

## **Appendix 1**

**Scope of Application documents for the A5 Corridor Study excluding Appendixes B and C**



## Brent Cross Cricklewood Regeneration

Scope of Application documents for:

A5 Corridor Study

October 2013

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Prepared for



**A5 Corridor Study**

October 2013

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- Appendix C – Current ‘living’ scope of the BXC DDM

# 1 Introduction

## 1.1 Context of the Study

There is a current planning consent in place for the Brent Cross Cricklewood Development (BXC). The regeneration proposals received outline planning consent from Barnet Council in October 2010. Attached to the permission are a number of planning conditions. These cover a wide range of topics and are to be discharged at defined points within the submission of reserved matters, detailed design process, construction and operation of the development. A condition of this consent was a requirement for an A5 Corridor Study to be submitted as a reserved matter. An initial scope of this study was included in the Section 106 agreement (see Appendix A).

There is a considerable amount of overlap between the individual conditions imposed on the permission. The A5 Corridor Study includes elements that will be input into work that will subsequently be undertaken to discharge other conditions, for instance the Area Wide Walking and Cycling Study. The purpose of this document is to further define the scope of the A5 Corridor Study and identify which elements of the original scope feeding into the discharge of other conditions.

Each element of the scope as defined in the Section 106 has been divided into key stages and defined and discussed in more detail. This version of the report aims to incorporate comments from Transport for London (TfL) and the London boroughs of Barnet, Brent and Camden.

For such a study, it is important to set out the roles and responsibilities of the local authorities along the A5 corridor, outlined below:

- London borough of Barnet – The section of the A5 running through the study area demarcates the Barnet/Brent borough boundary. An agreement between the boroughs is in place whereby Barnet are responsible for the management and maintenance of this section of the A5. Figure 2 shows borough boundaries. This section of the A5 is designated as strategic road network (SRN), where TfL are statutory consultees. Under the traffic management act, the London borough of Barnet has a responsibility to ensure its road network is managed effectively to minimise congestion and disruption to vehicles and pedestrians. In addition, the borough will review the impact of the development in their borough based on outputs from a strategic traffic model and assist with the development, review and approval of any mitigation packages deemed necessary from the traffic modelling assessment. Barnet are ultimately responsible for signing off the corridor study and clearing the condition in liaison with TfL through the Transport Strategy Group, and with all stakeholders via the Transport Advisory Group.
- London borough of Brent – will review the impact of the development in Brent based on outputs from a strategic traffic model and assist with the development, review and approval of any mitigation packages deemed necessary in Brent from the traffic modelling assessment.
- London borough of Camden – as above.
- TfL – TfL's road network (TLRN) in this area includes the A406, the A41, A5 slip roads on the approach to the intersection known as Staples Corner and the A5 between the A406 and Oxgate Lane, and therefore have a responsibility to ensure its road network is managed effectively to minimise congestion and disruption to vehicles and pedestrians. The remainder of the A5 in this area is designated as SRN (as described

above). TfL are also responsible for traffic signals on both the TLRN and SRN together with bus operations through the A5 corridor. TfL will appoint network assurance, model and signal audit engineers to review and approve each modelling stage associated with the proposed junction improvements on the TLRN and SRN.

## 1.2 Objectives of the study

There are three primary objectives of the A5 Corridor Study that the original scope captured. These are defined below:

1. Ensure that any local traffic impacts are identified in the adjacent boroughs of Brent and Camden by ensuring that the traffic modelling for the design stage is sufficiently detailed in areas of interest, e.g. the Dollis Hill area and south of Cricklewood Lane. Assess any identified impacts using appropriate junction modelling tools and produce outline designs of any mitigation measures.
2. Develop an A5 VISSIM design model to assist with the following:
  - i. The development of detailed designs for the new and improved junctions along the A5 Edgware Road,
  - ii. The testing of any temporary traffic management measures during the construction period on highway operations.
3. Define any new or improved facilities required in regard to multi-modal user requirements, i.e. walking and cycling and bus priority, and setting out the identified interventions in line with the indicative phasing and construction programme.

In order to address these three objectives the 'A5 Corridor Study' has been broken down into three individual components:

