces as part of the development are also not considered as part of the exercise.

The Worst Case Scenario for the school of one-way vehicle trips arriving to the development which would wish to park within the vicinity of the site has been tested against the available residential, disabled and pay and display occupancy in the area, summarised in **Table 7.5** below.

Table 7.4 – Base Case Parking Summary

		Average Un-Occupied Spaces		
	No. Spaces	AM	PM1	PM2
RESI	263	29%	36%	29%
DIS	13	91%	85%	65%
P+D	23	56%	58%	56%
TOTAL	299			
AVG		59%	60%	50%

Table 7.5 - Parking Impact Assessment

	Regulation			Un-Occupied Spaces		
				AM	PM1	PM2
Base Case	RESI			77	95	77
	DIS			12	11	8
	P+D			13	13	13
	TOTAL			101	119	98
	Worst Case One-way Trips			Net Un-Occupied Spaces		
	AM	PM1	PM2	AM	PM1	PM2
Phase 1	44	42	1	57	77	97

As the table demonstrates there is more than sufficient capacity within the area to accommodate the additional vehicle traffic generated by the development.

7.3 Highway Assessment

In order to assess the impact of the proposed development on the local highway network, capacity analysis has been undertaken for a number of relevant junctions. In consultation with LBC, and from trip distribution those junctions considered relevant for detailed assessment are:

- Maygrove Road / Iverson Road
- Ariel Road / Iverson Road

At each junction, flow scenarios were assessed for a series of demand sets. Peak periods where modelled as:

- AM peak period (08:00 – 09:00)
- PM1 peak Period (15:30 – 16:30)
- PM2 peak period (17:00-18:00)

Both the AM and PM1 peaks were analysed at 15 minute intervals as to accurately represent the concentrated peak of vehicle trips associated with Phase 1 of development. It has been assumed that in AM and PM1 there is a 15 minute period during which all the Family Group car trips arrive and depart.

For each peak period two scenarios where tested:

- **Base Case:** Existing Traffic Flows
- **With Development:** Existing Flows - Supplanted Trips + Development Trips (Phase 1+2)

Whilst there are committed developments in the West Hampstead area, none of these generate any significant level of peak hour vehicle movement and so have been ignored in the assessment.

Existing flow data has been taken from junction turning counts undertaken as part of the Transport Surveys discussed in Section 3.11.

The proposed development would generate a new pattern of movement based on the change of land uses, and the removal of vehicle trips from the existing uses at Liddell Road. The vehicles currently using the development have therefore been removed from the network to form an adjusted existing traffic flow.

All the traffic network flow diagrams used for the assessment are contained in **Appendix 11**.

Junction capacity analysis has been undertaken using PICADY 8 (priority junctions) modelling module. The Ratio of Flow to Capacity (RFC) / Degree of Saturation (DOS) and theoretical maximum queue lengths produced by the model are reported for each junction. A junction with an arm having a RFC or DOS of 90% is deemed to be at practical capacity. However, it should be noted that an RFC or DOS above 90% are common within London.

Capacity analysis output files are contained in **Appendix 12**. All queues listed in tables are in vehicles.

Junction 1 – Maygrove Road / Iverson Road

The junction at Maygrove Road / Iverson Road is a three-armed T-junction with zebra crossings on two of its arms. The two zebra crossings have been taken into account within the model. The zebra crossing on Iverson Road junction arm has been relocated as proposed in Section 4.1.

The pedestrian flows for the zebra crossing were taken from the trip generation and distribution exercises discussed in Section 5.1 and 6.0, respectively, and have only been considered for the 15min school peak of AM and PM1.

Pedestrian flows outside of the 15min school peak and for the With Development scenarios have been assumed to be negligible. This therefore negates the need to test Junction 1 with the original location of zebra crossing as part of the Without Development scenarios.

The junction was modelled as:

- Iverson Road (S) – Arm A
- Maygrove Road – Arm B
- Iverson Road (N) – Arm C

A summary of the results is provided in **Table 7.6** and

Table 7.7 overleaf. The junction is predicted to be operating well within capacity and the addition of traffic associated with the development would have a negligible impact on the junction.

Streams A-B and A-C have uninterrupted priority and do therefore not produce any queuing.

The resultant queue lengths from the model are low when validated to the surveyed queue lengths. However, the peak queue lengths surveyed at Junction 1 were observed to not exceed 1 vehicle, and occur infrequently.

Junction 2 – Ariel Road / Iverson Road

The junction at Ariel Road / Iverson Road is a three-armed T-junction. The junction was modelled as:

- Iverson Road (S) – Arm A
- Ariel Road – Arm B
- Iverson Road (N) – Arm C

A summary of the results is provided in **Table 7.8** and **Table 7.9** overleaf. The junction is predicting to be operating well within capacity and the addition of traffic associated with the development and would have a negligible impact on the junction.

Streams C-B, A-B and A-C have uninterrupted priority and do therefore not produce any queuing. Similarly to Junction 1, the resultant queue lengths from the model are low when validated to the surveyed queue lengths. The peak queue lengths surveyed at Junction 2 were observed to not exceed 2 vehicles. Queues were recorded as occurring infrequently across the period.

Table 7.6 - Junction 1 Existing

Stream	AM (0800-0900)			PM1 (1530–1630)			PM2 (1700–1600)		
	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	Surveyed Queues AVG
B-AC	0.07	0.08	0.10	0.03	0.03	0.10	0.07	0.08	0.10
C-A	0.02	0.04	0.00	0.02	0.03	0.00	0.02	0.04	0.00
C-B	0.05	0.03	0.50	0.04	0.03	0.10	0.05	0.03	0.60
A-B	-	-	-	-	-	-	-	-	-
A-C	-	-	-	-	-	-	-	-	-

Table 7.7 - Junction 1 With Development

Stream	AM (0800-0900)			PM1 (1530–1630)			PM2 (1700–1600)		
	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	Surveyed Queues AVG
B-AC	0.07	0.07	0.10	0.06	0.06	0.10	0.07	0.08	0.10
C-A	0.02	0.04	0.00	0.02	0.03	0.00	0.02	0.04	0.00
C-B	0.05	0.03	0.50	0.07	0.05	0.10	0.05	0.03	0.60
A-B	-	-	-	-	-	-	-	-	-
AC	-	-	-	-	-	-	-	-	-

Table 7.8 - Junction 2 Existing

Stream	AM (0800-0900)			PM1 (1530–1630)			PM2 (1700–1600)		
	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	Surveyed Queues AVG
B-AC	0.05	0.05	0.50	0.04	0.04	0.60	0.05	0.05	0.10
C-A	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.02	0.00
C-B	-	-	-	-	-	-	-	-	-
A-B	-	-	-	-	-	-	-	-	-
A-C	-	-	-	-	-	-	-	-	-

Table 7.9 - Junction 2 With Development

Stream	AM (0800-0900)			PM1 (1530–1630)			PM2 (1700–1600)		
	Max RFC	Max Queue	Surveyed Queues AVG	Max RFC	Max Queue	AVG Surveyed Queues	Max RFC	Max Queue	Surveyed Queues AVG
B-AC	0.01	0.01	0.50	0.04	0.04	0.60	0.05	0.05	0.33
C-AB	0.00	0.00	0.00	0.01	0.01	0.16	0.01	0.02	0.00
C-A	-	-	-	-	-	-	-	-	-
A-B	-	-	-	-	-	-	-	-	-
A-C	-	-	-	-	-	-	-	-	-

7.4 Walking

Table 7.10 summarises the total number of two-way walking trips generated by the site. Both the AM and PM1 peaks generate the highest number of walking trips.

