7. Traffic and Transport

7.1 Introduction

7.1.1 This Chapter, which has been prepared by AECOM, provides a statement of conformity with regard to potential traffic and transport impacts arising from the Scheme with Phase 1B (North) in place (and having regard also to the detailed design previously approved in relation to Phase 1A (North)). This statement of conformity is provided pursuant to the s73 ES and other EIA Documentation (as defined in **Chapter 4: Approach to the ES Further Information Report**), in light of the further detailed design information now available in respect of Phase 1B (North), and confirms whether the findings of the s73 ES and other EIA Documentation with respect to the likely significant effects, mitigation and residual impacts in relation to traffic and transport remain valid. Noise and air quality impacts associated with traffic and transport are addressed separately within **Chapter 9: Noise and Vibration** and **Chapter 14: Air Quality and Dust** respectively.

7.1.2 A review of relevant policy, legislation and guidance published since preparation of the s73 ES and other EIA Documentation has been carried out. A review of the detailed design for Phase 1B (North), as defined in **Chapter 2: Description of Phase 1B (North) RMA**, has then been undertaken, to identify elements of the Phase 1B (North) RMA of relevance to the traffic and transport assessment.

7.1.3 The approach to the statement of conformity is set out and a summary of relevant consultation is provided. A review of the baseline information presented in the s73 ES and other EIA Documentation has been undertaken and updates are presented where relevant. Commentary is then provided which examines whether any new or different potential significant traffic and transport impacts arising from the Development (comprising the Scheme with the detailed design for both Phase 1A (North) and Phase 1B (North) in place) from those identified in the s73 ES and other EIA Documentation are likely. Likewise, any new or different mitigation measures from those identified in the s73 ES and other EIA Documentation are presented where considered necessary and residual impacts following the application of mitigation are described.

7.1.4 This Chapter is supported by:

- **Appendix 7.1**: Reserved Matters Transport Report (RMTR): Phase 1B (North);
- **Appendix 7.2**: Pedestrian and Cycle Strategy: Phase 1BN;
- **Appendix 7.3**: P1BN Car Parking Standards and Strategy; and
- **Appendix 7.4**: Servicing and Delivery Strategy: P1BN.

7.2 Policy, Legislation and Guidance

7.2.1 As presented in the Phase Transport Report: Phase 1 (PTR:P1), as included in the s73 ES and other EIA Documentation, transport policy support for the Scheme has been predicated upon it delivering sustainable regeneration, which in transportation terms minimises car use and provides a comprehensive range of improvements to public transport and accessibility across the area. This policy objective was reflected throughout the approach contained in the Consolidated Transport Assessment (Consolidated TA) that accompanied the s73 ES (document reference BXC05), and which also comprised Appendix 7.2 of the Phase 1A (North) FIR, which included a detailed review of the policy context and framework within which the Scheme proposals sit.

7.2.2 Whilst there have been minor amendments to some of the policies or guidance set out in the s73 ES and other EIA Documentation, these are not significant changes and do not have a material effect on the approach to, or findings of, the assessment.

7.2.3 A review of material which has been published or amended since the s73 ES and other EIA Documentation was prepared is set out below for reference.

National Planning Practice Guidance, 2016

7.2.4 National Planning Practice Guidance was published in 2014, with the most recent updates published in November 2016, and comprises a web-based resource which provides further details relating to the policies set out within the National Planning Policy Framework (NPPF) published in 2012. This guidance provides advice on when transport assessments and transport statements are required and what they should contain.

The London Plan, 2016

7.2.5 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20 years. The London Plan states the Mayor's commitment to working with the London Boroughs, Transport for London (TfL), Government and stakeholders to achieve the strategic transport objectives and policies.

7.2.6 Minor alterations to the London Plan were published (i.e. adopted) in March 2016[i], in relation to housing standards and parking standards. These alterations were in response to new Government policy on technical housing standards and how they would be applied through planning policy and the Mayor's commitment to bring forward a review of residential parking standards in parts of outer London with low public transport accessibility.

Cycling Design Guidance

7.2.7 The following documents represent the latest adopted cycle parking standards which the Phase 1B (North) proposals are required to take due cognisance of:

- Further Alterations to the London Plan (March 2015)[ii];
- Minor Alterations to the London Plan (March 2016)[iii];
- DfT Draft Cycling Delivery Plan (October, 2014)[iv];
- DfT Cycling Delivery Plan consultation response from the Mayor for London (November, 2014)[v];
- Human Streets: The Mayor's Vision for Cycling, three years on (March 2016)[vi]; and
- Streets Toolkit, TfL design guidance documents including streetscape, cycle infrastructure and accessible bus stops (2015) (which incorporates the updated London Cycling Design Standards).