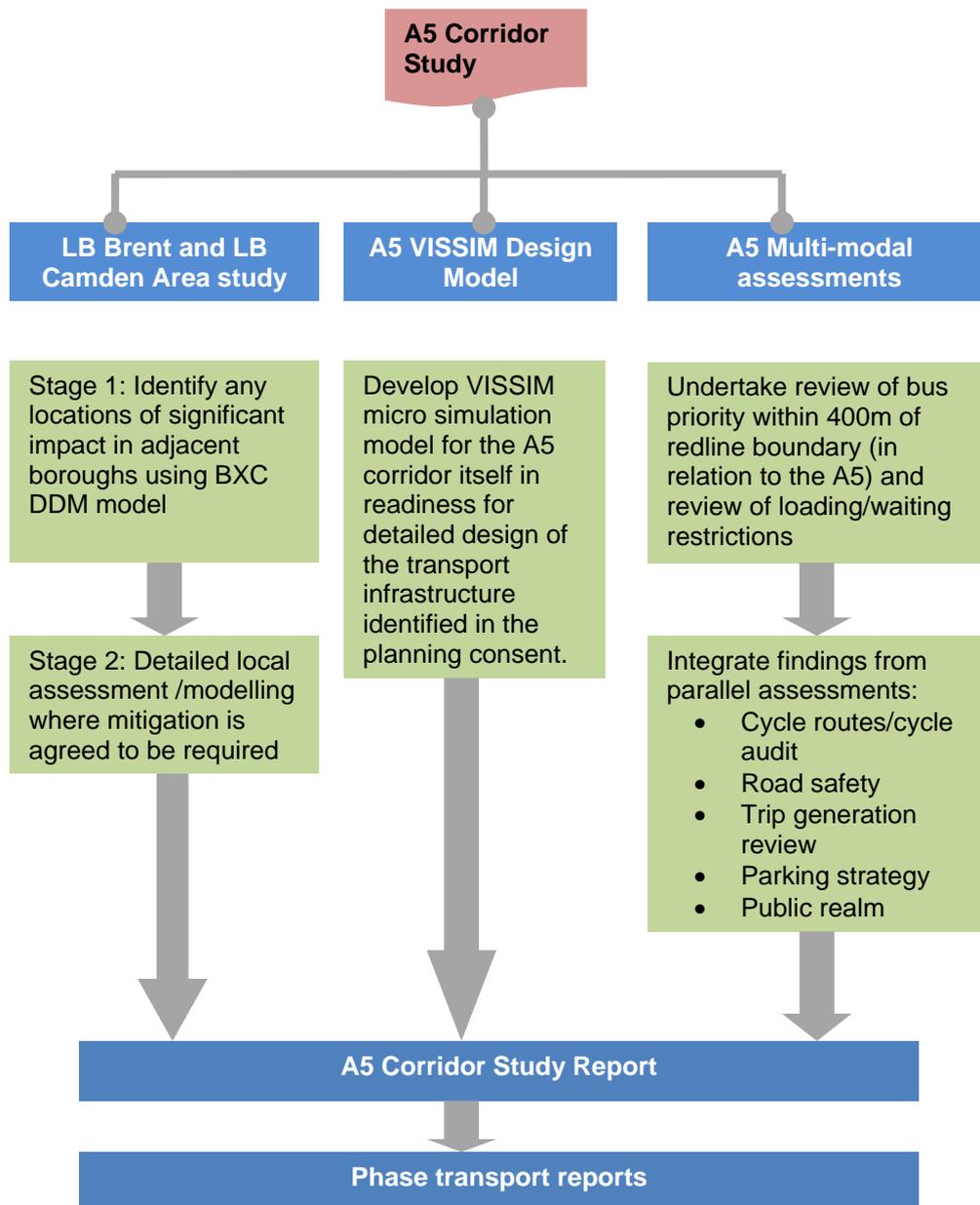
- London Borough of Brent and London Borough of Camden Area Studies
- A5 VISSIM Design Model
- A5 Multi Modal Assessments.

The structure of this scope is outlined below:

- Section 2 – Background: a description of the relevant planning condition (2.7) has been included together with background information about the BXC Detailed Design Model that is currently being developed, and is intended to be used to undertake the London Borough of Brent and London Borough of Camden Area Study.
- Section 3 – London Borough of Brent and London Borough of Camden Area Studies: provides a description of a two stage process that will identify in detail any areas of impact on local roads which have not already been identified as part of the work undertaken prior to 2010 within London boroughs of Brent and Camden and to develop and agree any necessary mitigation measures through detailed assessment that may include junction modelling.
- Section 4 – A5 VISSIM Design Model: define the extent of the VISSIM model along the A5 itself, the scenarios to be developed and tested, and how the models will be progressed.
- Section 5 – A5 Multi-modal assessment: feeding into a number of parallel and other assessments such as the area wide walking and cycling study, as well as undertaking

further analysis on bus priority, waiting and loading restrictions. Combining together all planned transport measures proposed along the corridor and linking them to the indicative programme.

Figure 1 provides an overview of the major elements of the A5 Corridor Study. The study will be used to inform the development of Phase Transport Reports, detailed further in section 2.5.



**Figure 1 An overview of the key stages of the A5 Corridor Study**

## 2 Background

### 2.1 Relevant planning conditions

Condition 2.7 of the outline planning permission states:

*Prior to or coincident with the submission of the first Other Matters Approval in respect of Phase 1 the A5 Corridor Study (including any necessary Supplementary Transport Measures required to address the detailed impacts identified in the study together with an indicative programme for carrying out such works) shall be submitted to and approved by the LPA, in consultation with the London Boroughs of Brent and Camden and the Transport Strategy Group. All other relevant Reserved Matters Applications and Other Matters Applications shall thereafter be in accordance with the A5 Corridor Study approved in accordance with this Condition (and including for the avoidance of doubt the approval of detailed delivery programmes in accordance with Condition 5 of this Permission).*

Reason: To ensure the transport impacts of the scheme upon the A5 are fully evaluated and mitigated as part of the detailed design and programming of Phase 1 and the other relevant Phases of the Development. The scope of the A5 Corridor Study was included within Annex 7 of schedule 17 of the signed S106 agreement (see Appendix A at the rear of this note) and is summarised below.