Table 7.10 - Walking Trips Generated from the Development

	AM	PM1	PM2
PHASE 1*	361	451	61
PHASE 2	49	57	53
PHASE 1+2	410	508	114

*Family Group trips, as part of the school trips, have been multiplied by Child to Adult Ratio of 1.7 to represent total people.

Phase 1 of the development can be seen to generate the vast majority of the walking trips. These trips mainly Family Groups picking up or dropping of their children at the school and will occur in a concentrated 15 minute peak either side of the school hours.

The generous public realm space within the site and the permeability through to Maygrove Peace Park, and expanded public realm space on Maygrove Road will be sufficient to accommodate the additional demand.

Table 7.11 summarises the two-way number of walking trips as final mode to and from the proposed development. This takes into account trips for which the main mode is public transport so there is also a walking trip required into order to get to and from a station or bus stop.

Table 7.11 –Final Mode Walking Trips Generated from the Development

	AM	PM1	PM2
PHASE 1*	387	475	40
PHASE 2	133	114	146
PHASE 1+2	520	589	186

An even distribution of walking trips is assumed to / from the site; east via Iverson Road, south-west via Iverson Road, and west via Maygrove Road. The additional multi-modal trips from public transport services are assumed to arrive from West End Lane for all rail services (Overground, Underground, National Rail) and an even split between West End Lane and Kilburn High Road for bus services.

7.5 Cycling

As shown in **Table 7.13** overleaf, the trip generation exercise estimates a total of 38 daily cycle trips to / from the site. The provision of additional cycle parking and facilities, as well as the implementation of measures to promote sustainable travel may slightly increase the number of trips by bicycle in the future. Their impact on the existing highway network, which currently accommodates cyclists, is likely to be minimal.

Table 7.12 –Cycle Trips Generated from the Development

	AM	PM1	PM2
PHASE 1	4	5	1
PHASE 2	4	1	6
PHASE 1+2	8	6	7

7.6 Public Transport

Bus

The bus trips estimated to be generated from the site have been distributed between services in accordance with trip distribution discussed in Section 6.0. For Phase 1, school staff bus trips have been distributed using employment figures, and Family Group trips have been distributed using residential figures. **Table 7.13** below summarises the distribution of trips per service.

Table 7.13 - Bus Trip Generation from Development

	Service	AM	PM1	PM2
PHASE 1	C11 (N)	4	5	2
	C11 (S)	6	7	1
	139 (S)	19	18	1
	328 (N)	5	5	2
	328 (S)	10	10	0
PHASE 2	C11 (N)	2	1	2
	C11 (S)	1	1	1
	139 (S)	1	1	1
	328 (N)	1	1	1
	328 (S)	1	1	1
PHASE 1+2	C11 (N)	6	52	4
	C11 (S)	7	23	2
	139 (S)	20	15	2
	328 (N)	6	35	3
	328 (S)	11	8	1

As Shown by the figures, the highest peak of trips per service is for the 139(S) bus service, in AM and PM1 peak periods. The frequency of services within the peak period is 9 per hour. This equates to approximately 2 trips per 15minutes. As Phase 1 peak periods occur within for a 15 minute interval, it is therefore approximated that a maximum of 10 trips per bus will be generated within the 15min peak period associated to Phase 1. This is not considered to be significant. Similarly for the full development, Phase 1+2 the impact is not considered to be significant.

Rail Services

The rail trips estimated to be generated by the development have been assessed for each service, which has been distributed accordingly to the 2001 Census data discussed in Section 6.0. It is assumed that all those travelling to and from site by rail services including Overground, Underground and National Rail services will all arrive or depart from the three West Hampstead Stations on West End Lane.

National Rail

From **Table 7.14**, it can be seen that the highest peak of rail services trips is in the AM period for Phase1+2. Given the frequency of services within the peak periods varies between 2 and 4 per hour, dependent on route, this equates to approximately 10 or 5 trips per train respectively. It is therefore considered that the impact to national rail services to be insignificant.

Table 7.14 - National Rail Trip Generation from Development

	AM	PM1	PM2
PHASE 1	9	11	2
PHASE 2	11	8	12
PHASE 1+2	20	19	14

Overground

From **Table 7.15**, it can be seen that the highest peak of overground trips is in the AM period for Phase1+2. Given the frequency of services within the peak periods varies between 4 and 8 per hour, dependent on route, this equates to approximately 5 or 2 trips per train respectively. It is therefore considered that the impact on London Overground services to be insignificant.

Table 7.15 - London Overground Trips Generated from Development

	AM	PM1	PM2
PHASE 1	4	6	3
PHASE 2	14	11	14
PHASE 1+2	18	17	17

Underground

From **Table 7.16**, it can be seen that the highest peak of underground trips is in the AM period for Phase1+2. Given the frequency of services within the peak periods 28 per hour, this equates to approximately 2 trips per train respectively. It is therefore considered that the impact on London Underground services to be insignificant.

Table 7.16 - London Underground Trips Generated from Development

	AM	PM1	PM2
PHASE 1	4	7	4
PHASE 2	32	23	31
PHASE 1+2	36	30	35

8.0 Conclusion

The proposed development at Liddell Road is located in an area of high public transport accessibility with a range of public bus, underground, overground and national rail connections. The local pedestrian environment is generally to a good standard and proposed public realm and traffic calming measures will improve movement between the site and local transport nodes.

The development has been shown to have an insignificant impact on local traffic levels and adjacent junctions. Sustainable trip generation also demonstrates that the development would not have a significant impact on local pedestrian environment and public transport services.

Off-street parking for disabled drivers and cycles is proposed in accordance of current parking standards and design guidelines. A parking impact assessment demonstrates that there is sufficient on-street parking capacity within the vicinity of the site to accommodate the vehicle trips generated by the development.

Refuse servicing of the site will be carried out in the public realm to the west of the site via a new access onto Maygrove Road. It has been demonstrated that both the new and existing site accesses can accommodate emergency and refuse vehicle movements.

The Draft Travel Plans in support of this Transport Assessment will be implemented to promote the use of sustainable modes of transport.

9.0 Appendices

Appendix 1 – Scoping Note

1. INTRODUCTION

This Scoping Note sets out the proposed approach to the preparation of the Transport Assessment (TA) and Framework Travel Plan (FTP) which will accompany the detailed planning application for the Liddell Road site in West Hampstead (ward of the London Borough of Camden). Development on the site will comprise an infant's primary school (4 form entry), residential uses (up to 120 units) and commercial space (up to 4000 sqm). The site is located to the west of West Hampstead Station and is bordered by Maygrove Peace Park to the west, Maygrove Road to the south and Thameslink rail line to the north as is illustrated in Figure 1 below.

