Abbey Road Development

Addendum Transport Assessment 2

London Borough of Camden

20 October 2015

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This document has 54 pages including the cover.

Document history

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Rev 1.0	Draft for comment	RJF	MT	CJC	CJC	20/10/15

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1. Introduction

Atkins Transportation (Atkins) has been appointed by the London Borough of Camden (LBC) Housing and Adult Social Services (HASC) to provide transport planning consultancy services in support of the residential led Abbey Road Development project, located within LBC.

The Abbey Road Development Project was originally granted outline planning permission in July 2012 (reference 2012/0096/P) and was supported by a Transport Assessment (TA) prepared by WSP (referred to as the "Original TA" henceforth).

A Hybrid application (reference 2013/4678/P) was subsequently submitted incorporating a revised outline application for the whole of the Abbey Road Development as well as the submission of full details in respect to Phase 1. This was granted planning permission in May 2014 and was supported by an Addendum Transport Assessment (referred to as the "Addendum TA" henceforth) prepared by Atkins.

A full planning application is now being submitted for areas north of Belsize Road, namely Phase 2 along with a Reserved Matters application for Phase 3. This is because the proposed development in Phase 2 is outside of the building footprint and parameters approved through the Hybrid Application, whereas Phase 3 required only one non-material amendment to ensure that the proposed building would sit within the approved parameters, thus allowing for a reserved matters submission.

As such, following submission of the original TA in support of the outline application, this report has been prepared as a second Addendum Transport Assessment to support the full planning application for Phase 2 and reserved matters submission for Phase 3.

The scope of work for this document has been guided by the content of the Original and Addendum TA documents, and in doing so, it provides updates to the Original and Addendum TA documents where required, with these being:

- proposed development (development quantums, on street parking and the Abbey Road / Belsize Road junction have been updated since the hybrid application) as the subject of this Addendum TA 2;
- planning policy (the London Plan has been updated with Further Alterations to the London Plan in March 2015) and existing traffic conditions at the Abbey Road/Belsize Road junction (traffic surveys were last undertaken in 2010); and
- LINSIG traffic modelling and associated impact of the proposed development (reflecting updated traffic surveys to inform an updated design of the Abbey Road / Belsize Road junction).

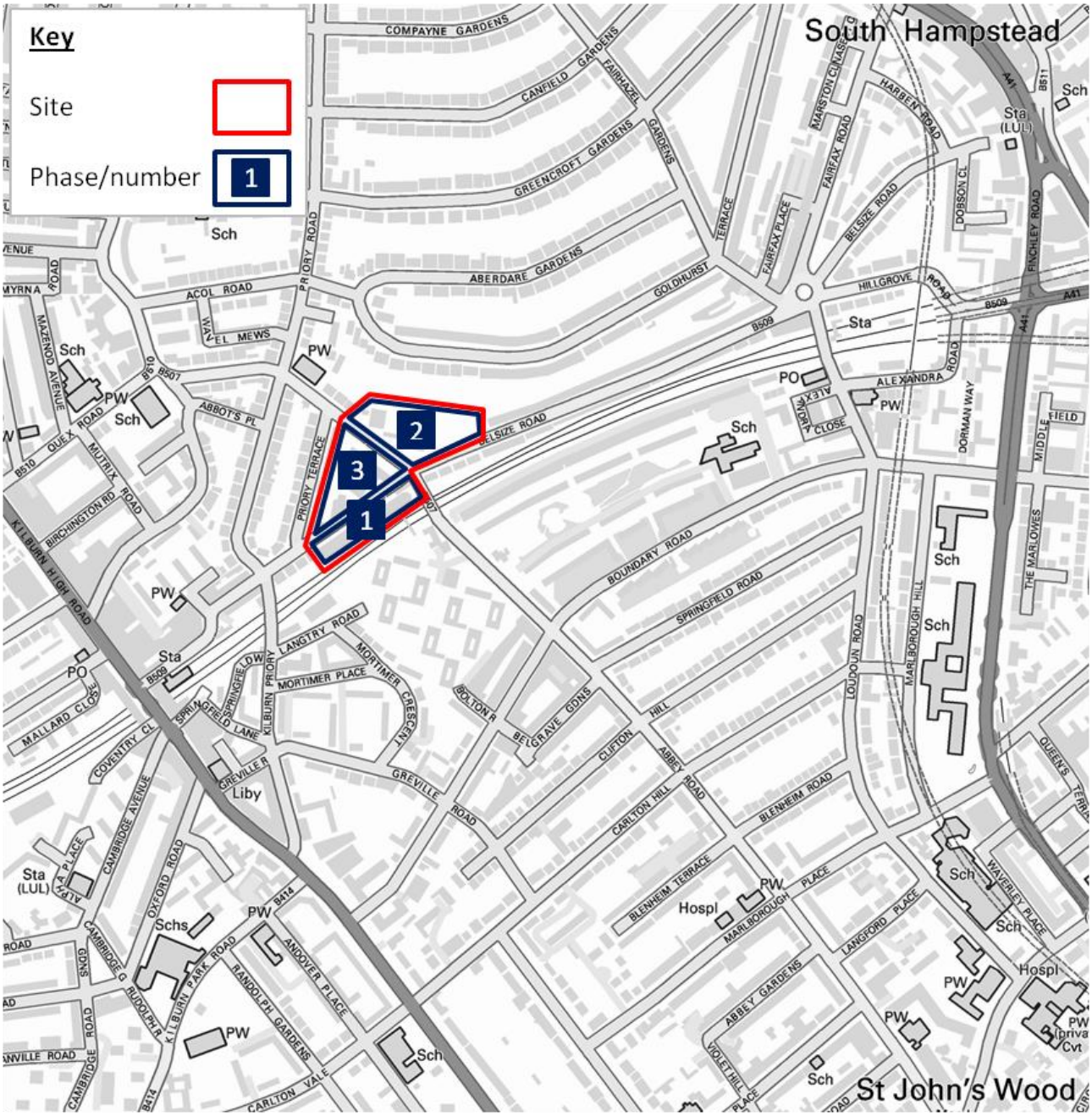
The location of the site and associated phases is shown in Figure 1–1, and covers an area around the junction of Abbey Road and Belsize Road.

1.1. Report Structure

The remainder of this document is set out as follows:

- Section 2 provides an update of the planning policy section;
- Section 3 provides an update of the baseline traffic conditions;
- Section 4 provides an update of the proposed development, focused on Phases 2 and 3 north of Belsize Road;
- Section 5 provides an update of the LINSIG modelling and associated impact assessment; and
- Section 6 provides a summary and conclusion to the document.

Figure 1–1 Plan of Abbey Area Redevelopment site and phases



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2. Planning Policy Context

This section provides an update to the policy chapters in the Outline and Addendum TAs as follows:

- Since the Original TA was prepared, Planning Policy Statement 3 (PPS3): Housing and Planning Policy Guidance 13 (PPG13): Transport has been superseded by the National Planning Policy Framework (NPPF), which was introduced in March 2012;
- Since the Original and Addendum TAs were prepared, the London Plan has been updated with Further Alterations to the London Plan (FALP) in March 2015;
- As this Addendum TA 2 includes detail of the design of Phases 2 and 3 of the scheme, the London Borough of Camden Streetscape Design Manual has been reviewed as it provides supplementary design guidance; and
- Finally, the London Plan and London Borough of Camden parking standards have been included again for ease of reference.

2.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published and came into effect on Tuesday 27th March 2012. The NPPF applies to England and is designed to supersede and simplify previous national planning policies. It is intended as a framework for the development of local and neighbourhood plans. However, existing Local Plan policies should not be considered out of date because they were adopted prior to the NPPF's publication.

The NPPF emphasises that the purpose of planning is to help achieve sustainable development; i.e. that which results in positive growth and economic, environmental and social progress. The NPPF is therefore based upon a presumption in favour of sustainable development, which should be allowed to proceed without delay. Therefore, proposed development that accords with an up to date Local Plan should be approved, while that which conflicts should be refused.

The NPPF sets out twelve core land-use planning principles, which should underpin both plan-making and decision-taking. One of the principles states that planning should:

"...actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable..."

The NPPF sets out policies to achieve sustainable development under 13 headings, one of which is titled *"Promoting Sustainable Transport".* Within this section, the NPPF states that:

- *"All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:*
  - *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
  - *safe and suitable access to the site can be achieved for all people; and*
  - *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe";*
- *"Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised";*
- *"Developments should be located and designed where practical to:*
  - *accommodate the efficient delivery of goods and supplies;*
  - *give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
  - *create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;*
  - *incorporate facilities for charging plug-in and other ultra-low emission vehicles; and*
  - *consider the needs of people with disabilities by all modes of transport"; and*
- *"All developments which generate significant amounts of movement should be required to provide a Travel Plan".*

2.1.1. National Planning Policy Guidance

The NPPG Section 42 defines the overarching principles of Travel Plans (TP), Transport Assessments (TA) and Transport Statements (TS). It identifies that these documents are suitable mechanisms for assessing and mitigating the negative transport impacts of development in order to promote the use of more sustainable transport options. TAs should evaluate the potential transport impacts of a development proposal, considering net reductions in trips likely to arise through the Travel Planning process.

TAs should promote mitigation measures where necessary and should also establish whether the residual transport impacts of a proposed development are likely to be severe, in the context of the NPPF.

TPs should be used as a long term management strategy to ensure sustainable travel proposals are integrated within the planning process, through anticipating the transport impacts of development and setting measures to promote and encourage sustainable travel.

2.2. London Plan

2.2.1. Further Alterations to the London Plan (FALP) - March 2015

The main changes that were made to the London Plan in March 2015 (known as "Further Alterations to the London Plan") are outlined below.

Policy 6.2 states *"Development proposals that do not provide adequate safeguarding for the schemes outlined in Table 6.1 should be refused."* The schemes listed in Table 6.1 considered relevant to the project are:

- Cycle parking;
- Sustainable transport initiatives; and
- Increased use of Travel Plans.

Policy 6.3 states:

"Development proposals should ensure that impacts on transport capacity and the transport network, at both a corridor and local level, are fully assessed. Development should not adversely affect safety on the transport network.

Where existing transport capacity is insufficient to allow for the travel generated by proposed developments, and no firm plans exist for an increase in capacity to cater for this, boroughs should ensure that development proposals are phased until it is known these requirements can be met, otherwise they may be refused. The cumulative impacts of development on transport requirements must be taken into account.

Transport assessments will be required in accordance with TfL's Transport Assessment Best Practice Guidance for major planning applications. Workplace and/or residential travel plans should be provided for planning applications exceeding the thresholds in, and produced in accordance with, the relevant TfL guidance. Construction logistics plans and delivery and servicing plans should be secured in line with the London Freight Plan and should be co-ordinated with travel plans."