The A5 Corridor Study has been defined to cover a core area of the A5 between A407 Cricklewood Lane and A406 Staples Corner, including local roads within Barnet, Brent and Camden within an area anticipated to be approximately 800m from the A5, Claremont Road and the A407 Cricklewood Lane.

**Table 1** lists the elements of the A5 study as detailed in Annex 7. It also illustrates where parallel work streams are being undertaken. Elements of the original A5 Corridor Study scope that are addressed in this report are also shown and highlighted in italics, and detailed further below.

**Table 1 Elements of A5 scoping study as defined in annex 7 of Schedule 17 of S106**

Element	Other Related Studies
<i>Traffic modelling – 2031* AM and PM peaks</i>	a) <i>A5 Corridor Study</i>
a) <i>Traffic modelling to inform detailed design</i>	b) Separate assessment being undertaken to update TA
b) Production of traffic forecasts	
Pedestrian environmental review/pedestrian routes	Area Wide Walking and Cycling Study
Pedestrian accessibility	Area Wide Walking and Cycling Study
<i>Traffic management – parking, loading and waiting review</i>	<i>A5 Corridor Study, Parking Strategy &amp; Servicing and Delivery Strategy</i>
Cycle routes/cycle audit	Area Wide Walking and Cycling Study
<i>Traffic management – review of signals/linked signals/traffic management</i>	<i>A5 Corridor Study</i>
<i>Review of bus priority including all bus stops within 400m of the redline boundary</i>	<i>A5 Corridor Study</i>

Element	Other Related Studies
Public realm	Area Wide Walking and Cycling Study
Road safety/accident data review	S73 Transport Assessment
* End state assessment year altered to 2031 in line with the proposed BXC DDM methodology	

## 2.2 BXC Detailed Design Model

The overarching reason for this study is to identify and mitigate in more detail any local impacts of the development within the LB Brent and Camden and elsewhere in Barnet, that were assessed at a more strategic level of detail in the transport modelling for the initial outline planning application.

The authorities' interest and objective of the study is for the developers and highway authorities to agree a corridor based approach for this part of the A5 that can serve as a benchmark for subsequent phases of BXC development that includes measures proposed by the developers, any additional mitigation needed, and measures funded by the consolidated transport fund in co-ordination with public funded and third party measures/works that may emerge in this area during the life of the scheme.

Since the signing of the section 106 agreement in 2010, the Development Partners have agreed to develop a new BXC Detailed Design Model to ensure compliance with current TfL standards when informing the detailed design of the proposed highway improvements. The new transport model, known as the BXC DDM, comprises a core area, part of the NoLHAM model (TfL's area wide SATURN highway assignment model) and part of Railplan v6, TfL's public transport model. Future year models are being developed for years 2021 (to represent phase 1) and 2031 (to represent end state).

The scope for the development of the BXC DDM model is currently under development and forms an 'emerging document' as the detailed work progresses. A draft copy of the BXC DDM scope is provided in Appendix C. It is worth noting that this document will evolve as the project develops. The new BXC DDM model has been scoped to have a core area which includes the area identified in Annex 7 of Schedule 17, and so provides the opportunity to ensure that any detailed impacts within this area are identified and mitigated to ensure compliance with the section 106 requirements.

The BXC DDM provides context for detailed design models and design approval. It will be used iteratively not deterministically. The local authorities are expected to use their judgement and discretion on specific measures in a reasonable manner and are expected to propose measures they deem relevant or needed.

## 2.3 Other Relevant Transport Proposals

As part of the A5 studies, it will be necessary to identify and review any current proposals for transport improvements within the area of interest agreed with the authorities. It is proposed to liaise with the authorities to identify any proposals under the following headings to inform the development of the required models:

- Planned improvements (funded with programme date)
- Longer term proposals
- Major maintenance / renewals planned

- 
- Major utility proposals
  - Other third party works

This information will be collected and data incorporated as appropriate. All background information will be reported within the A5 Corridor Study Report.

## 2.4 Implementation

The implementation of any proposals identified through the A5 Area Studies will be monitored by the Transport Advisory Group (TAG), and subject to the agreement of the Transport Strategy Group (TSG).