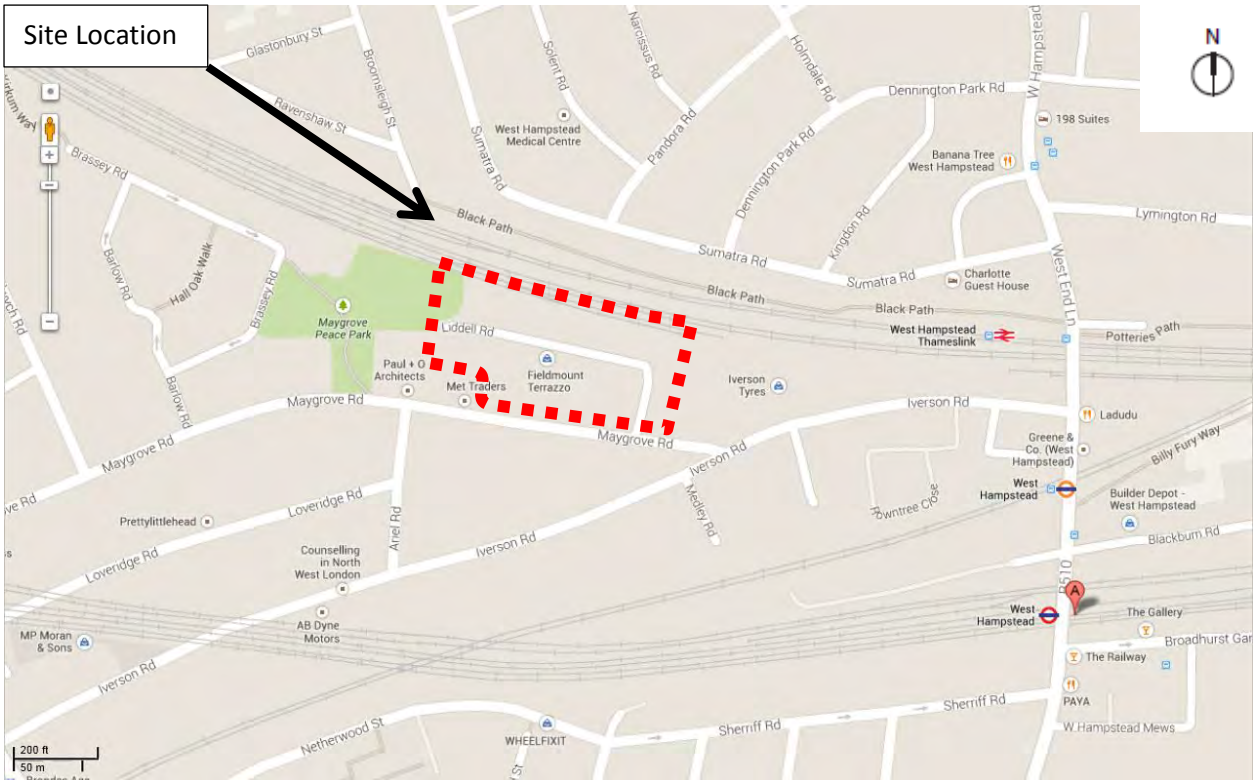


Figure 1 – Site Location

The site has PTAL between 4 – 5, which equates to access to public transport being categorised as good - very good.

The TA will generally follow the guidelines set out in "Guidance on Transport Assessments" (TfL 2014) and will contain a prediction of vehicle impacts based on existing data from similar sites.

It is assumed the proposed scheme is non referable and as such engagement with the TfL Land use planning team will not be undertaken as part of this application.

Within the subsequent sections of this note, the proposed content for the TA's will be outlined, including proposals to undertake a traffic and parking beat surveys.

2. DEVOLPMENT PROPOSALS

2.1 Summary

The development proposals for the Liddell Road site in West Hampstead by type are summarised below and illustrated in Appendix 1 on Maccreanor Lavington drawing MLA/403/SK/45:

- **School**: 4 form entry infant school (Nursery, Reception, Year 1 and Year 2) with up to 400 pupils and a GIA of 2280 sqm. Upon completion of the new facility Kingsgate School will operate over two sites with Years 3, 4, 5 & 6 located at the current site on Kingsgate Road to the south.

- **Residential** (C3 use)**:** approximately 110 units comprising a block fronting onto Maygrove Road (approx. 60 units) and a block within the site (approx. 50 units).

- **Commercial space** (B1 use): GIA up 4000 sqm. It should be noted that potentially some of the commercial space will have a light industrial use. However conservatively it has been assumed that all space will be B1 office use, as this use type generally has a much higher trip generation rate than light industrial use.

2.2 Vehicle Parking Provision

Based on advice in Camden's SPD, minutes from a meeting between MLS and LB Camden Access team on 06.05.2014 and a meeting with planning and transport officers on the 23.05.2014 the following parking provision as set out in Tables 1, 2 and 3 is proposed

Land Use Type	**Commercial (B1)**		
User Group	***Disabled Staff***	***Disabled Visitor***	***Operational***
Camden SPD Minimum Space Requirements (unless stated)	1 per disabled employee or per 20,000 sqm m	From a threshold of 2,500 sqm m, a minimum of 1 plus any additional spaces needed to bring total provision to 5% of visitors	Maximum of 1 Space per 1500 sqm m in a low parking area
Proposed Provision	1	1 (shared with the school)	0

Table 1: Parking standards and Proposed Provision for Commercial Use

Land Use Type	**Residential (C3)**	
User Group	***Wheel Chair Housing***	***General Housing***
Camden SPD Minimum Space Requirements (unless stated)	1 per residential unit with dimensions suitable for use by people with disabilities	1 space per 20 units with dimensions suitable for use by people with disabilities
Proposed Provision	Wheel chair housing will be located in the block fronting onto Maygrove Road. Subject to a survey to demonstrate capacity it is assumed that residents in this block who hold a Blue Badge will park on street in the CPZ bays.	The block within the site could generate the requirement for up to 3 disabled spaces. These will not be provided initially but it will be demonstrated that the public realm adjacent to this block has the capacity to accommodate this parking should it be required in the future

Table 2: Parking Standards and Proposed Provision for Residential Use

Land Use Type	**School / Non Residential Institution (D1)**		
User Group	***Disabled Staff***	***Disabled Visitor***	***Operational***
Camden SPD Minimum Space Requirements (unless stated)	1 (from a threshold of 2,500 sqm m)	1 space per 500 sqm (from a threshold of 2,500 sqm m)	Maximum of 1 Space per 1500 sqm
Proposed Provision	1	1 (shared with the commercial use)	2 spaces (This is in excess of what the standard permits as a maximum but is necessary in order for the school to function across two physical sites)

Table 3: Parking Standards and Proposed Provision for School Use

2.3 Cycle Parking Provision

The cycle parking requirements in accordance with Camden Development Polices (2010) and proposed provision for this site are set out in Table 4 below. It should be noted that in addition parking for children's scooters will also be provided within the school grounds.

Type of Parking	School		Commercial		Residential	
	*Requirements**	*Proposed*	*Requirements**	*Proposed*	*Requirements**	*Proposed*
Off Street Secure (for Staff / Residents)	1 space per 250 sqm	9	1 space per 250 sqm	16	1 space per unit	110
On Street – Visitors	1 space per 250 sqm	9	Minimum of 2	2	1 space per 10 units	11

Table 4 – Cycle Parking Standards and Proposed Provision

3. POLICY FRAMEWORK

A review and summary of the transport policy contexts from the following sources will be included:

- National Planning Policy Framework (2012);
- London Plan (2011);
- Camden Core Strategy (2010 - 2025);
- Camden Development Polices (2010 – 2025); and,
- Camden Planning Guidance (2013)

4. EXISTING CONDTIONS

A description of the existing conditions in the vicinity of the site including:

- **Walking** - Review of existing walking facilities and routes within 10 minutes' walk of site (800 metres). As part of this review a PERS audit will be undertaken within the area illustrated in Appendix 2 – Figure 3. Moreover as part of the PERS audit, 4 walking routes will be reviewed as illustrated in Appendix 2 – Figure 4 and summarised below:
    - Maygrove Road to Site Via Maygrove Peace Park;
    - Maygrove Road to Site Via Liddell Road;
    - West Hampstead Station to Site; and,
    - St Gilberts Road to Site via Wayne Kilburn Walk and Maygrove Peace Park.
- **Cycling** - Review of existing cycling facilities and routes within 10 minutes cycle of site (2400 metres).
- **Public Transport** - Review of the following public transport facilities which are accessible within 5 minutes' walk of site (400 metres) :
    - Bus Services 139,328 and C11
    - Thameslink, Jubilee Line and London Overground Rail services serving West Hampstead

- Jubilee line services serving Kilburn Station

- **Highway Network** - Summary of the local highway network facilities including traffic flows and analysis of accident data in the vicinity of the site.