Policy 6.9 states

"Developments should:

- *provide secure, integrated, convenient and accessible cycle parking facilities in line with the minimum standards set out in Table 6.3 and the guidance set out in the London Cycle Design Standards (or subsequent revisions)*
- *provide on-site changing facilities and showers for cyclists*
- *contribute positively to an integrated cycling network for London by providing infrastructure that is safe, comfortable, attractive, coherent, direct and adaptable and in line with the guidance set out in the London Cycle Design Standards (or subsequent revisions)*
- *provide links to existing and planned cycle infrastructure projects including Cycle Superhighways, Quietways, the Central London Grid and the 'mini-Hollands'*

- *facilitate the Mayor's cycle hire scheme through provision of land and/or planning obligations where relevant, to ensure the provision of sufficient capacity*

Policy 6.10 states *"Development proposals should ensure high quality pedestrian environments and emphasise the quality of the pedestrian and street space by referring to Transport for London's Pedestrian Design Guidance."*

Policy 6.13 states *"The maximum standards set out in Table 6.2 in the Parking Addendum to this chapter should be the basis for considering planning applications. In addition, developments must:*

- *ensure that 1 in 5 spaces (both active and passive) provide an electrical charging point to encourage the uptake of electric vehicles*
- *provide parking for disabled people in line with Table 6.2*
- *meet the minimum cycle parking standards set out in Table 6.3*
- *provide for the needs of businesses for delivery and servicing."*

2.2.2. Minor Alterations to the London Plan

On 11th May 2015 two sets of Minor Alterations to the London Plan – on Housing Standards and on Parking Standards - were published for public consultation. These alterations have been prepared to bring the London Plan in line with new national housing standards and car parking policy.

Both sets of minor alterations will be considered by an independent planning inspector at a joint public examination to be held in City Hall in late October 2015.

The proposed development has been reviewed against these minor alterations, but it is considered that they do not affect the proposed development as the changes relate to outer London boroughs, whereas LBC can be considered an inner London borough.

2.3. London Borough of Camden Streetscape Design Manual

The second edition of the London Borough of Camden Streetscape Design Manual (March 2005) sets standards for street works in the London Borough of Camden.

2.3.1. Principles

The Manual contains six key design principles as follows:

1. Respecting and enhancing the local streetscape;
2. Using a simplified palette of quality materials;
3. Providing a clutter-free environment;
4. Enabling equal and inclusive access for all road users;
5. Considered, yet innovative complementary design; and
6. Making the street environment safer.

2.3.2. Aims

The aims of the Manual are to:

1. Identify an overall image for the borough's streets with respect to the appearance of surfacing materials, street furniture and lighting;
2. Provide a reference guide for the use of standard design details, surfacing materials and street furniture to be used in engineering, traffic management and environmental improvement schemes; and
3. Use materials and furniture that are attractive, appropriate to the area, durable, low maintenance and practical.

2.3.3. Content

The Manual contains chapters dealing with:

- **Local Character -** the importance of local character distinctiveness and the elements of the streetscape that have a crucial role in maintaining and enhancing this are outlined, including historic, listed and modern sympathetic styles and street trees;
- **Carriageway Details** - design options for the carriageway are outlined, including layouts, traffic calming, crossings and carriageway markings, drainage and materials;
- **Footway Details** - the main paving and kerb options are outlined, including materials and Boulevard specifications, and footway adaptations for the visually impaired and other mobility impairments; and
- **Street Furniture -** information on major items of street furniture are provided, including preferences of designs, colours and positions within the footway and carriageway.

2.4. Parking Standards

2.4.1. Car parking

2.4.1.1. FALP (2015)

2.4.1.1.1. Residential

The residential car parking standards set out in Table 6.2 of FALP (2015) are outlined in Table 2-1 below.

Table 2-1 London Plan (2015) Maximum Residential Parking Standards

Number of Beds	4 or more	3	1-2
Parking spaces	Up to 2 per unit	Up to 1.5 per unit	Less than 1 per unit

It should be noted that the London Plan (2015) states that all development in areas of good public transport accessibility should aim for significantly less than one space per unit, and in this respect the site has a Public Transport Accessibility Level (PTAL) of 6a – the second highest with excellent accessibility.

In addition, the London Plan (2015) states that adequate parking spaces for disabled people must be provided preferably on-site (see section 2.4.1.1.3 below) and 20 per cent of all spaces must be for electric vehicles with an additional 20 per cent passive provision for electric vehicles in the future.

2.4.1.1.2. Retail / Employment

The parking standards for retail and employment land uses have not changed since the previous London Plan, while no retail parking is to be provided on site in any case. As such, the employment parking standards are repeated in Table 2–2 below. It should be noted that Camden is in inner London and the London Plan (2015) states that 20% of all spaces must be for electric vehicles with an additional 10% passive provision for electric vehicles in the future.

Table 2–2 London Plan (2015) Parking Standards for Employment (spaces per m^2 of gross floorspace)

Location	Standard
Inner London	600-1,000
Outer London	100-600

2.4.1.1.3. Disabled

The London Plan (2015) states that any development providing off-street parking should provide at least two bays designated for Blue Badge holders and that disabled parking should be provided in line with BS 8300:2009 as outlined in Table 2-3.

Table 2-3 Designated Blue Badge parking bays recommended in BS 8300:2009

Building Type	Provision from the outset		Future provision
	Number of spaces* for each employee who is a disabled motorist	Number of spaces* for visiting disabled motorists	Number of enlarged standard spaces**
Workplaces	One space	5% of the total capacity	A further 5% of the total capacity
Shopping, recreation and leisure facilities	One space	6% of the total capacity	A further 4% of the total capacity

* Parking spaces designated for use by disabled people should be 2.4m wide by 4.8m long with a zone 1.2m wide provided between designated spaces and at the rear outside the traffic zone, to enable a disabled driver or passenger to get in or out of a vehicle and access the boot safely.

** Enlarged standard spaces 3.6m wide by 6m long that can be adapted to be parking spaces designated for use by disabled people to reflect changes in local population needs and allow for flexibility of provision in the future.

2.4.1.2. London Borough of Camden

Parking standards for LBC are outlined in Appendix 2 of LBC's "Camden Development Policies 2010" document and have not changed since the Addendum TA was prepared, but are repeated in Table 2–4 below for ease of reference. It should be noted that:

- the parking standards for people with disabilities are minimum standards whereas the other parking standards are maximum standards; and
- Motorcycle parking may be provided within the space allowed by the maximum standards, at a guideline rate of five motorcycle spaces in place of each permitted car parking space.

Table 2–4 London Borough of Camden Parking Standards for relevant land uses

Vehicle Type	A1/A2/A3/A4/A5	B1	C3	D1
People with disabilities	• Staff/ operational - from a threshold of 1,000 m^2, 1 space per 20,000m^2 • Customer - from threshold of 1,000m^2, 1 space per 500m^2	• Staff/ operational - from a threshold of 2,500m^2, 1 space per 20,000m^2 • Visitor - from threshold of 2,500m^2, minimum of 1 if any visitors are expected, plus any additional spaces needed to bring the total number up to 5% of the visitors likely to be present at any time	• Wheelchair housing: 1 space per dwelling • General housing: above a threshold of 10 units, 1 space per 20 units	• Staff/ operational - from threshold of 2,500m^2, 1 space per 20,000m^2 • Visitors / students - from threshold of 2,500m^2, 1 space per 500m^2
Service vehicles	• Required above 1,000m^2 • One 3.5m x 16.5m bay, or one 3.5m x 8m bay where a servicing agreement is secured as part of a Travel Plan	• Required above 2,500m^2 • One 3.5m x 16.5m bay, or one 3.5m x 8m bay where a servicing agreement is secured as part of a Travel Plan		• No minimum requirement, on-site provision should be supported by the Transport Assessment
Taxis	• One pick-up/ set-down bay required above 1,000m^2, with any departure justified by a Transport Assessment			
Other staff / operational parking	• Low parking provision areas: maximum of 1 space per 1,500m^2 • Rest of borough: maximum of 1 space per 1,000m^2	• Low parking provision areas: maximum of 1 space per 1,500m^2 • Rest of borough: maximum of 1 space per 1,000m^2		• Low parking provision areas: maximum of 1 space per 1,500m^2 • Rest of borough: maximum of 1 space per 1,000m^2 • Any additional needs for staff providing home visits and working anti-social hours will be considered provided they are supported by a Transport Assessment, and a Travel Plan can be secured
General car parking			• Low parking provision areas: maximum of 0.5 spaces per dwelling • Rest of borough: maximum of 1 space per dwelling	

Vehicle Type	A1/A2/A3/A4/A5	B1	C3	D1
Other visitor parking	Only considered if supported by a Transport Assessment (or supporting information as appropriate for smaller schemes) showing that existing spaces, public transport and home delivery services cannot cater for the expected travel demand, and a Travel Plan can be secured.			• Spaces will be considered for healthcare if supported by a Transport Assessment showing that existing spaces, public transport and taxis cannot cater for the expected travel demand, and a Travel Plan can be secured.

2.4.2. Cycle Parking Standards

2.4.2.1. FALP (2015)

The cycle parking standards from Table 6.3 in FALP (2015) relevant to the development are shown in Table 2-5 below.

Table 2-5 London Plan (2015) Cycle Parking Standards

Land use		Long-stay	Short-stay
A1	Non-food retail	From a threshold of 100m^2: first 1,000m^2: 1 space per 250m^2 thereafter: 1 space per 1,000m^2	From a threshold of 100m^2: first 1,000m^2: 1 space per 125m^2 thereafter: 1 space per 1,000m^2
A2-A5	Financial / professional services	From a threshold of 100m^2: 1 space per 175m^2	From a threshold of 100m^2: 1 space per 40m^2
	Cafes & restaurants		
	Drinking establishments		
	Take-aways		
B1	Business offices	Inner/central London: 1 space per 90m^2; outer London: 1 space per 150m^2	First 5,000m^2: 1 space per 500m^2 thereafter: 1 space per 5,000m^2
C3-C4	Dwellings (all)	1 space per studio and 1 bedroom unit; 2 spaces per all other dwellings	1 space per 40 units
D1	Health centre, including dentists	1 space per 5 staff	1 space per 3 staff
	Other (e.g. library, church, etc.)	1 space per 8 staff	1 space per 100m^2

In outer London town centres that are designated as 'mini-Hollands' or which have high PTALs, cycle parking standards are expected to match those of inner/central London.

Where the size threshold has been met, for all land uses in all locations a minimum of 2 short-stay and 2 long-stay spaces must be provided.

Cycle parking areas should allow easy access and cater for cyclists who use adapted cycles.

The London Plan (2015) states:

"Cycle parking provided for staff should be suitable for long stay parking, particularly in terms of location, security and protection from the elements.

Short-stay cycle parking should have step-free access and be located within 15 metres of the main site entrance, where possible.

For both long-stay and short-stay parking, consideration should be given to providing spaces accessible to less conventional bicycle types, such as tricycles, cargo bicycles and bicycles with trailers.

Where it is not possible to provide suitable visitor parking within the curtilage of a development or in a suitable location in the vicinity agreed by the planning authority, the planning authority may at their discretion instead accept, in the first instance, additional long-stay provision or, as a last resort, contributions to provide cycle parking in an appropriate location in the vicinity of the site.

Where it is not possible to provide adequate cycle parking within residential dwellings, boroughs are encouraged to engage with developers that propose innovative alternatives that meet the objectives of these standards. This may include options such as providing the required spaces in secure, conveniently located, on-street parking such as bicycle hangars. Transport for London (TfL) will work with boroughs and developers to provide guidance for such a mechanism.

All cycle parking should be consistent with the London Cycling Design Standards, or subsequent revisions."