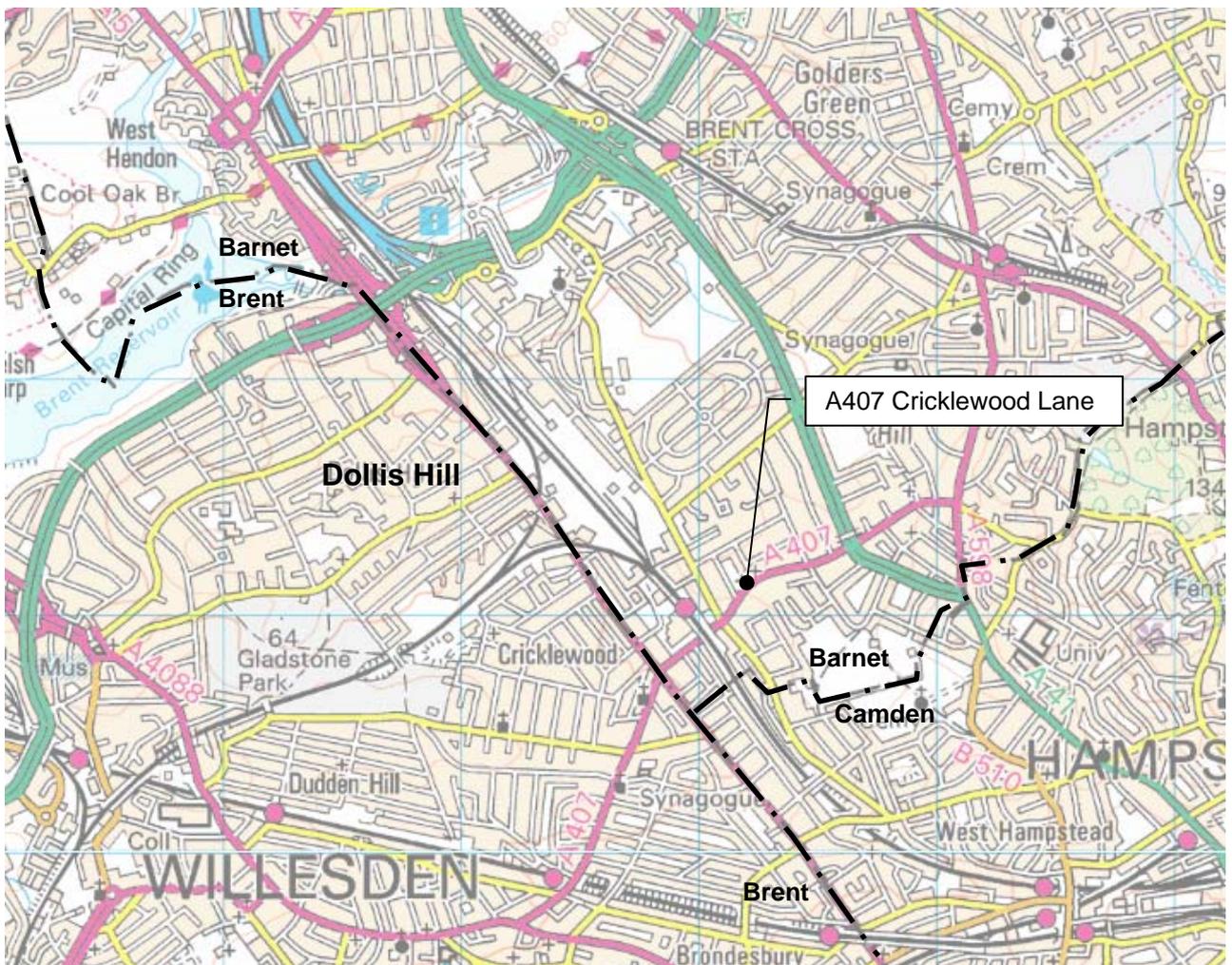
## 2.5 Phase Transport Reports

Following the submission and approval of the A5 Corridor Study Report and therefore the discharge of condition 2.7 all subsequent changes to the A5 Corridor which are brought forward under later phases of the development will be addressed in the appropriate phase transport report, which has to be prepared in respect of each phase or sub-phase as a further S106 condition.

### 3 London Boroughs of Brent and Camden Area Studies

#### 3.1 Stage 1 – Identify areas of material impact

As described earlier, the BXC DDM scope is currently being developed such that the model will be able to provide adequately detailed information within Brent and Camden to satisfy the requirements outlined in Annex 7, i.e. significant detail is being coded into BXC DDM to enable changes in traffic movements within the Dollis Hill and south of Cricklewood Lane areas to be identified (see Figure 2). It is anticipated that future year traffic flow data (with and without development traffic for phase 1 and ‘end-state’ scenarios) will be available from BXC DDM in early 2014. Discussions with TfL and others are on-going about the development of the BXC DDM model.



**Figure 2 Area plan showing borough boundaries**

As soon as data is available from BXC DDM this will be used to identify any material impacts on the local road network. The analysis will be undertaken to compare ‘V/C’ (flow to capacity ratios) from the BXC DDM Saturn modelling in the future year scenario with no development (Do Minimum) with the V/C for phase 1 and end state model (Do Something). Junctions where

'V/C' is more than or equal to 90% in the with development scenario and less than 90% in the Do Minimum will be subject to detailed capacity analysis using the appropriate junction modelling tool (i.e. TRANSYT/LinSig/PICADY/ARCADY).

Where BXC DDM identifies junctions where 'V/C' is greater than 90% in the Do Minimum (in the vicinity of the development), consideration will be given to the most appropriate package of mitigation, or as termed in the s106 agreement; 'supplementary transport measures'. Recommendations will be presented to the Transport Advisory Group where confirmation on how the transport fund should be used to progress intervention measures.

These junctions will be considered as having a '**material**' impact from the development on highway operations. The local models will be used to facilitate the preparation of outline designs of mitigation measures, which may entail revising proposed mitigation or recommending additional measures.