  A traffic survey will be commissioned to establish vehicle flow levels in the vicinity of the site consisting of:

  - ATCs for a two week period in the locations summarised below and illustrated in Appendix 2 – Figure 1 :
    - Maygrove Road;
    - Liddell Road;
    - Iverson Road.

  - MTCs on a traffic neutral weekday between 07:00 - 10:00 and 15:00 – 19:00 at the locations summarised below and illustrated in Appendix 1 – Figure 2:
    - Maygrove Road / Liddell Road – Priority Junction;
    - Iverson Rod / Maygrove Road – Priority Junction; and,
    - Iverson Road / West End Lane – Signal Controlled.

  Given that there is existing vehicle movement associated with the Liddell Road industrial estate that will be removed and a relatively small level of vehicle trips generated from the new uses. A survey of the Iverson Road/West End Lane junction is not considered necessary.

- **Parking** – Review of existing parking demand and provision.

  To obtain understanding of parking demand and provision, a parking beat survey will be commissioned between 07:30 – 09:30 and 15:00 – 22:00 on a traffic neutral weekday (Tuesday, Wednesday or Thursday). The extents of the parking beat survey are illustrated in Appendix 2 – Figure 5.

- **Car Ownership Levels** - Identification of car ownership in the surrounding local area, (source: Census 2011).

- **Modal split journeys to work –** Identification of modal split for journeys to work for residents of the surrounding local area, (source: Census 2011.)

- **Future Transport Improvements –** identification of any major transport improvements. To our knowledge there are none planned.

- **Committed Developments -** identification of any developments in the vicinity of the site to be agreed with LB Camden.

5. ACCESS STRATEGIES

Outlining the details of the proposed development access strategies with subsections describing:

- **Walking –** Identification of strategies for travel to and from the site by Walking
- **Cycling –** Identification of strategies for travel to and from the site by Cycle
- **Public Transport –** Identification of strategies for travel to and from the site by Public Transport
- **Parking –** Setting out the parking provision for different uses and comparing to maximum standards set out in the Camden Core Strategy and the London Plan.

  It is intended that new residents of the development will not be eligible to apply for parking permits from the London Borough of Camden to park within CPZs on surrounding local streets. To establish this measure, it is intended that the planning application be accompanied by a unilateral undertaking (or included in any associated S106 planning obligation) exempting future occupiers of the development from being able to obtain a parking permit from London Borough of Camden.
- **Highway Access –** Outline design of new vehicle access of the development junction (including sightlines) to facilitate vehicle access from and to the site.
- **Deliveries and Servicing –** An analysis of the anticipated deliveries to the site will be carried out with swept path analysis as required. Servicing is likely to be mainly for deliveries and refuse collection. The current strategy is for this activity to be undertaken from Maygrove Road and using the public realm space within the site.

6. TRIP GENERATION

Calculation of person trips generated by the development is determined by analysing trip rates, trip distribution and future traffic growth.

6.1 Peak Trip Rates

Based on employment and school uses proposed, it assumed that peak trips generated will occur on weekdays, therefore it is not proposed to determine trips generated and their potential impacts at weekends.

<u>Residential and Commercial use</u>

The developments person trip rate for the residential and commercial elements of the site are to be calculated using the average trip rate from at least 3 recently surveyed similar sites within the TRAVL or TRICS database. Based upon the categories within the TRAVL and TRICS databases, the desired profile of suitable sites has been set out in Table 5 below:

Land Use Type	**Residential**	**Commercial B1**
Approximately Size	120 Units (Flats)	GFA of 2500 sqm – 4000 sqm
Parking	Essential Parking Only	Essential Parking Only
Type	Inner London Borough Preferred	Inner London Borough Preferred
PTAL	3 - 6	3 - 6
Survey Date	Post 2004	Post 2004

Table 5 – Desired Site profiles within TRAVL database

Based upon the above factors, the residential and commercial sites determined as being most suitable are outlined in Tables 6 and 7 below.

Name	**Type**	**Ref**	**Location**	**Parking**	**Units**	**Date of Survey**	**PTAL**
Winchester Mews	Flats	649	Camden (Inner London)	0	22	09/2008	3
Albion Wharf (Affordable)	Flats	417	Battersea, Lambeth (Central London)	0	45	04/2005	4
Swainson Road	Flats	888	Shepherds Bush, Ealing (Outer London)	24*)	78	12/2009	3
St Georges Wharf	Affordable	467	Vauxhall, Lambeth	76	173	05/2006	6

Table 6 – Residential Sites Selected (Source: TRAVL Database)

*17 for disabled and car club vehicles

Ref	**Type**	**Location**	**Parking**	**Date of Survey**	**GFA (sqm)**	**Date of Survey**	**PTAL**
BT-02-A-02	Office	Wembley, Brent, (Outer London)	43	08/2010	4750	08/2010	5
IS-02-A-01	Office	Islington (Inner London)	21	01/2009	5500	01/2009	6
SK-02-A-02	Office	Rotherhithe Southwark (Inner London)	30	09/2011	2371	09/2011	5
WH-02-A-02	Office	Battersea, Wandsworth (Inner London)	0	07/2012	1215	07/2012	5

Table 7 – Commercial Space Sites Selected (Source: TRICS Database)

Due to the largely parking free nature of the residential and commercial units, vehicle generation from these uses is considered to be negligible compared to vehicle trips generated for Kingsgate School use. As such for the purposes of this assessment vehicle trips from the residential and commercial uses will be ignored.

To account for the variation in public transport facilities' available in the local vicinity of each site, modal split for public transport modes will be determined based on 2011 travel to work census data for West Hampstead Ward in Camden set out in Table 8 below.

Public Transport Mode	**Proportion of Public Transport Trips**
Rail (including Underground)	90.3 %
Bus	9.7 %

Table 8 – Public Transport Travel to Work Modal Split in West Hampstead Ward (Source: Census 2011)

School

Trip generation is proposed to be undertaken using a "first principles" methodology. Based on discussion with Shelly Dumber (Kingsgate School Business Manager) on 22/05/2014). The following travel profile will be assumed:

- Number of Pupils: 400 (30 pupils per class x 12 classes plus 39 children in a nursery);
- Number of Staff: 50 ("1 teacher and 1.5 teaching assistants per class" x 12 + 20 other staff (including admin, maintenance and Senior Teachers));
- 90 % of Infant school pupils and 100% of Nursery school pupils expected to arrive between 08:45 – 09:00, with the remaining 10 % of Infant school pupils expected to arrive earlier between 08:10 – 08:45 for a "breakfast club";
- 70 % of staff expected to arrive between 07:30 – 08:00, and the remaining 30 % arriving between 08:00 – 08:30;
- 90 % of Infant school pupils and 100% of Nursery school pupils expected to depart between 15:30 – 15:45 with the remaining 10 % leaving between 16:30 – 18:00;
- 20 % of staff are expected to leave the school in the afternoon between 15:30 – 16:00, with a further 40 % departing between 16:00 – 17:00 and 40 % departing between 17:00 – 18:00;
- From the parent interviews carried out as part of the traffic surveys in June 2014, on average the ratio of Parent / Guardian to pupil for trips to and from school is 1.7;
- Conservatively it has been assumed that the school will have 100 % attendance from pupils.