2.4.2.2. London Borough of Camden

The cycle parking standards for LBC are outlined in Appendix 2 of LBC's "Camden Development Policies 2010" document and have not changed since the Addendum TA was prepared, but are repeated in Table 2–6 below for ease of reference.

2.5. Policy compliance

The proposed development accords with the policies outlined above.

The development is located in an area with high public transport accessibility and is accessible by a range of public transport modes including bus, London Overground and the Bakerloo Line services. The development proposals comprise a mix of uses on previously developed land within an established urban area, close to a range of local facilities, providing access to jobs, education, and shopping and leisure facilities.

The transport aspects of the proposal have been designed to limit parking availability and to encourage sustainable modes of transport. The development:

- Is supported by this Addendum TA 2, which assesses the impacts of the development proposals on transport capacity and is accompanied by Framework Workplace and Residential Travel Plans, a Construction Logistics Plan and a Delivery and Servicing Plan;
- is 'car-capped' with car parking provided within the maximum standards of both the London Plan and LBC Policy;
- provides disabled car parking to minimum standards;
- provides electric vehicle charging points to minimum standards;
- provides cycle parking to minimum standards;
- incorporates loading bays to cater for the delivery of goods and supplies; and
- incorporates improvements to the public realm in line with The London Borough of Camden Streetscape Design Manual.

The location, nature and design of the development therefore all encourage the use of sustainable forms of transport and reduce the need to travel and reliance on private car use. This Addendum TA 2 also demonstrates that the traffic impact of the proposed development is not anticipated to be severe and as such in accordance with NPPF (paragraph 32) should not be prevented or refused on transport grounds.

Table 2–6 London Borough of Camden cycle parking standards for relevant land uses

Land Use	A1/A2/A3/A4/A5	B1	C3	D1
Standard	• Staff - from threshold of 500m^2, 1 space per 250m^2 or part thereof. • Customer - from threshold of 500m^2, 1 space per 250m^2 or part thereof.	• Staff - from threshold of 500m^2, 1 space per 250m^2 or part thereof. • Visitor - from threshold of 500m^2, minimum of 2 if any visitors are expected, plus any additional spaces needed to bring the total number up to 10% of the visitors likely to be present at any time.	• Residents - 1 storage or parking space per unit. An exception may be made for dwellings available solely to occupants unlikely to use cycles due to age or disability. • Visitors - from threshold of 20 units, 1 space per 10 units or part thereof.	• Staff - from threshold of 500m^2, 1 space per 250m^2 or part thereof. • Visitor - from threshold of 500m^2, 1 space per 250m^2 or part thereof.

3. Baseline Traffic Conditions

As the previous LINSIG assessments (Outline TA in December 2011 and Addendum TA in July 2013) were based on traffic surveys that were undertaken in June 2010, which are now over five years old, new traffic surveys were undertaken at the Abbey Road / Belsize Road junction in September/October 2014.

This was done to establish updated baseline traffic conditions in the vicinity of the proposed development in order to assess the impact of the redesigned Abbey Road / Belsize Road junction.

This section therefore provides details of the traffic surveys and associated results and conditions, as well as providing updated collision data.

It should be noted that at the time of the survey, the multi-storey car park that was located on the Phase 1 site was vacated ready for demolition in November 2014.

3.1. Traffic surveys

Traffic surveys were undertaken at the Abbey Road / Belsize Road junction from Tuesday 30th September 2014 to Wednesday 8th October 2014, with the following data recorded:

- Classified turning counts;
- Queue lengths;
- Volumetric traffic and speed data (Automatic Traffic Count or ATC) on all arms at the junction;
- Degree of saturation / Underutilised green time; and
- Saturation flows.

The peak hours in terms of traffic flows at the junction were identified as follows:

- AM peak hour: 0800–0900 hours;
- Interpeak hour: 1500–1600 hours; and
- PM peak hour: 1630–1730 hours.

The peak hour flows (in Passenger Car Units) are presented in Figure 3-1 and Figure 3-2 for general traffic (excluding buses) and buses only respectively. The traffic survey indicates a predominant and tidal traffic movement along Abbey Road. There is a heavy southbound flow on Abbey Road during the AM peak hour with the flows reversing during the PM peak hour. There is also significant volume of traffic turning right from Belsize Road East to Abbey Road North.

Figure 3-1 AM, Inter and PM peak hour flows (excluding buses) at Abbey Road / Belsize Road junction on Wednesday 1st October 2014

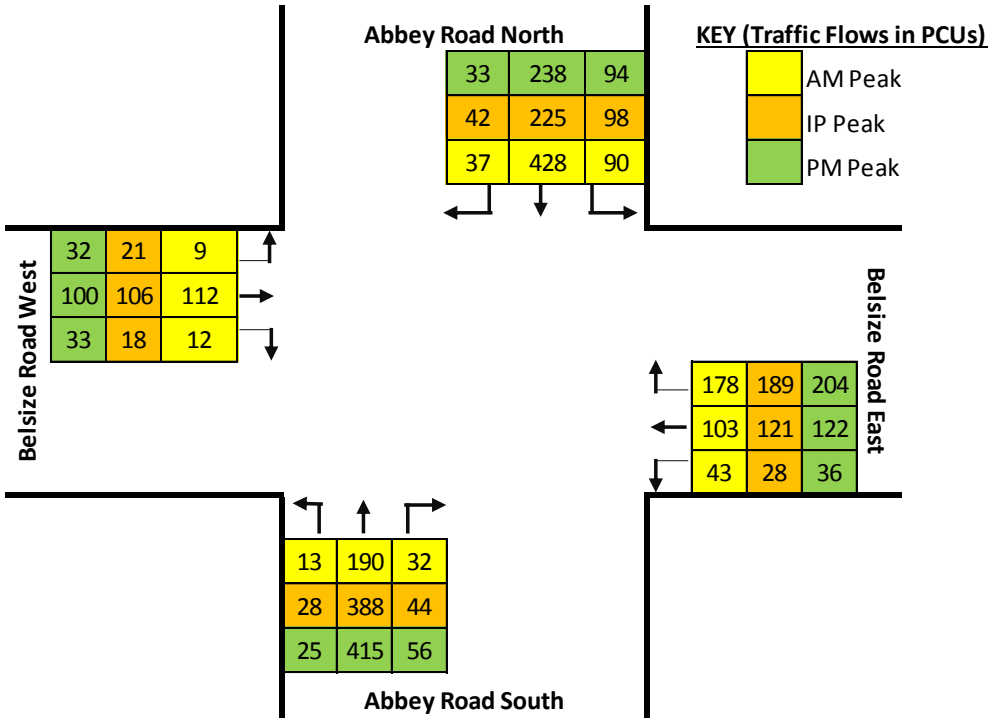
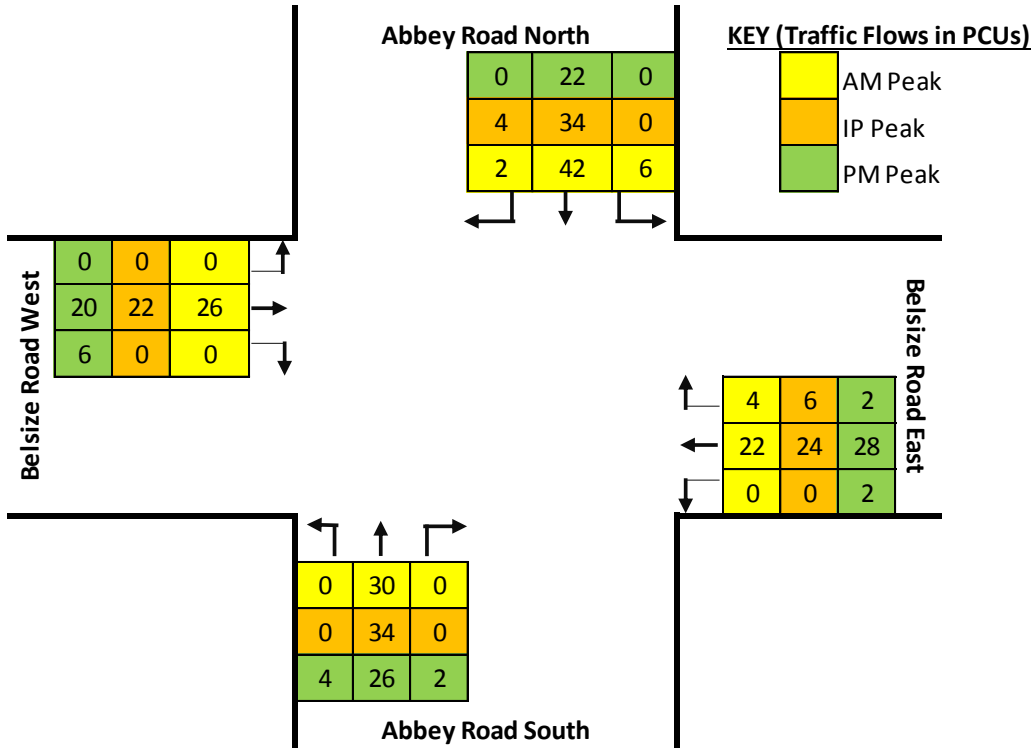


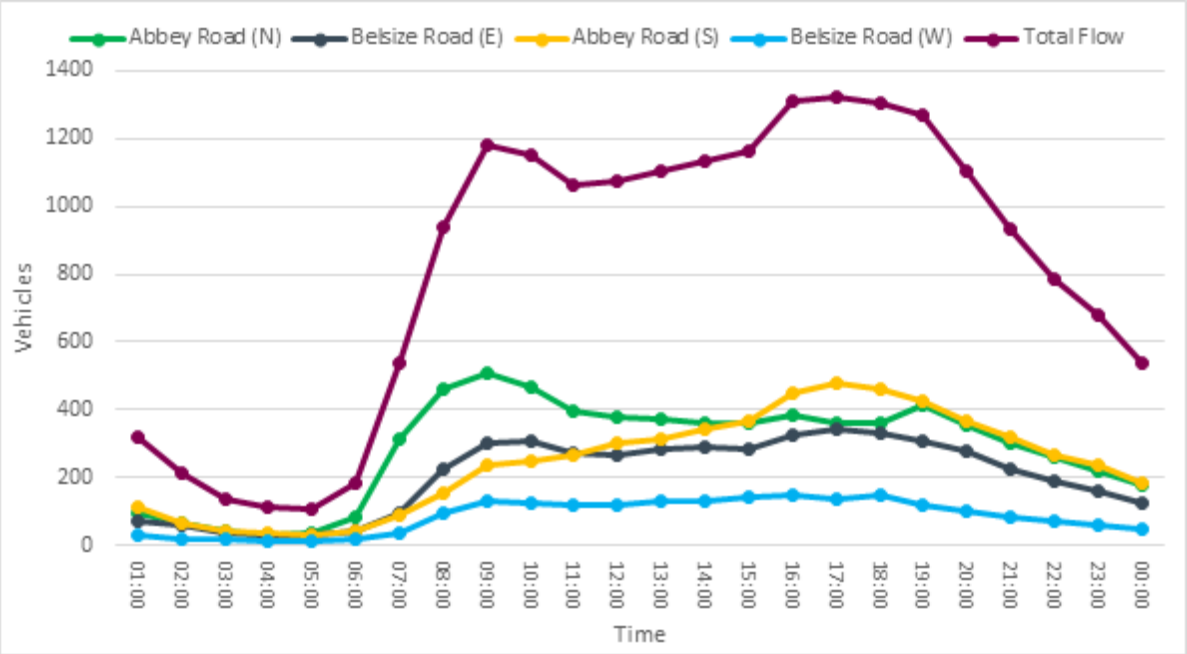
Figure 3-2 AM, Inter and PM Peak hour Bus Flows at Abbey Road / Belsize Road junction on Wednesday 1st October 2014



3.1.1. Volumetric Counts

ATC data was recorded on all arms for a seven day period from Tuesday 30th September 2014 to Wednesday 8th October 2014. Figure 3-3 presents the results for the average weekday traffic flow profile with the peak flows occurring typically at 0900 hours, 1500 hours and 1700 hours. This is consistent with the single day traffic count data recorded at the junction on Wednesday 1st October 2014.