7.2.8 The latest adopted cycle parking standards contain a number of minor changes to those previously agreed for the Scheme through the s106 Agreement. The main changes are as follows:

- Slightly increased levels of minimum provision for land uses; and
- Clearer defined long stay cycle provision (controlled access, covered, mainly for staff), short stay (located in the public realm, freely accessed).

7.2.9 The changes outlined in this section do not have any material effect on the approach to, or findings of, the traffic and transport assessment.

7.3 Relevant Phase 1B (North) RMA Details

7.3.1 This section sets out the principal features of the Phase 1B (North) RMA of relevance to the assessment. Further details can be found in **Chapter 2: Description of Phase 1B (North) RMA**, and in the Reserved Matters Transport Report (RMTR), prepared to address the detailed transport issues relating specifically to Phase 1B (North) (**Appendix 7.1**).

7.3.2 The Phase 1B (North) RMTR provides additional detail on the proposed development quanta, transport infrastructure works and management strategies of the Development within the framework set out in the Consolidated TA submitted with the s73 Application. The RMTR presents Phase 1B (North) in its own right and in the context of its interface with Phase 1A (North) and the wider phases of the Scheme.

7.3.3 As such, the description of the proposed works and transport impacts remain consistent with the Scheme which is the subject of the 2014 Permission, however additional detail on the Phase 1B (North) elements of the Development are now available for further detailed consideration, as assessed within this Chapter and within the RMTR (**Appendix 7.1**).

Development Plots

7.3.4 Phase 1B (North) includes the following elements:

- New Town Centre;
- Residential Plot 113;
- Plot 109 (Hotel);
- Plot 101 (Energy Centre);
- Sturgess Park;
- Eastern and Western Brent Riverside Parks and Nature Park 4; and
- Transport Infrastructure T2 (Replacement Bus Station).

7.3.5 Further details on the development plots, including access and egress to and from each development plot, car parking provision, pedestrian and cycle access are provided within the RMTR for Phase 1B (North) (**Appendix 7.1**).

Pedestrians and Cycles

7.3.6 The principles for the provision of pedestrian and cycling facilities set out in the s73 ES remain applicable to the Phase 1B (North) RMA. A Phase 1B (North) Pedestrian and Cycle Strategy (**Appendix 7.2**) has been developed to support the Phase 1B (North) RMTR. The strategy sets out the details of the pedestrian and cycle links and facilities within Phase 1B (North) in accordance with the 2014 Permission.

7.3.7 Phase 1B (North) includes a comprehensive walking and cycling network (see **Appendix 7.2**) which will ensure that connectivity is maintained with the surrounding pedestrian and cycle networks.

Car Parking

7.3.8 Full details of the parking proposals are contained within the Car Parking Standards and Strategy Report (**Appendix 7.3**). The Phase 1B (North) proposals include car parking for residential plot 113, and the new Town Centre.

Servicing and Delivery

7.3.9 A Servicing and Delivery Strategy (SDS), with the overarching aim to reduce the impact of delivery and servicing activity generated by the Development during its operation, has been prepared for Phase 1B (North) and has been submitted for approval. Details on the servicing and delivery aspects of Phase 1B (North) are contained within the SDS (**Appendix 7.4**) which has been produced in accordance with Condition 1.22 attached to the 2014 Permission, and with the agreed Framework Servicing and Delivery Strategy (FSDS) for the Scheme.

Travel Planning

7.3.10 The Framework Travel Plan (FTP) and Construction Worker Travel Plan (CWTP) as set out within the Consolidated TA (as part of the s73 ES and other EIA Documentation) remain valid for Phase 1B (North) proposals. The overall objective of these Travel Plan frameworks is to reduce the impact of daily travel needs associated with the Scheme on the transport network and on the environment. The content and mechanisms for delivering travel behaviour changes and the agreed travel outcomes through a hierarchy of travel planning has been refined in discussion with London Borough of Barnet (LBB) and Transport for London (TfL) and details will be set out in Individual Travel Plans (ITPs) for specific development plots.

Integrated Transport Strategy

7.3.11 The multi-modal Integrated Transport Strategy (ITS) as per the 2014 Permission remains valid for the Phase 1B (North) proposals. The ITS represents a comprehensive plan for delivering the overarching transport vision for the whole Brent Cross Development area, and Phase 1B (North) has been designed within the parameters and principles set out within the approved ITS.

Roads and Junctions

7.3.12 The majority of the infrastructure improvements associated with the Scheme will be delivered during Phase 1 so that they provide additional capacity and new routes early on in the construction period. The main infrastructure elements will be delivered during Phase 1A (North), including improvements to major junctions and the delivery of bridges such as Bridge Structure B7 (Living Bridge). By delivering these improvements early, the highway, pedestrian and cycle networks will be prepared for the proposed Development due to come forward during Phase 1, as well as subsequent phases.