## 3.2 Stage 2 – Detailed local road assessments

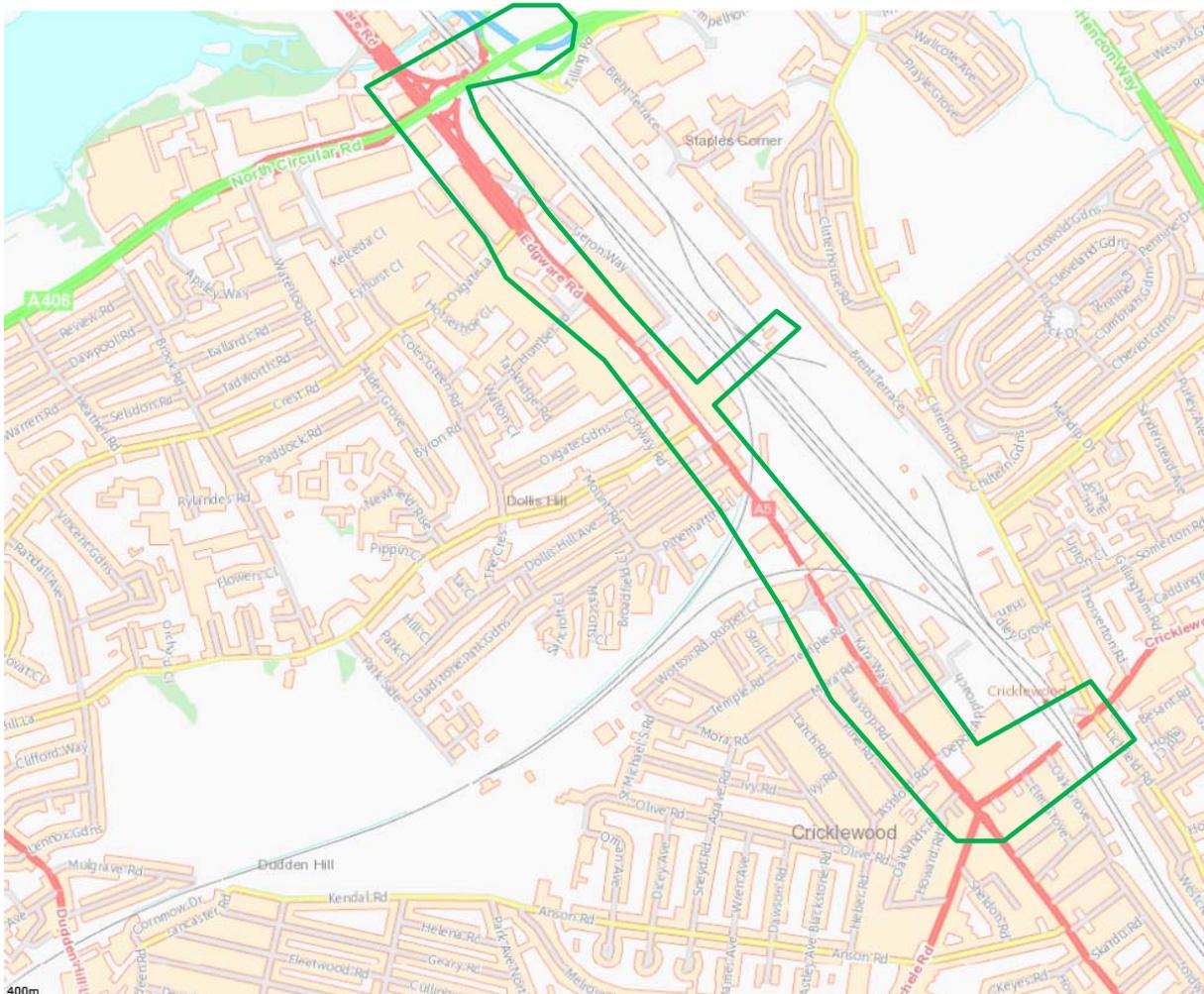
Pending the outcome of the Stage 1 analysis, local static traffic models will be produced for weekday AM and PM peak hours as specified in the Section 106 agreement. Where possible, data transfusion between the BXC DDM model and more detailed local modelling will be undertaken to ensure reliable data is taken forward to the detailed design of the highway improvements. This will entail iterations between models where traffic flows and signal timing data are exchanged to refine model outputs more precisely. The process is defined more fully in the BXC DDM scoping report.

Detailed traffic modelling for the junctions identified for mitigation within Brent and Camden, will follow the process set out below:

- Model audit: undertake a review of any junction models that the local authorities may have already developed and/or model developed in the previous BXC assessments. Identify models fit for updating and where new models need to be developed.
- Surveys: develop a survey specification to enable the updating and validation of the traffic models, commission surveys and undertake analysis. The survey data from the June 2013 surveys (which was designed to principally aid the development of the BXC DDM) will provide some overlap with the requirements for the LB Brent and LB Camden Area Studies. Any additional surveys will be identified as necessary and programmed for October 2013.
- Undertake base model calibration and validation in line with the methodology for the BXC DDM for the local authorities approval prior to testing of future year scenarios
- Discuss and agree with the local authorities the phase 1 (2021) and 'end-state' (2031) development proposals and how they are to be modelled
- Code 'end-state' development proposals for future year modelling and obtain local authority approval. Undertake intervention testing and agree any appropriate supplementary mitigation measures with the authorities.
- Produce scheme designs for any additional supplementary mitigation measures that are found to be necessary, including plans at an appropriate scale, and undertake a completely independent Stage 1 Road Safety Audit compliant with TfL best practice, including the Designer's.