Based on these assumption, the trips expected to be generated by the school, are set out in Table 9 below:

Time Period	**Adults** (Parents / Guardians)		**Pupils**		**Staff**		**Total**		
	Arr	***Dep***	***Arr***	***Dep***	***Arr***	***Dep***	***Arr***	***Dep***	***Two Way***
07:30 – 08:00	0	0	0	0	35	0	35	0	35
08:00 – 08:45	21	21	36	0	15	0	87	36	123
08:45 – 09:00	**214**	**214**	**364**	**0**	**0**	**0**	**753**	**370**	**1123**
15:30 – 15:45	**214**	**214**	**0**	**364**	**0**	**10**	**364**	**738**	**1102**
15:45 – 17:00	10.5	10.5	0	18	0	20	18	56	74
17:00 – 18:00	10.5	10.5	18	18	0	20	36	56	92

Table 9 – School Trips Generated (peak periods highlighted)

6.2 Supplanted Trips

There are some existing light industrial uses on the site the trips from which will be recorded via an ATC on Liddell Road and an MCC at the junction with Maygrove Road. It will be assumed that the wider trip distribution of these supplanted trips is the same as the distribution outlined in section 6.3 below. When calculating the vehicle impact of the development, the supplanted trips will be removed from the network.

Trip Distribution

Modal Split and distribution of trips for School use to be determined based on patterns for the infants at the existing Kingsgate School.

Trip distribution for Residential uses has been determined based on origin/destination data for residents of West Hampstead Ward from 2001 Census and is summarised by mode in Tables 10 – 12 below.

Trip distribution for School Staff been determined based on origin/destination data for employees in West Hampstead Ward from 2001 Census and is summarised by mode in Tables 10 – 12 below.

Travel to Work (Direction)	Commercial / School Staff	Commercial / School Staff
West End Lane / Iverson Road (N)	13.1%	44.8%
West End Lane / Iverson Road (S)	47.8%	19.0%
Shoot Up Hill / Maygrove Road (SW)	7.0%	11.9%
Shoot Up Hill / Maygrove Road (SE)	7.4%	22.9%
Shoot Up Hill / Maygrove Road (NW)	24.8%	1.4%

*excluding Motorcycles

Table 10 – Trip Distribution for Vehicle and Motorcycle drivers (Source 2001 Census)

Travel to Work		Bus	
Bus Stop		*Service*	*Commercial / School Staff*
N	C11 (N)	40%	7%
W	C11 (S)	18%	12%
W	139 (S)	11%	30%
N	328 (N)	26%	7%
W	328 (S)	6%	13%

Table 11 – Trip Distribution for Bus Passengers (Source 2001 Census)

Travel to Work		Rail	
Station	Service	Residential	Commercial / School Staff
West Hampstead Thameslink	Thameslink (N)	1%	7%
	Thameslink (S)	48%	12%
West Hampstead	London Overground (E)	6%	30%
	London Overground (W)	2%	7%
	Jubilee (N)	3%	13%
	Jubilee (S)	41%	30%

Table 12 – Trip Distribution for Rail Passengers (Source 2001 Census)

6.3 Future Traffic Growth

For the purposes of this assessment it is assumed that baseline traffic growth is 0 %. Future traffic growth in Camden is assumed to be generated by the proposed development and any committed developments (assumed to be 159 Iverson Road and 65 Maygrove Road).

7. IMPACT ASSESSMENT

7.1 Vehicle Impact assessment

Vehicle Capacity assessment of the following junctions to be undertaken:

- Maygrove Road / Site Access Priority Junction *(using PICADY 8)*
- Maygrove Road / Iverson Road Priority Junction *(using PICADY 8)*

At each junction, the following flow scenarios will be assessed in both the AM peak period (08:45 – 09:00) and the PM peak Period (15:30 – 15:45).

- Do Minimum – Existing Flows (including Supplanted Trips) + Committed Developments Trips
- Do Something – Existing Flows – Supplanted Trips + Committed Developments Trips + Development Trips

7.2 Non Vehicle Impacts Assessment

- **Bus and Rail Services** - The trips generated and distribution of trips outlined in sections 6.1 and 6.2 respectively will be used as a basis to forecast bus and rails trips from the proposed development traveling on the bus and rails networks. Based on this information London Buses, TfL and Thameslink Operators to assess impact upon services.
- **Walking and Cycling Network –** A brief broad review of the impact of development trips on the Walking and Cycling Networks will be undertaken.

8. FRAMEWORK TRAVEL PLAN

As the site has three distinct uses, a Framework Travel Plan will be prepared as part of the TA setting out a range of measures and actions to influence the travel behaviour of the site's residents and visitors towards more sustainable options. As part of the Framework Travel Plan, each land use type will subsequently be required to write a bespoke Travel Plan (before occupation) to suit their individual needs.

APPENDIX 1 – MACCREANOR LAVINGTON DRAWINGS – MLA/403/SK/45

PLANT 13.8 m2
SUBSTATION 23.1 m2
PLANT 40.8 m2
CYCLE STORE 75.2 m2
REFUSE STORE 26.3 m2
CAFE 112.5 m2
WORKSPACE 788.6 m2
MA 2B4P 75.0 m2
MA 1B2P 50.0 m2
MA 2B4P 77.0 m2
+3.00
+2.55
+1.80
+1.50
+1.00
0.00
1:20
1:15

Rev	Details	Drwn	Date
-	Issued for Information	MJR/IP	23-05-14

LIDDELL ROAD KINGSGATE SCHOOL

Client: London Borough of Camden
Title: Approach 04G
Ground Floor Plan
Scale: 1:500 @ A3
Date: 23-05-2014 Drawn: IP/JY/MJR/TW

MLA / 403 / SK / 045

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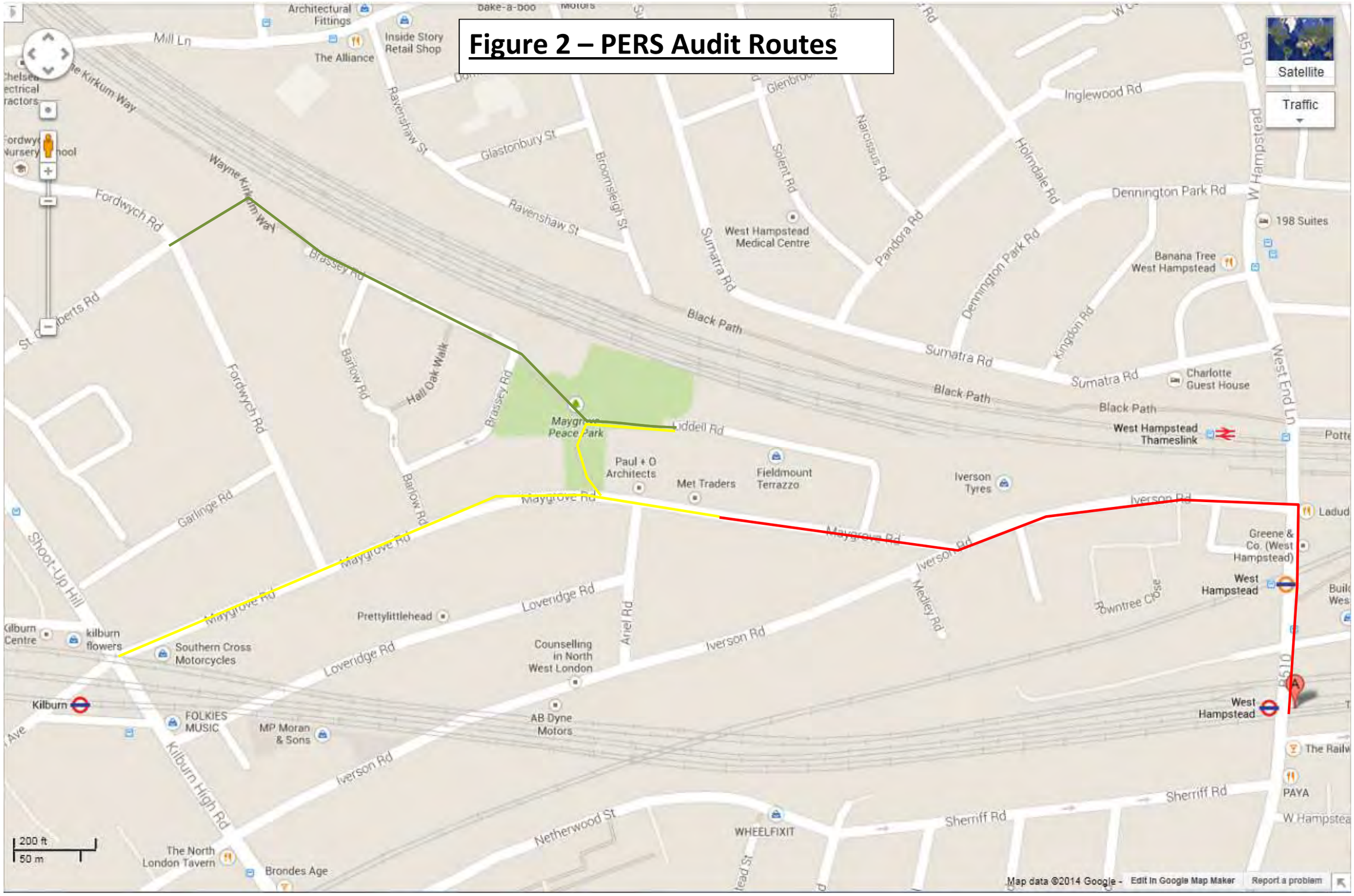
APPENDIX 2 – SURVEY AREA EXTENTS