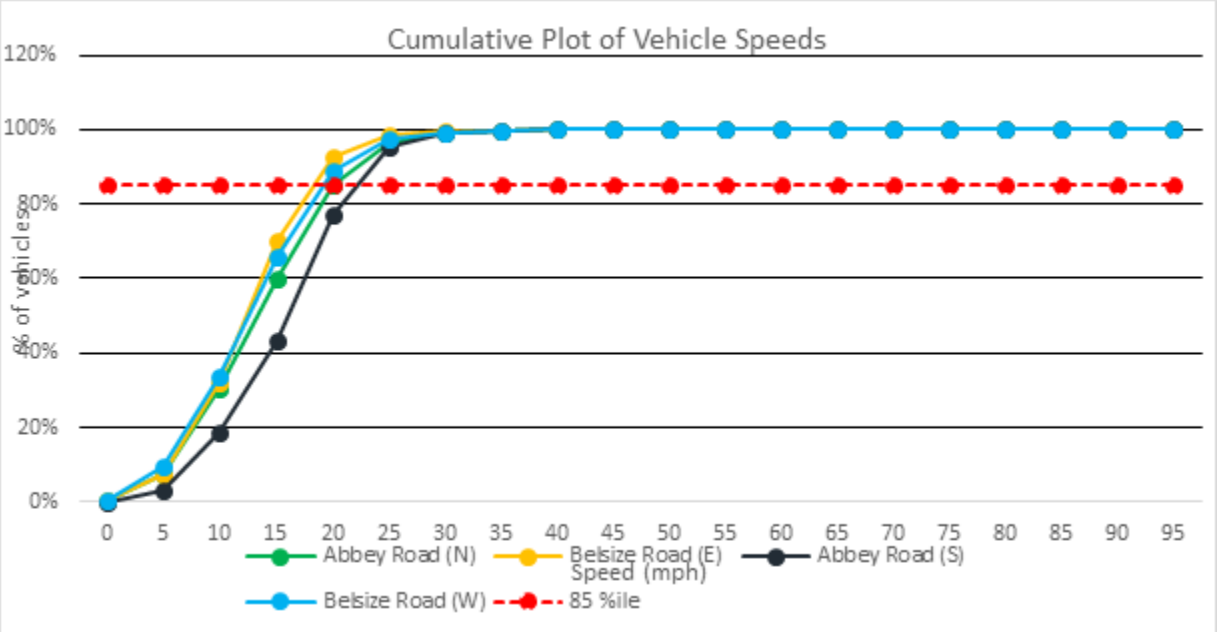
Figure 3-3 Average weekday traffic flow profile at Abbey Road / Belsize Road junction



3.1.2. Vehicle Speeds

Figure 3-4 presents the cumulative plot of vehicle speeds measured at the existing junction from Tuesday 30th September 2014 to Wednesday 8th October 2014. Based on the traffic survey data, the 85th percentile speed at the junction was assessed as 20 mph.

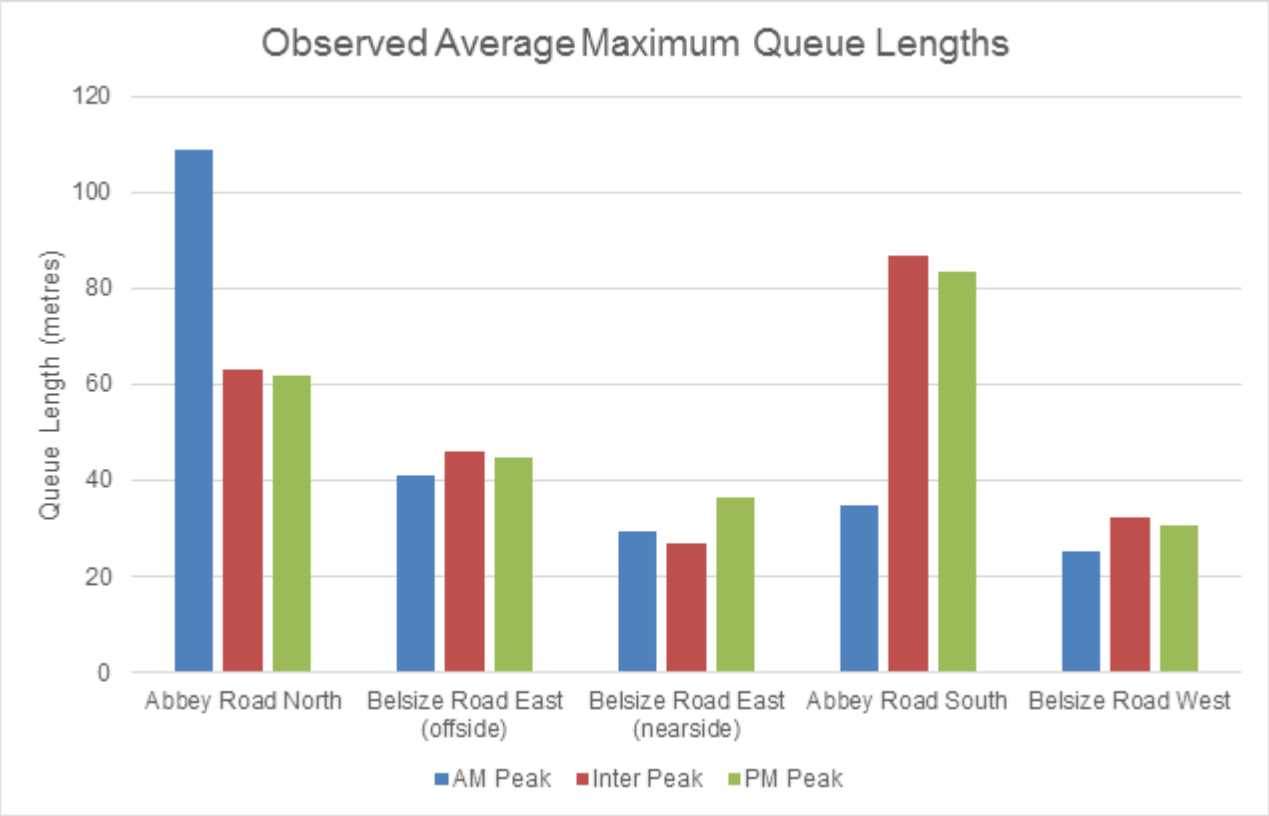
Figure 3-4 Cumulative plot of vehicle speeds at Abbey Road / Belsize Road junction



3.1.3. Queues

A summary of the average of the maximum queue lengths (measured at five minute intervals) observed at the junction is presented in Figure 3-5. During the AM peak hour, an average maximum queue of approximately 120 metres was observed on the Abbey Road North arm. During the Inter peak and PM peak hours, average maximum queue lengths of approximately 80 metres were observed on Abbey Road South arm. At the other approaches at the junction, queue lengths between 30-60 metres were observed.

Figure 3-5 Average (of maximum) queue lengths measured at Abbey Road / Belsize Road junction



The following observations were made during a site visit and from video recordings at the junction:

- Long queues were observed on the Abbey Road North arm especially during the AM peak hour with the queues extending beyond the Abbey Road / Priory Road junction (approximately 200 metres from the junction);
- The offside lane of Belsize Road East arm is used predominantly by right turning traffic as there is a high volume of right turning traffic onto Abbey Road North arm; and
- There was sufficient storage space within the junction which allowed up to two vehicles making the opposed right turn manoeuvre (from each arm) to wait in the middle of the junction without blocking the ahead and left turn manoeuvres.

3.2. Abbey Road / Belsize Road Junction LINSIG Analysis

3.2.1. Base LINSIG Models

Using the traffic survey data outlined above, LINSIG Base models were developed for the Abbey Road / Belsize Road junction for the AM (0800-0900), Inter peak (1500-1600) and PM (1630-1730) peak hours. The validated Base LINSIG models form the basis for the development and assessment of the proposed models for the respective peak hours. The models have been through the TfL LINSIG Model Auditing Process (LMAP) with the Base models subject to LMAP Stage 2 & 3.

It should be noted that the offside lane on the Belsize Road East approach has been modelled as a flare lane. Although this lane is designated for both traffic travelling straight ahead and making the right turning

manoeuvre, site observations during the AM, Inter Peak and PM peak hours indicated that the offside lane is used predominantly by traffic making the right turn manoeuvre due to the high traffic demand for this movement. Therefore, the offside lane was modelled as a right turn (only) lane to reflect the site observations.

The models were developed in accordance with the TfL requirements for LINSIG. The AM, Inter peak and PM base models were validated against the key validation criteria: Degree of Saturation (DoS). In addition, validation against queue lengths was undertaken.

The results indicate that the modelled DoS on all lanes at the junction with the exception of the Belsize Road West and East arms validate within five percent of the observed values during the each of the peak hours. There is a good correlation between the modelled and observed queue lengths on all lanes at the junction.

Therefore, the Base LINSIG model is considered to be an accurate representation of the existing conditions and operation at the junction.

The models have been audited and approved by TfL with the full results contained in Appendix A.

The Degree of Saturation and queue lengths, along with the Practical Reserve Capacity (PRC) and delay in PCUs per hour, for the base model are outlined in Table 3-1. It shows that there is currently no spare capacity in the AM Peak Hour at the junction, while the junction is operating within capacity in the Inter peak and PM peak hours.

Table 3-1 LINSIG Base Model Results

Approach	AM Peak		Inter peak		PM peak	
	DoS	Queue length	DoS	Queue length	DoS	Queue length
Abbey Road (N)	93%	16.7	67%	9.3	54%	7.9
Belsize Road (E)	69%	4.2	84%	7.0	81%	6.4
Abbey Road (S)	45%	4.6	84%	13.7	81%	13.5
Belsize Road (W)	67%	4.0	78%	5.6	69%	5.3
PRC (%)	-3.2		11.2		10.8	
Delay (PCU/hr)	16.8		16.44		16.88	

3.3. Collision Data

The analysis of collision data has been updated to ascertain if there are any safety issues or accident black spot areas on the local highway network. Personal Injury Accident (PIA) records were obtained for the area surrounding the site from Transport for London (TfL) for the latest three year period up to 31st May 2015. The full data is contained within Appendix B, which also includes a plot of collisions within the study area.

A total of eight collisions occurred in the past three years in the vicinity of the Abbey Road / Belsize Road junction. All of the collisions that have occurred have resulted in only slight injuries and no trends have been noticed that would warrant further consideration.