## 4 A5 VISSIM Design Model

The proposed extent of the A5 VISSIM Design Model is shown in Figure 3. The VISSIM model will be developed for weekday AM and PM peak periods and will be used to supplement appropriate junction models (TRANSYT and LinSig models for signalised junctions, PICADY for priority junctions and ARCADY for roundabouts) in the study area.



**Figure 3 A5 VISSIM Design Model area**

The primary objectives of the A5 VISSIM Design Model are:

- Provide a tool to assess journey times along the A5 corridor
- Advise the operational impacts of the proposed infrastructure improvements
- Advise the detailed design of the infrastructure improvements along the A5 corridor

At the time of writing this scoping report it is proposed that the development of appropriate junction models and VISSIM models will follow the outline process set out below, however it has been agreed that the nature and level of detail in the VISSIM model will be monitored and agreed through the model development process to ensure that the model and associated validation is appropriate for the proposed use of the model:

- VISSIM model audit: undertake a review of TfL’s A406 VISSIM model (see Figure 4) to ascertain whether elements of the network coding can be extracted and used for the development of the A5 VISSIM Design Model.
- Junction model audit: undertake a review of the junction models used in the previous assessments. Identify models fit for updating and where new models need to be developed
- Surveys: develop a survey specification in accordance with the data requirements defined in TfL’s modelling guidelines (this is being undertaken in collaboration with the BXC DDM scoping, with surveys being carried out in June 2013. Further specific surveys may be undertaken as part of the VISSIM modelling work as necessary)
- Undertake base model calibration and validation (following TfL’s MAP for stages 2 and 3) and seek TfL and LB Barnet approval prior to testing of future year scenarios
- Discuss with the authorities the ‘end-state’ development proposals and how they are to be modelled (TfL MAP stage 4)
- Code phase 1 and ‘end-state’ development proposals for future year modelling (following TfL’s MAP for stage 5) and seek the authorities approval, making full use of TRANSYT’s signal optimisation processes to inform VISSIM



**Figure 4 The extents of TfL’s A406 Section 3 VISSIM network**

The suite of traffic models along the A5 will provide the following functions:

- Inform the Phase Transport Reports and the detailed design of junctions along this corridor.
- The VISSIM model will be available to test scenarios during key construction phases and assist in identifying and testing mitigation measures. For example, the VISSIM model will be used to assess the effectiveness of any traffic management measures such as linked signals and dynamically controlled bus priority measures proposed as part of the multi-modal assessment described in section 5.1. Any proposals for scenario testing will be documented in the A5 Corridor Study report as appropriate.

## 5 A5 Multi-Modal Assessment

This element of the study is comprised of a number of stages, and predominately draws together the findings from other parallel studies (see section 2.1) to advise the A5 related detailed designs as follows:

1. Pedestrian accessibility and routing
2. Cycling accessibility and routing
3. A review of bus priority, including a review of all bus stops within 400m of the redline boundary along the A5 corridor, accessibility, and the forecast impact on bus journey times
4. A review of parking, loading and waiting restrictions along the A5 corridor, including any proposed changes to the existing provision and parking controls
5. Streetscape improvements, including enhancements to the public realm in relation to all modes
6. Road safety and accident analysis
7. Integration of conclusions and recommendations from all previous sections, and providing a linkage to the indicative programme for delivery.

### 5.1 Bus priority

A review of current and proposed bus stop locations and bus priority measures will be undertaken within 400m of the red line boundary along the A5 corridor. The following stages have been identified:

- Attend a joint inspection meeting with TfL Buses and the local authorities to understand bus priority issues, initiatives, proposals planned and/or committed.
- Base year bus infrastructure review: create an inventory of bus infrastructure, to include bus stop locations, bus stop facilities, i.e. shelter, timetable information, countdown etc., current bus priority measures e.g. selective vehicle detections at traffic signals. There is likely to be overlap here with the PERS audit that is being undertaken for the area wide walking and cycling study. A coordinated approach will be adopted to avoid any duplication of effort.
- Base year congestion analysis – a) identify ‘pinch-points’ where buses are delayed by general traffic by on-site observations and, b) review dwell time data at key bus stops (to be agreed with TfL and local authorities) and boarding and alighting data (to be provided by TfL) to identify areas for possible enhancement,
- Future year bus measures: identify what measures are proposed from the original consent and ensure these measures are included in the future year modelling assessment. Make recommendations for additional measures if warranted, such as selective vehicle detection for buses.