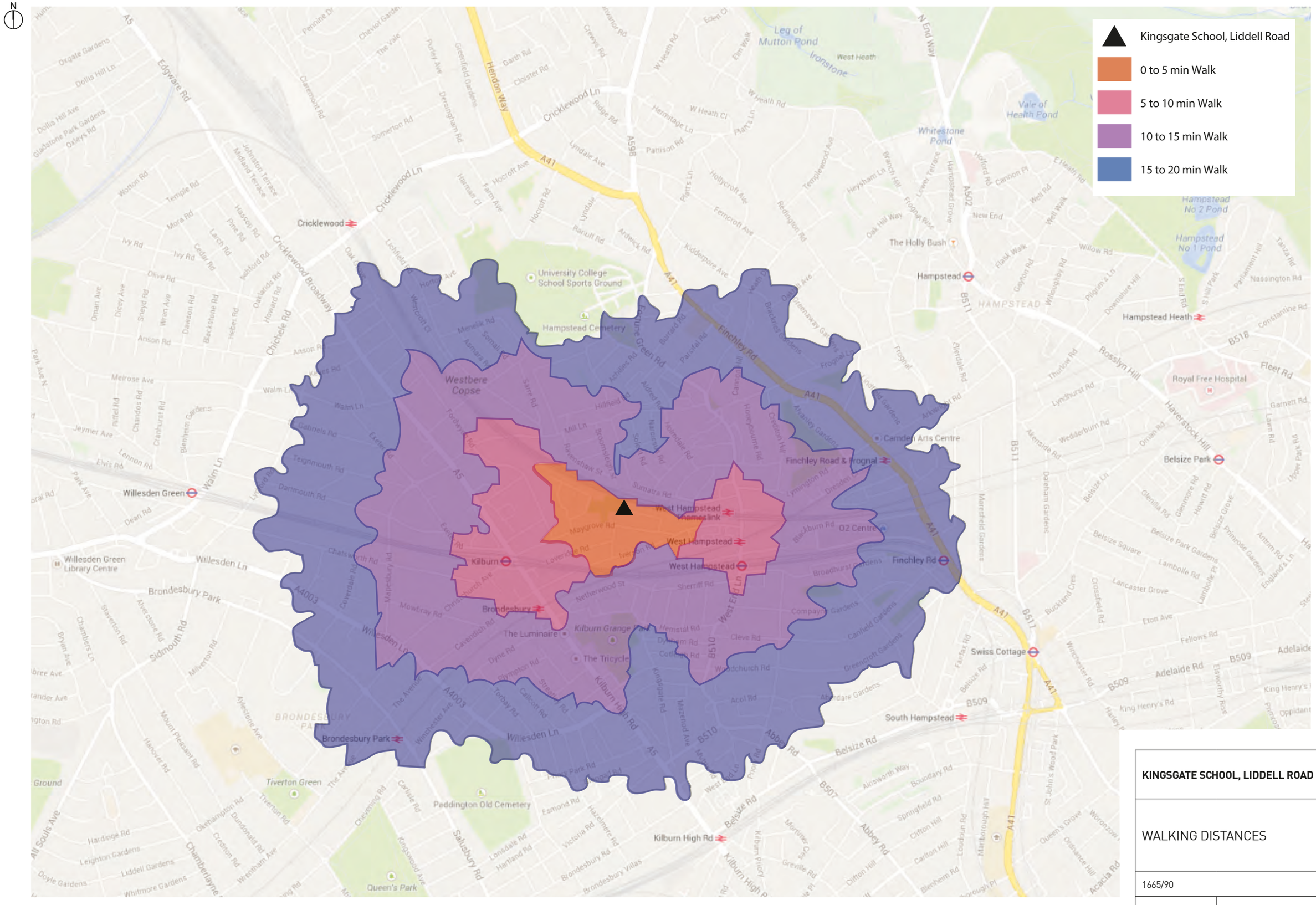
Figure 1 – PERS Audit Extents

Figure 2 – PERS Audit Routes



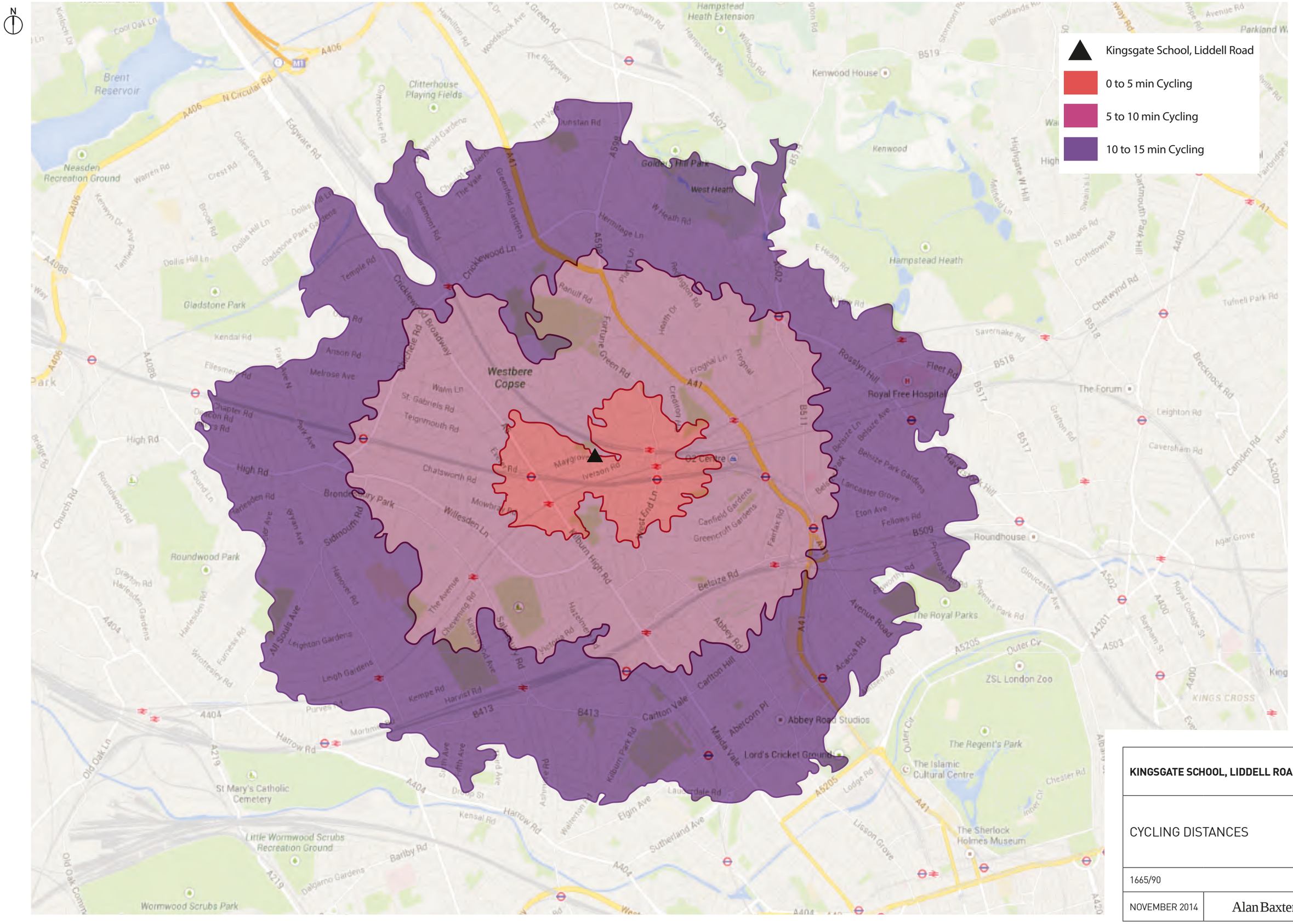
Appendix 2 – Maps and Plans

Figure 1 – Development Site Walking Isochrone



KINGSGATE SCHOOL, LIDDELL ROAD	
WALKING DISTANCES	
1665/90	
NOVEMBER 2014	Alan Baxter

Figure 2 – Development Site Cycling Isochrone



KINGSGATE SCHOOL, LIDDELL ROAD	
CYCLING DISTANCES	
1665/90	
NOVEMBER 2014	Alan Baxter

Figure 3 – TfL Cycle Map

Key

2012 Games Walking and Cycling Routes to east London Games venues