Three collisions occurring in the vicinity of the junction involved pedestrians. The first collision occurred when a car turning right from the Belsize Road West arm into the Abbey Road South arm collided with a pedestrian on a pedestrian crossing in the dark. The second collision occurred when pedestrian stepped out in front of a vehicle turning right from the Belsize Road East arm to the Abbey Road North arm. The third

collision occurred when a vehicle travelling west on Belsize Road hit a parked car's door pushing it into the pedestrian who was putting a child into the car.

One collision occurred in the vicinity of the junction involving a cyclist on Monday 28th April 2014 at 1705 hours on Abbey Road at the junction with Belsize Road when a car turned left suddenly clipping the cyclist who was on the inside.

4. Proposed Development

The proposed development is set out below:

- Phase 1: Demolition of the existing multi-storey car park and construction of 66 affordable and 75 private residential units, along with a 522m^2 supermarket and 399m^2 of flexible commercial floorspace (Classes A1-A5 / B1) south-west of the Abbey Road/Belsize Road junction;
- Phase 2: Improved access arrangements and additional development around the base of the Snowman and Casterbridge residential towers, comprising a 2,006m^2 Health Centre (land use D1), 947m^2 Community Centre (land use D1) and 234m^2 Abbey Co-Op office (land use B1) north-east of the Abbey Road / Belsize Road junction; and
- Phase 3: Demolition of the Emminster and Hinstock affordable housing blocks, along with associated retail, Health Centre and Community Centre buildings, which will be replaced by 48 affordable residential units, 52 private residential units, 353m^2 of retail (land use A1-A5) development and 362m^2 of office (land use B1) development north-west of the Abbey Road/Belsize Road junction.

The quantum of proposed development remains broadly consistent across the same phases as the previous July 2013 hybrid planning application. The quantum of development associated with the July 2013 hybrid planning application is shown in Table 4-1 below, with the revised quantum in Table 4-2, which also includes details of the quantum of development proposals by phase.

Table 4-1 July 2013 Hybrid Planning Application Proposed Development Schedule

Land Use	Existing	Phase 1	Phase 2	Phase 3	Net Change
Affordable Residential C3	70 units	66 units	-	48 units	+44 units
Private Residential C3	4 units	75 units	-	52 units	+123 units
Supermarket	0m^2	522m^2	-	-	+522m^2
Other Retail/A1/A2/A3/A4/A5	835m^2	399m^2	-	645m^2	-566m^2
B1 Office	895m^2		-	120m^2	
Health Centre and Community D1	1,775m^2 + 500m^2	-	2,500m^2	-	+225m^2

Table 4-2 Overall Development Schedule (Existing versus updated proposed development)

Land Use	Existing	Phase 1	Phase 2	Phase 3	Net Change
Affordable Residential C3[1]	70 units	66 units	-	48 units	+44 units
Private Residential C3	4 units	75 units	-	52 units	+123 units
Supermarket	0m^2	522m^2	-	-	+522m^2
Other Retail/A1/A2/A3/A4/A5	835m^2	399m^2	-	353m^2	-616m^2
B1 Office	895m^2		-	362m^2	
D1 Health Centre	1,775m^2	-	2,006m^2	-	+231m^2
D1 Community Centre	500m^2	-	947m^2	-	+447m^2
B1 Co-Operative office	-	-	234m^2	-	+234m^2

Comparison of Table 4-1 and Table 4-2 shows that:

- Phase 1 remains unchanged as per the approved Hybrid Planning Application;
- the detailed Phase 2 application involves an increase in floor area for the Health Centre/community centre/Co-Operative office by 687m^2 from 2,500m^2 to 3,187m^2;

[1] Including Intermediate Housing

- the detailed Phase 3 application involves a slight reduction in retail floor area by 292m^2 from 645m^2 to 353m^2 and a slight increase in office floor area by 242m^2 from 120m^2 to 362m^2.

As detailed in Table 4-2, The Phase 3 residential element will be comprised of 100 units as per the Hybrid Planning Application. This will be a mix of affordable, intermediate and market housing as outlined in Table 4-3 below.

Table 4-3 Proposed housing by type in Phase 3 of the Abbey Road Development

Unit type	Affordable	Intermediate	Market	Total
1 Bed	25	6	19	50
2 Bed	4	3	21	28
3 Bed	7	3	12	22
Total	**36**	**12**	**52**	**100**

It should be noted that twelve of the affordable units will provided be for wheelchair users and that 15 of the three bed dwellings will be mews houses.

Compared to the 2013 hybrid planning application, the overall number of residential units remains the same, although the number of one bed units has increased from 47 to 50 and the number of two bed units has been reduced from 31 to 28 accordingly.

4.1. Car Parking

4.1.1. On-Street Parking

The proposed on-street parking is shown in Appendix E, with the net changes shown in Table 4–4 and described beneath.

Table 4–4 Net change in on-street parking provision (spaces) compared to existing

Location	Permit holder	Pay and display	Disabled	Loading bay	Bus cage	Emergency / refuse area
Abbey Road (northwest)	0 (-1 / +1)	-1	-1	+1	0	0
Abbey Road (northeast)	-3	-3	0	0	0 (-1 / +1)	+1
Belsize Road (northwest)	-2 (-3 / +1)	-1	0	0	0	0
Belsize Road (southwest)	0	0	0	+1	0	0
Belsize Road (northeast)	-8	+5 (-3 / +8)	0	+1	0	0
Priory Terrace	+2	0	0	0	0	0
Total	-11	0	-1	+3	0	+1

Table 4–4 shows that the proposed changes to on-street parking will result in:

- A net loss of 11 permit holder spaces as follows:
  - on Abbey Road northwest, one space will make way for the Phase 3 basement car park access but will be replaced by a new permit holder space to the southeast;

  - on Abbey Road northeast, three spaces will make way for the relocated bus cage;
  - on Belsize Road northwest, three spaces will make way for the area for emergency and refuse vehicles to stop, with one pay and display space converted to a permit holder space;
  - on Belsize Road northeast, eight spaces will be removed to accommodate the eight pay and display spaces lost as a result of the proposed changes elsewhere; and
  - on Priory Terrace, two new spaces will be provided.
- No change in the number of pay and display spaces, although the following changes are proposed:
  - On Abbey Road northwest, one space would be lost to accommodate the proposed crossing between Phase 2 and Phase 3;
  - On Abbey Road northeast, three spaces will be lost to accommodate the relocated bus cage;
  - On Belsize Road northwest, one space will be lost to accommodate one of the permit holder spaces lost to make way for the space for emergency and refuse vehicles;
  - On Belsize Road northeast, three spaces will make way for the ambulance/loading bay but eight permit holder spaces will be converted to pay and display spaces to accommodate the spaces lost as outlined above;
- A net loss of one disabled space, which would be on Abbey Road northwest to make way for the proposed crossing between Phase 2 and Phase 3;
- A net gain of three loading bays:
  - On Abbey Road northwest a new loading bay will be provided for Phase 2;
  - On Belsize Road southwest, a new loading / disabled bay will be provided for Phase 1;
  - On Belsize Road northeast, a new ambulance/loading area will be provided in place of three pay and display spaces for Phase 2;
- No change in the number of bus cages, although the bus cage on Abbey Road northeast will be relocated from near the junction northwards to make way for an emergency/refuse servicing, thus replacing three pay and display and three permit holder spaces; and
- A net gain of one emergency / refuse area on Abbey Road northeast for Phase 2 in place of the existing bus cage.

With regard to permit holder bays, occupancy surveys have shown that there is scope for the eleven spaces to be removed as outlined above.

4.1.2. Off-street parking

The proposed off-street parking for Phases 2 and 3 is summarised in Table 4-5 below and is compared to the existing situation and consented hybrid application.

Table 4-5 Off-Street Parking Provision in Phases 2 and 3

Phase	Location/type	Existing	Hybrid application	Phase 2/3 application	Net change existing – P2/3	Net change hybrid – P2/3
Phase 2	Phase 2 surface level (residential)	33	34	18	-15	-16
	Phase 3 basement (residential)	-	-	15	+15	+15
	Subtotal	33	34	33	0	-1
Phase 3	Phase 3 basement (Phase 2 community centre)	-	3	3	+3	0
	Phase 3 basement (residential)	-	14	15	+15	+1
	Phase 3 basement (disabled)	-	7	12	+12	+5
	Subtotal	0	24	30	+30	+6

In terms of Phase 2, the surface level car park is smaller in size compared to the previous hybrid application (18 spaces as opposed to 34 spaces). In lieu of this, 15 spaces are to be provided in the Phase 3 basement car park for Phase 2 residents. In addition, there will be five motorcycle spaces in the Phase 2 surface level car park.

In terms of Phase 3, the three spaces for community centre staff remains the same as the hybrid application while provision of 15 residential spaces for the Phase 3 mews houses represents an increase of one residential space. There will also be an increase in disabled parking provision from seven to 12 spaces – one for each of the wheelchair units in Phase 3.

It should be noted that a Phase 3 Basement Parking Management Plan has been prepared to support the reserved matters application for Phase 3 and is included in Appendix D. It outlines how the proposed development accords with the conditions attached to the hybrid planning application and includes details of:

- numbers and types of parking spaces and their layout;
- access arrangements to/from the street;
- how the general purpose, disabled and blue badge parking spaces would be allocated and managed in accordance with the car parking standards set out in condition 74 (of the hybrid planning permission); and
- how the provision of and access to electric charging points would be managed.

4.1.3. Cycle Parking

4.1.3.1. Phase 2

Cycle parking for the new elements of Phase 2 has been designed in line with the London Plan (2015) and LBC cycle parking standards as shown in Table 4-6 and Table 4-7 below. It should be noted that the short stay space for the Co-Operative office has been provided within Snowman House.

In addition, it should be noted that there are currently 26 cycle stands for Phase 2 residents providing space for 52 cycles, which will be re-provided on the ground floor within Snowman House and Casterbridge House. The cycle parking in Phase 2 is show in Appendix F and Appendix G.

Table 4-6 Phase 2 cycle parking numbers using parking standards

Land use	Quantum of development		London Plan standard	London Plan requirement	LBC standard	LBC requirement
	GFA (m^2)	Staff				
Community Centre (D1)	947	25	Long stay: 1 per 8 staff Short-stay: 1 per 100m^2	Long Stay: 4 Short Stay: 10	From threshold of 500m^2, 1 staff and 1 visitor space per 250m^2	4 staff 4 visitor
Co-Operative office (B1)	234	-	Long stay: 1 per 90m^2 Short-stay: 1 per 500m^2	Long Stay: 3 Short Stay: 1	From threshold of 500m^2, 1 staff space per 250m^2 + 10% visitors at any time (min 2)	N/A (below 500m^2)
Health centre (D1)	2,006	100	Long stay: 1 per 5 staff Short-stay: 1 per 3 staff	Long Stay: 20 Short Stay: 34	From threshold of 500m^2, 1 staff and 1 visitor space per 250m^2	9 staff 9 visitor
Total	**3,187**	**125**	**-**	**Long Stay: 27 Short Stay: 45**	**-**	**13 staff 13 visitor**

Table 4-7 Numbers and types of cycle parking spaces for new elements of Phase 2

Location	Long Stay	Short Stay
Community centre	4 in Snowman House	10 in landscape
Co-Op office	4 in Snowman House	-
Health centre	20 in Casterbridge House	34 in landscape
Total	**28**	**44**

4.1.3.2. Phase 3

Planning permission for the hybrid application was granted before FALP (March 2015). As such, the London Plan and LBC cycle parking standards and associated requirements that were applicable at the time are shown in Table 4-8 below.