### 5.2 Parking, loading and waiting restrictions

The review of loading and waiting restrictions will be undertaken in areas along the A5 corridor (to be agreed with the authorities). Key steps will include:

- Base year assessment: map out on-street parking areas, loading and waiting restrictions.
- Analyse parking and loading survey which will be focussed on 'hot-spots' along the A5 corridor. Surveys will include arrivals, departures and dwell times by vehicle type. This information will be used to develop the base year VISSIM model.
- Review development proposals and how they might impact on parking, loading and waiting restrictions. Identify locations where restrictions should be modified to facilitate traffic movement whilst balancing the requirements of residents, local businesses etc.

A review of parking (including controlled parking zones) is being undertaken separately in the Car Parking Management Strategy report (Condition 11), outlined further in section 5.3.

### 5.3 Pedestrian and Cycling

The Area Wide Walking and Cycling Study will include:

- PERS and CERS audit for the A5 corridor, including public realm considerations
- A joint inspection meeting with TfL and the LB Barnet
- A review of pedestrian and cycling accessibility along the A5 corridor
- Proposed improvements to improve pedestrian and cycling accessibility
- Review of the public realm with specific reference to pedestrian and cycling facilities

Appropriate areas from the above study will be incorporated into the A5 Corridor Report to provide an overview of the pedestrian and cycling facilities along the A5 corridor.

### 5.4 Road Safety

A review of road safety will be undertaken as part of the S73 Transport Assessment. The area pertinent to the A5 corridor will form part of the A5 Corridor Report as appropriate.

### 5.5 Programme

Appendix B of this scoping document provides the outline programme for the development of the A5 corridor studies.

With regards to the parallel studies which feed into the A5 multi-modal assessment, the current programme has each report due for final issue on the following dates:

- Area wide walking and cycling study – February 2014
- BXC Detailed Design Model – Spring 2014
- Phase Parking strategy – February/March 2014
- Servicing and delivery strategy – February 2014

Sufficient time will be programmed to enable a comprehensive integration of any conclusions and recommendations made from these studies. It should be noted as each work stream progresses recommendations will be evaluated as necessary rather than as each study is finalised.

## **Appendix A – Annex 7 Schedule 17 from the S106**

**A5 Corridor Study**

General Scope & Area of Study

The A5 Corridor Study will cover a core area of the A5 between A407 Cricklewood Lane and A406 Staples Corner including adjacent local roads within Barnet, Brent and Camden within an area anticipated to be 800 metres, or larger/smaller if considered necessary as part of the scoping, from the A5, the MML link, the Claremont Road corridor and the A407 Cricklewood Lane to include a study of road safety, cycle provision, pedestrian environment, bus priority, traffic control, freight and delivery, servicing and on-street parking strategy and management.

Table 1: Detailed Scope of A5 Corridor Study

<b>Corridor Element</b>	<b>Aim</b>	<b>Current Guidance and relevant studies (or substitute with update guidance)</b>	<b>Types of Measures (illustrative/ examples)</b>
Traffic Modelling – 2026 AM and PM peaks	(a) Traffic modelling to inform the Phase Transport Reports and the detailed design of the junctions along the A5 Corridor.  (b) Production of traffic forecasts that enable fuller understanding of impacts and testing of local traffic management measures and/or supplementary mitigation in LB Brent	TfL modelling guidance, existing modelling work undertaken for the TA	(a) Development of a Vissim micro-simulation model as described below.  (b) Refinement of TA strategic modelling work as described below, e.g. zonal disaggregation,,review of trip generation and distribution from key sites e.g, WHF.
Pedestrian Environmental Review / Pedestrian Routes	Create pedestrian network between the development and adjacent communities / key attractors	TRL's Pedestrian Environment Review System (PERS) as developed for TfL; TfL Streetscape Guidance	Links, footway design, pedestrian crossings, subways/bridges, routes/route choices, public spaces, interchanges, bus stops, signage and way finding

Pedestrian Accessibility	Make the above network fully accessible <sup>3</sup>	Panel advice/ other relevant advice from the community. TfL guidance on providing for disabled people; Design Manual for Roads and Bridges	Legibility, level changes, car parking location/ design, taxi location and design, design/location of crossings and bus stops, design of interchanges (including step free access)
Traffic Management - Parking, loading and waiting review	Improve movement capacity and smooth traffic flows	Relevant TfL or Borough Guidance	Waiting/loading restrictions along corridors and parking controls in adjacent roads
Cycle Routes / cycle Audit	Create cycle network between the development and adjacent communities / key attractors	London Cycling Action Plan; Cycle Route Implementation Study Process (CRISP) studies; London Cycle Design Standards; LCN+ guidance	Cycle routes/ cycle lanes, all public highway/ footbridge designed for cyclists, Advanced Stop Lines/ Toucan crossings

<b>Corridor Element</b>	<b>Aim</b>	<b>Current Guidance and relevant studies (or substitute with update guidance)</b>	<b>Types of Measures (illustrative/ examples)</b>
Traffic Management - Review of signals/ linked signals/traffic management	Improve movement capacity and smooth traffic flows	TfL modelling Guidelines; TfL signal design standards	Signal equipment, re-timing/ staging, layout changes (kerb-re-alignment, crossings, lining, signing), lighting, linked signals.
Review of bus priority including all bus stops within 400 metres of the redline boundary	Improve movement capacity and smooth traffic flows. Improve conditions for bus users	London Buses advice on bus stops and bus priority	Selective Vehicle Detection, Bus SCOOT (or similar signal control), review waiting/ loading, location of crossings, Bus stops, lighting.
Public realm <sup>4</sup>	Enhance the highway environment in the corridor	TfL Streetscape Guidance	Soft and hard landscaping, including trees; lighting, drainage and public realm
Road safety/ accident data review	Improve road safety as part of the traffic management proposals	TfL guidance on road safety schemes; Design Manual for Roads and Bridges	Relates to design of the above elements including minimising safety concerns during construction.