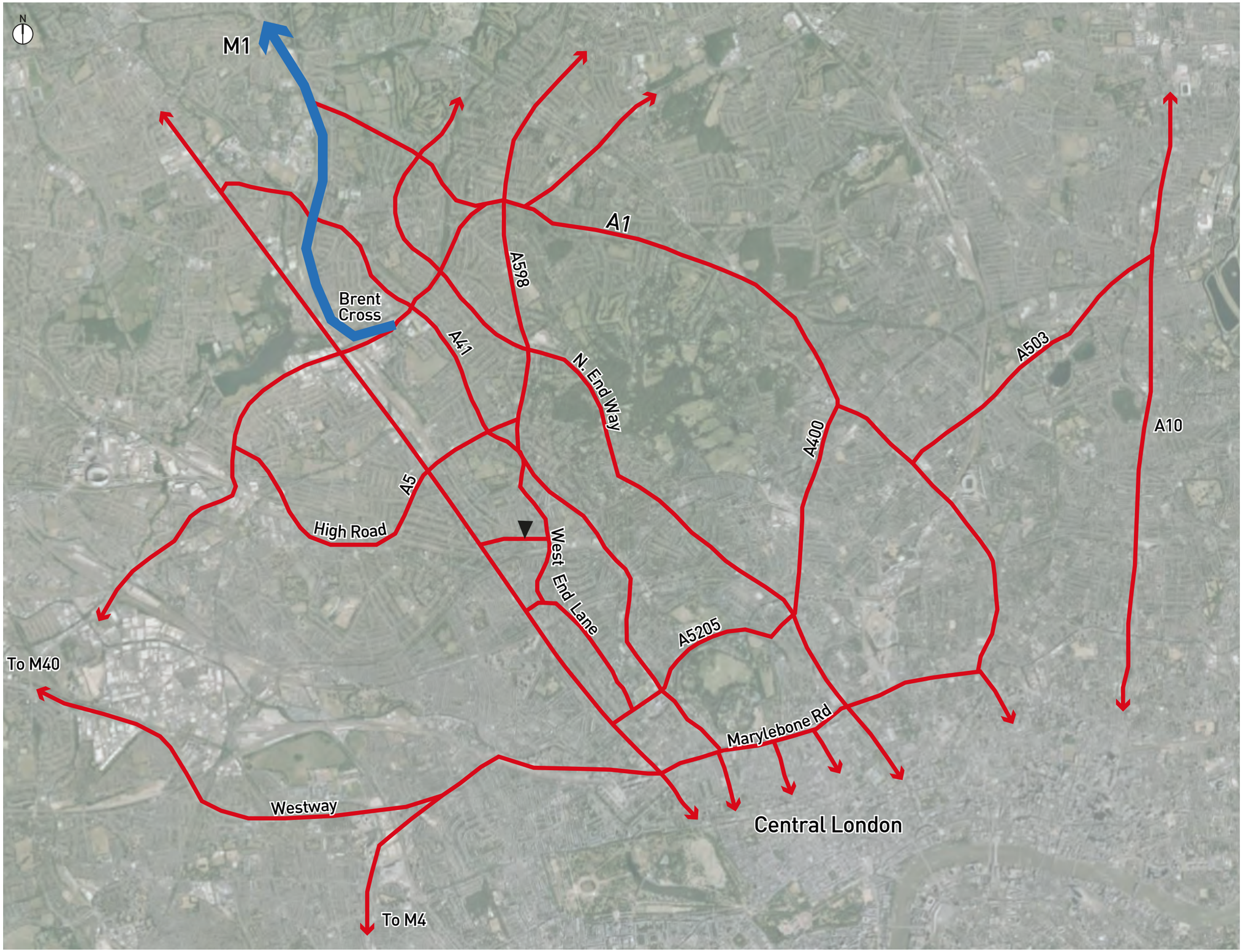
Routes signed or marked for use by cyclists on a mixture of quiet or busier roads

Quieter roads that have been recommended by other cyclists, may connect other route sections

Off-road routes: Either alongside roads, through parks, or along towpaths. Some routes may not be available or suitable for use at night. Routes may be shared with pedestrians

Pedestrian only route which connects cycling sections – you must dismount as cycling is not permitted at any time