Table 4-8 Phase 3 cycle parking requirement

Land use	Quantum of development	London Plan (2011) standard	London Plan (2011) requirement	LBC standard	LBC requirement
C3 (residential)	78 x 1 or 2 bed units / 22 x 3 or more bed units	1 per 1 or 2 bed unit / 2 per 3 or more bed unit	122	1 space per non wheelchair unit + from threshold of 20 units 1 visitor space per 10 units	88 for residents 10 for visitors
A1-A5 (retail)	353m^2	1 per 50m^2	8	From threshold of 500m^2, 1 staff and 1 customer space per 250m^2	N/A (below 500m^2)
B1a (employment)	362m^2	1 per 250m^2	2	From threshold of 500m^2, 1 staff space per 250m^2 + 10% visitors (minimum 2)	N/A (below 500m^2)
Total	**-**	**-**	**132**	**-**	**98**

The provision within Phase 3 is summarised in Table 4-9 below and described in more detail beneath and demonstrates that the proposed development is in excess of the minimum requirements.

Table 4-9 Numbers and types of cycle parking spaces in Phase 3

Type of space	Number of spaces
Residential	92 (in basement)
Mews houses	30 (15 units with two spaces each)
Commercial units	10 (covered spaces on northwest side of Abbey Road / Belsize Road junction)
Visitors	10 (on south side of service access road)
Total	**142**

Ninety two cycle spaces will be provided in the Phase 3 basement car park in two blocks – one with 38 spaces and another with 54 spaces. These will be accessed via a lift and stairs with Dutch ramp from the courtyard at ground floor level.

Ten cycle spaces will also be provided for visitors at ground floor level within the public realm to the south of the service access road at the western end of the residential block opposite the mews houses, while ten cycle spaces will be provided under a covered stand for staff at the commercial units. These will be located between the commercial units and the northwest side of the Abbey Road/Belsize Road junction, again within the public realm.

In addition, the 15 mews houses will each be provided with two cycle spaces per unit (one in the front garden and one in the rear garden).

4.2. Servicing and Loading

Servicing and loading for Phase 2 will take place from two locations:

- A 15m length of kerbside will be available on the east side of Abbey Road for refuse vehicles, which can also be used by emergency vehicles.
- In addition, a 15m area will be provided on the north side of Belsize Road for ambulance parking, loading/unloading, refuse collection and passenger pick up / drop off.

As per the hybrid application, servicing and loading for Phase 3 will take place from a new 12m loading bay on the west side of Abbey Road north of the Abbey Road / Belsize Road junction. In addition, refuse collection will also take place from the access road to the courtyard, which can also be used by emergency service vehicles.

4.3. Abbey Road / Belsize Road Junction

As outlined in the Addendum TA, the Abbey Road / Belsize Road junction is to be re-developed to complement public realm proposals for this area. Since the Addendum TA was prepared, the junction design and associated LINSIG modelling has been updated as described below and shown in Appendix E.

The key design changes which impact on the operation of the junction are summarised below:

- Re-alignment of the existing pedestrian crossings on all arms at the junction;
- Removal of pedestrian refuge islands on the Abbey Road North arm and Belsize Road East arm; and
- Introduction of new diagonal crossings at the junction.

No changes are proposed to the method of control at the junction.

4.4. Trip Generation

The trip generation for the proposed development has been reviewed against the net development quantums in Table 4-2.

4.4.1. Residential Trip Generation

The Addendum TA applied trip rates from the Original TA to the quantum of proposed residential development in the hybrid application. The quantum of residential development has not changed since the 2013 Hybrid Application so there are no changes to this element of the trip generation assessment. The trips associated with the affordable and private residential development are repeated in Table 4-10 and Table 4-11 respectively for ease of reference.

Table 4-10 Peak hour Affordable Residential Net Trips by Mode

Mode	AM Peak			PM Peak		
	In	Out	Two-way	In	Out	Two-way
Car Driver	2	3	4	3	3	6
Car Passenger	0	2	3	0	1	1
Pedal Cycle	0	1	1	1	0	2
Taxi	0	0	0	0	0	0
Walk	0	3	3	1	1	2
Underground	2	9	11	5	4	9
Train	0	2	2	1	1	2
Bus	1	5	6	2	2	4
Total	**6**	**24**	**30**	**14**	**12**	**26**

Please note numbers may not add up due to rounding errors

Table 4-11 Peak hour Private Residential Net Trips by Mode

Mode	AM Peak			PM Peak		
	In	Out	Two-way	In	Out	Two-way
Car Driver	6	9	15	16	9	25
Car Passenger	0	1	1	5	1	6
Pedal Cycle	1	0	1	2	0	2
Taxi	0	0	0	0	0	0
Walk	1	2	3	6	2	9
Underground	4	8	12	23	8	31
Train	1	2	3	5	2	7
Bus	2	4	6	12	4	16
Total	**15**	**26**	**41**	**69**	**26**	**95**

Please note numbers may not add up due to rounding errors

4.4.2. Supermarket Trip Generation

The Addendum TA applied trip rates from the Original TA to the quantum of proposed supermarket development in the 2013 Hybrid Application. The quantum of supermarket development has not changed since the 2013 Hybrid Application so there are no changes to this element of the trip generation assessment. The trip generation associated with the supermarket element of the development is shown in Table 4–12 below. It should be noted that as the supermarket trips will be mostly local, they have been added to the “walk” mode.

Table 4–12 A1 Supermarket Trips

Mode	AM Peak			PM Peak		
	In	Out	Two-way	In	Out	Two-way
Trips (walking)	46	39	85	96	92	188

4.4.3. Commercial Trip Generation

The 2013 Hybrid Application highlighted that the proposed development will result in a reduction in commercial floorspace and as no parking is proposed for this element of the development, these trips were discounted.

As outlined in Table 4-2, the proposed development will still result in a reduction in commercial floorspace as outlined below:

- There is currently 1,730m^2 of commercial floorspace, comprised of 835m^2 of A1-A5 retail and 895m^2 of B1 office, while the proposed development will be comprised of 1,114m^2 of commercial floorpsace (399m^2 in Phase 1 with 353m^2 of A1-A5 and 362m^2 of office in Phase 3). The 234m^2 B1 Co-Operative office is considered in the community centre section below.

Therefore, as no parking will be provided for the commercial floorspace and as the proposed development will result in a reduction of 616m^2 of commercial floorspace, as per the Addendum TA, these trips have been discounted.

4.4.4. Health Centre / Community Centre

The development proposals outline that:

- the health centre will have a floor area of 2,006m^2, representing an increase of 231m^2 compared to the existing facility;
- the community centre will have a floor area of 947m^2, representing an increase of 447m^2 compared to the existing facility; and
- a new Co-Operative office will be provided with a floorspace of 234m^2.

However, as the health and community centre will replace an existing facility, will serve the local community and will have minimal parking provision.

As such, as outlined in the Addendum TA any additional trips will be local in nature and accounted for within the residential trip generation and therefore, no additional trip generation has been undertaken for this land use.

4.4.5. Net Change – Trip Generation

As outlined above, the trip generation for each land use within the Addendum TA is considered valid for the current proposals given the changes in development quantum outlined in Table 4-2.

However, the Outline and Addendum TAs deducted trips associated with the multi-storey car park on the Phase 1 site to calculate the net trip generation. As this car park was vacated when the surveys were undertaken in September and October 2014, no such reduction has been undertaken. The resulting net change in trip generation by mode is shown in Table 4–13 below.

Table 4–13 Net Change in Peak Hour Trips by Mode

Mode	AM Peak			PM Peak		
	In	Out	Two-way	In	Out	Two-way
Car Driver	11	32	43	24	17	41
Pedal Cycle	1	1	2	4	0	4
Taxi	0	0	0	0	0	0
Walk	48	44	91	104	96	199
Underground	5	17	23	27	12	39
Train	1	4	5	6	3	9
Bus	3	9	12	14	6	20
Total	**35**	**76**	**110**	**167**	**86**	**253**

4.4.5.1. Sensitivity Test

A sensitivity test was undertaken in the Addendum TA, which is repeated here to assess a worst case scenario for the flexible commercial floorspace. As the peak hour trip generation for B1 office is higher than A1-A5 land use, a scenario has been considered whereby the flexible commercial floorspace in Phase 1 is provided as B1 office.

Based on this scenario, there would be a reduction in A1-A5 retail floorspace (353m^2 in Phase 3 compared to the existing 835m^2), so no further assessment of A1-A5 retail has been undertaken.

The assessment of office trip rates in the original Outline TA did not include any existing office floorspace. Using this principle, the proposed development would result in an increase of 761m^2 of office floorpsace (399m^2 in Phase 1 and 362m^2 in Phase 3). Using the first principles methodology in the Outline TA, the trip generation associated with the office element of the development is shown in Table 4–14 below. As no parking is provided for the office element of the development, it is assumed that all employees will use a combination of walk and/or public transport modes.

Table 4–14 Office Peak hour Trips by Mode

Mode	AM Peak			PM Peak		
	In	Out	Two-way	In	Out	Two-way
Walk	2	0	2	0	2	2
Underground	10	0	10	0	10	10
Train	8	0	8	0	8	8
Bus	3	0	3	0	3	3
Total	23	0	23	0	23	23

The resulting net trip generation is shown in Table 4–15 below.

Table 4–15 Net Change in Peak Hour Trips by Mode (Office Sensitivity test)

Mode	AM Peak			PM Peak		
	In	Out	Two-way	In	Out	Two-way
Car Driver	11	32	43	24	17	41
Pedal Cycle	1	1	2	4	0	4
Taxi	0	0	0	0	0	0
Walk	51	44	94	104	99	202
Underground	17	17	34	27	23	50
Train	4	4	7	6	5	11
Bus	9	9	18	14	12	26
Total	**57**	**76**	**133**	**167**	**109**	**276**

Table 4–15 shows a small increase in trips across sustainable modes (walk, underground, train and bus) as all trips associated with the office land use have been assigned to these modes. However, Table 4–15 shows that the trip generation is still forecast to be less than that predicted in the original Outline TA.

4.5. Proposed Development Traffic Flows

This assessment adopts the methodology used to distribute the proposed development traffic flows to the traffic network at the Abbey Road / Belsize Road junction from the 2013 Addendum TA.

For the AM, Inter and PM peak hours respectively, Figure 4-1, Figure 4-2 and Figure 4-3 below show:

- the 2014 surveyed traffic flows at the Abbey Road / Belsize Road junction from Figure 3-1;
- the proposed development traffic flows; and
- The 2014 surveyed flows added to the proposed development traffic flows.

It should be noted that the trip generation assessment in the Addendum TA was undertaken for the AM and PM peak hours only. Therefore, for robustness, the PM peak hour development traffic was added to the traffic flows observed during the Inter peak for the Inter Peak Hour assessment.