<sup>3</sup> The study will inform the detailed design at the junctions and the wider connectivity at the junctions which will form part of the mitigation funded by the DPs.

<sup>4</sup> The DPs will carry out the works identified in the Public Realm and Open Space Parameter Plan 003 and the associated landscaping to the new junctions. Any works identified beyond this will be funded if appropriate from the consolidated Transport fund, subject to a decision of the Transport Strategy Group.

## **Modelling for the A5 Corridor Study**

A Vissim model will be developed to inform the A5 Corridor Study. It is proposed that a Vissim micro-simulation model is formed based on an area element of the wider A5 Corridor Study around the A5 between the section of this road between A5/A406 North Circular Road and A5/A407 Cricklewood Lane junctions, also extending to include A407/Claremont Road and A5/MML Bridge to be agreed as part of the scoping. The extent of the area to be covered by the Vissim model will be agreed with the Authorities before the time when the design work on the A5 corridor is to be undertaken.

The aim will be to cordon out the A5 area from the strategic BXC model and then introduce the modelling of more localised junctions and movements into the analyses so that the impacts of these movements can also be assessed in the detailed junction assessments, and hence detailed designs.

This will also enable the operational impacts of adjacent developments on the corridor to be further assessed. The traffic demand would be taken from the BXC strategic SATURN model.

All major and minor junctions on this section of the A5 would be included in the simulation model. This would require full classified turning movement surveys to be undertaken at each of these junctions. The Vissim model will be able to assess the linking of traffic signals

The trip generation and distribution assumptions made for the ParcelForce site opposite Dollis Hill Lane will be reviewed for the appropriate form of landuse being proposed at the time the study is conducted.

The network will be taken from the SATURN model and enhanced with the introduction of local roads to get a suitable level of local detail. In this way the zonal detail would be increased so that local movements will be further represented. Matrix estimation will then be used to control the demand to the locally observed movement totals. The model would then require a local validation, which would need some further counts on adjacent links and/or junctions.

A journey time survey on the A5 would also be undertaken to further inform the calibration and validation processes.

Forecasting with the model will be done by forecasting the relative change in demand in the A5 corridor using the BXC SATURN model forecasts, including the use of the junction adjustments as included in the TA assessments. These would be applied in a relative fashion to the local model matrix, which would allow local forecasts to be run. After that the model could be used to test the various mitigation measures.

It is proposed that this work is undertaken for the AM and PM peak periods, for development scenarios to be agreed with LB Barnet and TfL, and in consultation with LBs of Brent and Camden.

### **Local Traffic Management Measures in Brent**

The existing strategic BXC transport model will be used, where necessary, with minor modifications, to further assess any local traffic management measures proposed in LB Brent. The existing BXC strategic transport model will be used to further test any wider area implications that might arise from future local traffic management measures that are proposed to be introduced in LB Brent to address any supplementary/unforeseen impacts from the BXC proposals. Any changes to the strategic model, would be minor and targeted to provide a better representation of the local zonal structure and network, whilst still retaining the forecast demand flows from the current matrices. In this manner, the fundamental traffic assumptions inherent within the TA will be retained.

Specifically the points would include:

- The adjustments that are currently applied in the junction assessment process as reported in the TA ensure that a robust assessment of the junctions has been undertaken. However, to refine the loading of trips from east and west of the A5 it is proposed to further disaggregate the zones, and reassess the zone centroid connections, for those zones that bisect the A5, namely zones 9201, 9203 and 9204.
- To also disaggregate zone 9209 which bisects the A406 North Circular Road at Neasden, and to review its zone centroid connections, to further reflect its loading onto the network east and west of the A406.
- To review and, where appropriate, modify the northern and southern junctions and links within the strategic model network definition at the A5 and Neasden Lane/Dudden Hill Lane for the Dollis Hill Area as defined by the boundary of the A406/ A5/ Cricklewood Freight Line and Neasden Lane/ Dudden Hill Lane.

The extent of the area to be covered by this modeling will be agreed with the Authorities at the appropriate time. Modelling will be undertaken for the AM and PM peak hours.

These enhancements could be introduced in a manner that would also inform the development of the Vissim model as described above.

As a consequence of these tests, additional/ supplementary mitigation measures identified as being required will be the subject of detailed design, costing and public consultation and programmed for implementation at the appropriate time according to development phasing and impact. The associated costs of detailed design, costing, public consultation and implementation will be at the Development Partners' expense