Figure 4 – Strategic Road Network



M way

A Road

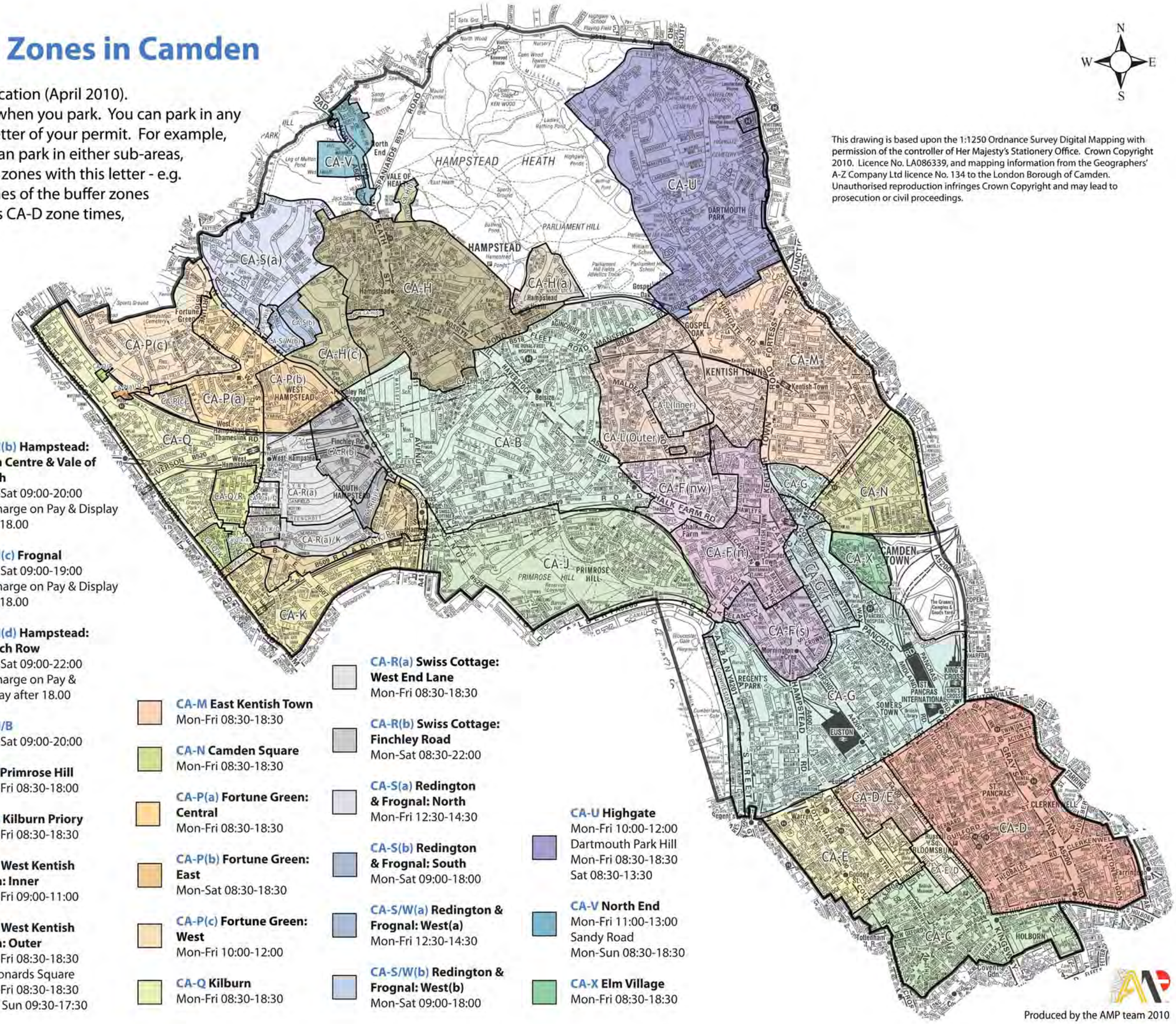
Development Site

KINGSGATE SCHOOL, LIDDELL ROAD	
STRATEGIC ROAD NETWORK	
1665/90	
NOVEMBER 2014	Alan Baxter

Figure 5 – Camden Controlled Parking Zones Plan

Controlled Parking Zones in Camden

Times shown are correct at time of publication (April 2010).
Please check controlled times on-street when you park. You can park in any sub-area or 'buffer zone' with the main letter of your permit. For example, with a Swiss Cottage permit, CA-R, you can park in either sub-areas, CA-R(a) and CA-R(b), or any of the buffer zones with this letter - e.g. CA-R/Q, CA-Q/R, CA-R/K/Q. The zone times of the buffer zones follow the first letter - e.g. CA-D/E follows CA-D zone times, rather than those of CA-E.



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CA-B Belsize
Mon-Fri 09:00-18:30
Sat 09:30-13:30

CA-C Holborn & Covent Garden
Residents Bays are controlled 24 hrs a day, 7 days a week. Parking controls on single yellow lines/Pay & Display bays are Mon-Sat 8:30-18:30

CA-D Kings Cross Area
Mon-Fri 08:30-18:30
Sat 08:30-13:30

CA-E Bloomsbury & Fitzrovia
Mon-Sat 08:30-18:30

CA-F(n) Camden Town: North
Mon-Fri 08:30-18:30
Sat & Sun 09:30-17:30

CA-F(nw) Camden Town: North West
Mon-Fri 08:30-23:00
Sat & Sun 09:30-23:00

CA-F(s) Camden Town: South
Mon-Fri 08:30-18:30
Sat 09:30-17:30
Sun (resident bays only) 9:30-17:30

CA-G Somers Town
Mon-Fri 08:30-18:30

CA-G Crown Estate
Every day 00:00-23:59
Private Parking Only

CA-H(a) Hampstead: South Hill Park
Mon-Sat 09:00-18:00

CA-H(b) Hampstead: Town Centre & Vale of Heath
Mon-Sat 09:00-20:00
No charge on Pay & Display after 18.00

CA-H(c) Frognal
Mon-Sat 09:00-19:00
No charge on Pay & Display after 18.00

CA-H(d) Hampstead: Church Row
Mon-Sat 09:00-22:00
No charge on Pay & Display after 18.00

CA-H/B
Mon-Sat 09:00-20:00

CA-J Primrose Hill
Mon-Fri 08:30-18:00

CA-K Kilburn Priory
Mon-Fri 08:30-18:30

CA-L West Kentish Town: Inner
Mon-Fri 09:00-11:00

CA-L West Kentish Town: Outer
Mon-Fri 08:30-18:30
St Leonards Square
Mon-Fri 08:30-18:30
Sat & Sun 09:30-17:30

CA-M East Kentish Town
Mon-Fri 08:30-18:30

CA-N Camden Square
Mon-Fri 08:30-18:30

CA-P(a) Fortune Green: Central
Mon-Fri 08:30-18:30

CA-P(b) Fortune Green: East
Mon-Sat 08:30-18:30

CA-P(c) Fortune Green: West
Mon-Fri 10:00-12:00

CA-Q Kilburn
Mon-Fri 08:30-18:30

CA-R(a) Swiss Cottage: West End Lane
Mon-Fri 08:30-18:30

CA-R(b) Swiss Cottage: Finchley Road
Mon-Sat 08:30-22:00

CA-S(a) Redington & Frognal: North
Mon-Fri 12:30-14:30

CA-S(b) Redington & Frognal: South
Mon-Sat 09:00-18:00

CA-S/W(a) Redington & Frognal: West(a)
Mon-Fri 12:30-14:30

CA-S/W(b) Redington & Frognal: West(b)
Mon-Sat 09:00-18:00

CA-U Highgate
Mon-Fri 10:00-12:00
Dartmouth Park Hill
Mon-Fri 08:30-18:30
Sat 08:30-13:30

CA-V North End
Mon-Fri 11:00-13:00
Sandy Road
Mon-Sun 08:30-18:30

CA-X Elm Village
Mon-Fri 08:30-18:30

Produced by the AMP team 2010

Figure 6 – Committed Development Plan

Key:

1. Liddell Industrial Site, Liddell Road
2. Hampstead Garden Centre, 163 Iverson Road
3. 159 – 161 Iverson Road, London, NW6 2RB
4. 65 & 67 Maygrove Road
5. 59 Maygrove Road
6. 1 Mill Lane
7. 187 – 199 West End Lane

5480 Liddell Road
Planning Policy Context

drawing no.	5480.02
client	xxxx
scale	
date	08-05-2014

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