Figure 4-1 AM peak hour flows

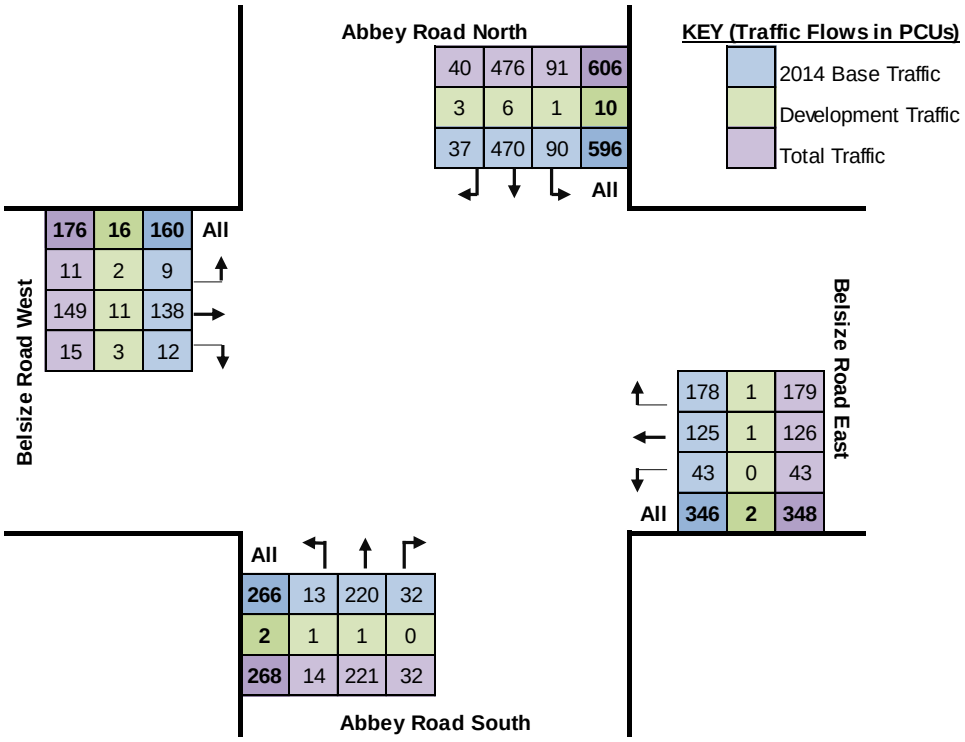


Figure 4-2 Inter peak hour flows

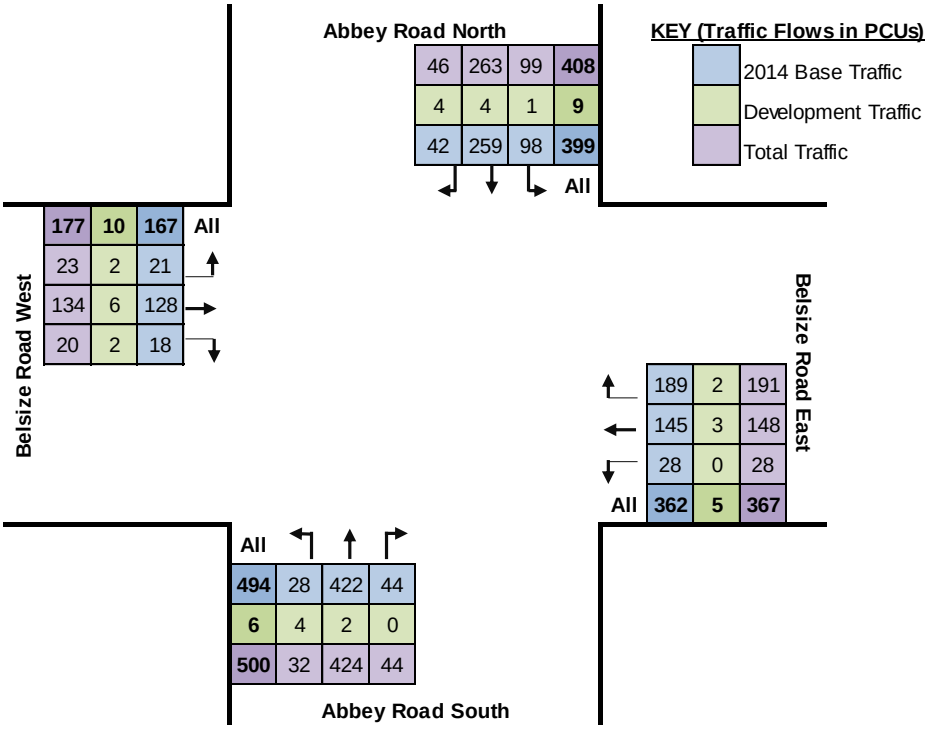
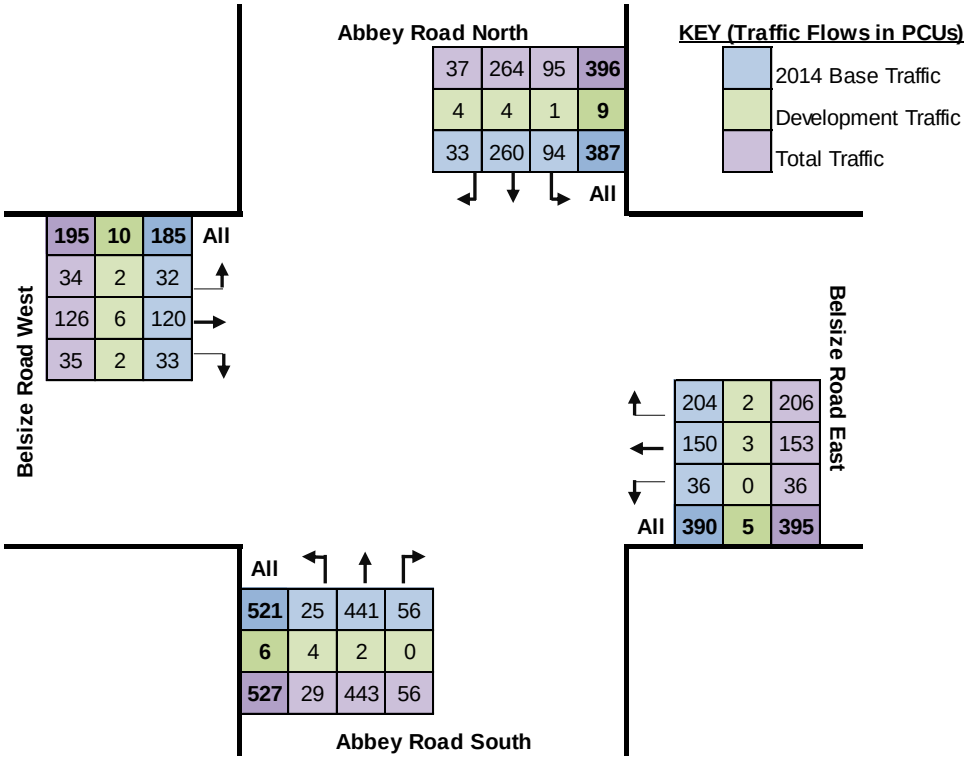


Figure 4-3 PM peak hour flows



5. Impact Assessment

To maintain consistency with the Outline TA, the assessments below have been based upon the sensitivity test as a worst case scenario.

5.1.1. Walking

The development is forecast to generate 94 and 202 two-way net additional (walk only) pedestrian trips in the AM (0800-0900) and PM (1800-1900) peaks respectively. This represents a marginal increase over the Outline TA. A further 59 and 87 net trips in the AM and PM Peak Hours respectively are forecast towards the tube and train stations and the local bus stops, which represents a fall in number in comparison to the Outline TA.

The total number of net additional two-way AM and PM pedestrian trips is therefore 153 and 289 in the AM and PM Peak Hours respectively. This equates to less than three pedestrians per minute in the AM Peak Hour and less than five in the PM Peak Hour, which is considered negligible in terms of footway capacity, and less than that assessed in the Outline TA.

5.1.2. Cycling

As per the Addendum TA, the development is forecast to generate two and four net additional two-way trips in the AM and PM Peak Hours respectively. These numbers are based upon existing travel patterns and demonstrate the opportunity for increasing the use of this mode.

5.1.3. Public Transport

5.1.3.1. Buses

The development is forecast to generate 18 net additional two-way “main mode” bus trips in the AM and 26 in the PM Peak Hour, which is less than predicted in the Outline TA. Given that ten bus services are accessible from the site, operating at a combined frequency of approximately 81 buses per hour (one-way), the additional demand generated by the development would equate to less than one additional passenger per bus during the peak hours.

An additional journey to work assessment has been undertaken in order to deduce the number of additional passengers using each bus service. The majority of residents (75%) living in the Kilburn ward that journey to work by bus work to the south or south east of the site.

There are five bus routes in the vicinity of the site (31, 98, 139, 189 and 332) that provide services to the east and south east, equating to a total of 40 bus services. Therefore, it can be anticipated that a total of 18 and 26 bus passengers will use these 40 bus services in the AM and PM Peak Hours respectively, equating to a maximum of one additional passenger per bus during these peak hours.

It is noted that the additional passengers generated by the proposed development onto other local bus services has a negligible effect on overall capacity.

5.1.3.2. London Underground

The development is forecast to generate 34 and 50 additional two-way “main mode” underground trips during both the AM and PM Peak Hours. Approximately 40 trains serve Kilburn Park underground station during the peak hours, therefore this increase in passenger numbers equates to less than two passengers per train.

In addition, to assess the effect of the development on the Bakerloo Line at Kilburn Park underground station, development trips have been calculated as a percentage of current and future line capacities as shown in Table 5–1 below.

Table 5–1 Bakerloo Line Capacity at Kilburn Park Underground Station

Bakerloo Line	No of Trips (Two-way)	% of current 6 car (PCC) Two-way capacity (25tph)
Two-way AM trips	34	0.16
Two-way PM trips	50	0.24

Piccadilly Line Current PCC (Practical Crush Capacity) = 843 per train

As Table 5–1 illustrates, the overall effect on capacity at Kilburn Park underground station will be negligible.

5.1.3.3. Rail

The proposed development is forecast to generate seven net additional two-way "main mode" rail trips during the AM Peak Hour and 11 during the PM Peak Hours, which is less than predicted by the Outline TA.

Given the number of services available from Kilburn High Road Overground station during the AM Peak Hour (and similar provision during the PM Peak Hour), it is considered that the effect of the development will be negligible.

5.1.4. Road Network

5.1.4.1. Development Proposals

The proposed development is forecast to result in an increase of 43 vehicle trips in the AM Peak Hour (0800-0900 hours) and 41 in the PM Peak Hour (1800-1900 hours).

5.1.4.2. Highway Network Analysis

Table 5–2 illustrates the percentage AM and PM Peak Hour change on the highway network with the development based on the 2014 traffic surveys.

Table 5–2 Forecast Change in Two-Way Net Traffic Flows with Development

Location	AM Peak Hour Change No. (%)	PM Peak Hour Change No. (%)
Abbey Road North	+14 (1.4%)	+16 (+1.5%)
Abbey Road South	+11 (1.4%)	+12 (+1.4%)
Belsize Road East	+14 (+2.3 %)	+12 (+1.8%)
Belsize Road West	+21 (+6.4%)	+21 (+5.4%)

As demonstrated in Table 5–2, the proposed development is predicted to result in small increases in net traffic flows on the local highway network. The largest increases/decreases are experienced on Belsize Road West due to the lightly trafficked nature of the road meaning small changes in the traffic flows have a bigger effect on the percentage changes.

5.2. Abbey Road / Belsize Road Junction LINSIG Analysis

5.2.1. Proposed Model

The TfL approved LINSIG base models were modified to reflect the design proposals at the Abbey Road / Belsize Road junction, which have then been subject to TfL's LMAP Stage 5. This included marking the offside lane on Belsize Road East for traffic making the right turn only so that the proposed changes to the road markings formalise the observed lane usage at the junction as modelled in the LINSIG base model.

The proposed LINSIG model was developed using new signal timing data provided by the TfL Signal Audit Engineer (SAE) to reflect the design changes at the junction. Traffic flows were also applied in the model to account for additional traffic generated by the adjacent Abbey Road Development that would travel through

the junction. In general, the trip generation assessment indicated a total of 30 PCUs of additional traffic would travel though the junction during the AM and PM peak hours.

The results of the modelling assessment indicated that during the AM peak hour, an increase in cycle time from the 72 seconds to 80 seconds would be required to maintain the current level of performance at the junction. During the Inter peak and PM peak hours, the existing cycle times of 88 seconds could be retained with new optimised signal timings.

5.2.2. Degree of Saturation (DoS) comparison

The LINSIG Proposed model was optimised for Practical Reserve Capacity (PRC) and the results are presented in Table 5-3 below showing a comparison of DoS for the LINSIG Base and Proposed models.

For the AM peak hour, the results indicate that retaining the existing cycle time of 72 seconds in the AM peak would result in unacceptable levels of saturation and delays on the Abbey Road North and Belsize Road West arms at the junction. However, increasing the cycle time to 80 seconds reduces the DoS at the junction to levels similar to the existing situation on all arms except on the Belsize Road West arm which is predicted to increase from 67% to 91%.

In Inter peak and PM peak hours, the DoS at the junction is predicted to remain similar to the existing situation except on the Belsize Road West arm where the DoS increases from 78% to 83% during the Inter peak hour and from 69% to 84% during the PM peak hour.

5.2.3. Queue length comparison

Table 5-3 shows the comparison of queue lengths for the LINSIG Base and Proposed models. The results indicate that the queue lengths at the junction are predicted to increase during each of the peak hours. However, the predicted increase in queue lengths is not significant and is not expected to impact the operation of the network adversely compared to the existing situation. This assumes that an 80 second cycle time is implemented at the junction during the AM peak hour. The results predict that retaining the existing cycle time of 72 seconds during the AM peak hour would lead to a significant increase in the queue length on Abbey Road North and Belsize Road West arms.

5.2.4. Junction Performance

Table 5-3 shows that lengthening the cycle time during the AM Peak Hour to minimise the impact of the proposed development results in a comparable performance in the proposed scenario in comparison to the base scenario.

Table 5-3 also shows that in the proposed scenario, the junction is predicted to operate with spare capacity in the Inter peak Hour and at capacity in the PM Peak hour, while there are increases in delay in all three peaks.

5.2.5. Summary

In summary:

- the LINSIG modelling has been approved by TfL and subject to LMAP Stage 5;
- the results of the proposed modelling, which includes the additional development traffic and revised junction design, reflect the results of the base modelling;
- the revised junction design provides benefits to pedestrians as outlined above (re-alignment of existing pedestrian crossings and introduction of diagonal crossings), as well as accommodating additional traffic generated by the development; and
- the junction design has been approved by TfL.

Table 5-3 Comparison of Base and Proposed Models

Approach	AM Peak						Inter peak				PM peak			
	Base		Proposed (Cycle Time 72s)		Proposed (Cycle Time 80s)		Base		Proposed		Base		Proposed	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
Abbey Road (N)	93%	16.7	103%	30.0	93%	18.5	67%	9.3	69%	9.7	54%	7.9	62%	8.7
Belsize Road (E)	69%	4.2	67%	4.3	71%	4.8	84%	7.0	85%	7.2	81%	6.4	80%	6.5
Abbey Road (S)	45%	4.6	49%	4.8	47%	5.0	84%	13.7	85%	14.1	81%	13.5	90%	16.2
Belsize Road (W)	67%	4.0	104%	12.4	91%	7.5	78%	5.6	83%	6.4	69%	5.3	84%	7.0
PRC (%)	-3.2		-15.9		-3.6		11.2		5.5		10.8		-0.1	
Delay (PCU/hr)	16.8		38.55		21.32		16.44		21.19		16.88		21.59	

5.3. Supplementary Documents

The following supplementary documents were submitted with the Addendum TA and have been updated to accompany this application. They are appended to this document as follows:

- Servicing Management Plan (Appendix H);
- Construction Logistics Plan (Appendix I);
- Framework Residential Travel Plan (Appendix J); and
- Framework Workplace Travel Plan (Appendix K).

6. Summary and Conclusion

Atkins Transportation has been appointed by the London Borough of Camden (LBC) Housing and Adult Social Services (HASC) to provide transport planning consultancy services in support of the residential led Abbey Road Development project, located within LBC.

The Abbey Road Development Project was originally granted outline planning permission in July 2012 (reference 2012/0096/P) and was supported by a Transport Assessment prepared by WSP (referred to as the "Outline TA" within this document).

Subsequently, a hybrid planning application (reference 2013/4678/P) was submitted incorporating a revised outline application for the whole of the Abbey Area Redevelopment as well as the submission of full details in respect to Phase 1. This was supported by an Addendum Transport Assessment ("Addendum TA") prepared by Atkins and was granted planning permission in May 2014.

A full planning application is now being submitted for Phase 2 and a Reserved Matters application for Phase 3. This report has been prepared as an Addendum TA 2 to support the applications.

6.1. Planning Policy

This Addendum TA 2 contains details of the following planning policies and how the proposed development complies with them:

- National Planning Policy Framework;
- London Plan - Further Alterations to the London Plan (FALP) – March 2015;
- London Borough of Camden Streetscape Design Manual; and
- London Plan and London Borough of Camden car and cycle parking standards.

6.2. Baseline Traffic Conditions

As the proposed development includes an updated design of the Abbey Road / Belsize Road junction including diagonal pedestrian crossings, the LINSIG modelling and associated impact assessment has been updated.

As the previous LINSIG assessments (Outline TA in December 2011 and Addendum TA in July 2013) were based on traffic surveys that were undertaken in June 2010, which are now over five years old, new traffic surveys were undertaken at the Abbey Road / Belsize Road junction in September/October 2014.

It should be noted that at the time of the survey, the multi-storey car park that was located on the Phase 1 site was vacated ready for demolition in November 2014.

6.3. Development Proposals

The development proposals for the overall site are outlined in Table 6-1.

As the multi-storey car park that was located on the Phase 1 site was vacated ready for demolition at the time of the traffic surveys, it has been assumed that there are no existing vehicle trips to subtract from the trip generation assessment.

Table 6-1 Overall Development Schedule (Existing versus latest proposals)

Land Use	Existing	Phase 1	Phase 2	Phase 3	Net Change
Affordable Residential C3	70 units	66 units	-	48 units	+44 units
Private Residential C3	4 units	75 units	-	52 units	+123 units
Supermarket	0m^2	522m^2	-	-	+522m^2
Other Retail/A1/A2/A3/A4/A5	835m^2	399m^2	-	353m^2	-616m^2
B1 Office	895m^2		-	362m^2	
D1 Health Centre	1,775m^2	-	2,006m^2	-	+231m^2
D1 Community Centre	500m^2	-	947m^2	-	+447m^2
B1 Co-Operative office	-	-	234m^2	-	+234m^2

6.4. Impact Assessment

The proposed development is forecast to result in an increase of 43 vehicle trips in the AM Peak Hour and 41 vehicles in the PM Peak Hour.

The proposed development is predicted to result in small increases in traffic flows at the Abbey Road / Belsize Road junction with a maximum increase of 6.4% on the Belsize Road West link and an average impact of -2.9% across the four links in the AM Peak Hour and 2.5% in the PM Peak Hour.

A LINSIG assessment of the Abbey Road / Belsize Road junction has also been undertaken to assess the proposed changes to the junction compared to the existing layout.

Validated LINSIG Base models (for the LMAP 3 stage) were developed for the Abbey Road / Belsize Road junction for the AM (0800 – 0900 hours), Inter peak (1500 – 1600 hours) and PM peak (1630 – 1730 hours) hours. The models were audited and subsequently approved by TfL.

The TfL approved LINSIG Base models were modified to reflect design proposals at the Abbey Road / Belsize road junction.

The LINSIG Proposed model was developed using new signal timing data provided by the TfL Signal Audit Engineer (SAE) to reflect the design changes at the junction. New traffic flows were also applied in the model to account for additional traffic generated by the adjacent Abbey Road Development that would travel through the junction.

The results of the modelling assessment indicated that during the AM peak hour, an increase in cycle time from the 72 seconds to 80 seconds would be required to maintain the current level of performance at the junction. During the Inter peak and PM peak hours, the existing cycle times of 88 seconds could be retained with new optimised signal timings.

A comparison of the Base and Proposed modelling results indicates that the proposed junction layout is predicted to provide a comparable level of performance to the existing situation on all arms at the junction except on the Belsize Road (W) arm where the DoS is expected to increase from 67% to 91% and from 69% to 84% during the AM and PM peak hours respectively. Queue lengths are also predicted to increase. However, the predicted increase in queue lengths are not significant and are not expected to impact the operation of the network adversely compared to the existing situation.

In summary:

- the LINSIG modelling has been approved by TfL and subject to LMAP Stage 5;
- the results of the proposed modelling, which includes the additional development traffic and revised junction design, reflect the results of the base modelling;
- the revised junction design provides benefits to pedestrians as outlined above (re-alignment of existing pedestrian crossings and introduction of diagonal crossings), as well as accommodating additional traffic generated by the development; and
- the junction design has been approved by TfL.

6.5. Supplementary Documents

In addition to the public realm improvements and associated signal time changes, the Addendum TA contained the following mitigation measures. The content of these document is still considered relevant and therefore no updates have been undertaken:

In addition to the public realm improvements and associated signal time changes, the Addendum TA contained the following mitigation measures. The content of these document is still considered relevant and therefore no updates have been undertaken:

- Servicing Management Plan;
- Construction Logistics Plan;
- Framework Residential Travel Plan; and
- Framework Workplace Travel Plan.

6.6. Conclusion

This Addendum TA 2 is consistent with the Original TA and Addendum TA documents prepared and approved for the 2011 outline and 2013 hybrid planning permissions. It has been updated to reflect current traffic conditions the details submitted pursuant to Phase 2 and 3.

This Addendum TA 2 also demonstrates that the traffic impact of the proposed development is not anticipated to be severe. The proposed development meets the transport aspirations of LBC and prevailing Governmental guidance in respect of sustainable development and will, through its design, encourage the use of sustainable modes of transport.

Atkins Transportation
Epsom Gateway
2 Ashley Avenue
Epsom
KT18 5AL
United Kingdom

Contact: info@atkinsglobal.com
Tel: +44 1372 726140
Fax: +44 1372 740055