7.3.13 The Phase 1B (North) highway proposals therefore represent the interface between the Phase 1B (North) development plots and their accesses and the Phase 1A (North) highway network and / or the existing highway network. Further details on the roads and junctions, including access and egress to and from each development plot within Phase 1B (North), are provided within the RMTR for Phase 1B (North) (**Appendix 7.1**).

Other Works and User Types

7.3.14 The Phase 1B (North) proposals include new and improved taxi and coach facilities. Further details on these aspects are provided within the RMTR for Phase 1B (North) (**Appendix 7.1**).

Retail Floorspace Uplift

7.3.15 As outlined in **Chapter 2**, ongoing detailed design works have resulted in some amendments to the design and layout of the Brent Cross East (BXE) Development Zone, in particular BXSC. Detailed design works have resulted in a proposed increase in the Phase 1 Retail and Related Uses (Class A1-A5) floorspace, which exceeds the maximum permitted floorspace for BXE (of 78,133m^2) granted under the 2014 Permission. This increase in floorspace, which equates to 4,192m^2, is to be the subject of a s96A application submitted separately to the RMA. As the revised floorspace figure of 82,325m^2 for Retail and Related Uses forms the basis for the Phase 1B (North) development quantum, the implications of this additional retail floorspace (Class A1-A5) are assessed in this Chapter.

7.3.16 The proposed increase in retail floorspace will add value to the consented shopping provision within BXSC by increasing the potential delivered by the consented Scheme. This increased provision will act to increase the dwell time of shoppers at the centre rather than attracting additional patrons. Furthermore, the increased floorspace will enable the centre to offer additional facilities to enhance the evening economy of BXSC and the surrounding area. From a transport perspective, the s96a Transport Statement produced in April 2017 to accompany the s96A application provides sound qualitative reasoning that the uplift in floorspace will not generate a significant amount of additional trips and it is considered that rather it will result in increased dwell times of the existing trips to the shopping centre.

7.3.17 This interpretation is supported by the fact that there will be no increase in the number of car parking spaces at the shopping centre to accommodate any potential additional parking demand. A key objective of the Development car parking management strategy is restraint in parking provision at BXSC, with parking spaces being shared between proposed retail and leisure uses as peak hour demand for these land uses will occur at different times of the day.

7.3.18 Notwithstanding the above, it was considered beneficial to provide confidence in the justification for this nominal impact in terms of traffic movements. Initially a sensitivity test was undertaken in March 2017 using the Transport Matrix (TM) tool as provided in the s106 Agreement to provide the appropriate level of comfort to the highway authorities without the need for complex strategic modelling testing. At LBB's request a further sensitivity test was subsequently undertaken in April 2017 using more detailed traffic modelling (the Detailed Design Model - DDM). Further information is provided in the Assessment Methodology section below.

7.4 Assessment Methodology

Baseline Data

7.4.1 Following preparation of the Consolidated TA for the Scheme, further baseline data was obtained in 2013 and further details were provided in the Detailed Design Model (DDM) Traffic Survey Report which formed Appendix 7.3 of the Phase 1A (North) FIR.

7.4.2 The baseline data presented in the Consolidated TA and DDM Traffic Survey Report includes the following existing data sources:

- TfL Count Sites;
- Traffic Master Data; and
- West Hendon Data.

7.4.3 In addition to the existing data sources a series of on-site data collections were undertaken between 17th June and 8th July 2013, including:

- Automatic Traffic Counts;
- Manual Classified Counts;
- Journey Time Surveys;
- Automatic Number Plate Recognition; and
- Car Parking Surveys.

7.4.4 This data remains the most recently collected with no further data requirements (as confirmed during scoping with LBB) necessary to support the Phase 1B (North) assessment. However, the Phase 1B (North) RMTR provides a comprehensive review of the existing transport conditions within the agreed study area. The overall accessibility of the Site was assessed in detail with respect to public transport, pedestrian, cycle and vehicular access and a summary provided for completeness in the baseline conditions section of this Chapter.

Construction Impacts

7.4.5 The Construction Impact Assessment Addendum (BXC21) that accompanied the s73 ES identified the traffic impacts during construction of the Development on the basis of worst case flows. As outlined in **Chapter 2**, elements of the CIA Addendum have now been updated to take into account changes to the construction programme for Phase 1 (North) (**Appendix 2.1)**.

7.4.6 **Chapter 7: Traffic and Transport** of the s73 ES, confirmed by equivalent sections in the subsequent other EIA Documentation, identified the impacts, as assessed in the Consolidated TA, of cumulative traffic (including operational and construction traffic). **Chapter 20: Interim Years Assessment** also provided a summary of the assessment of interim years as presented in the Consolidated TA. The assumptions presented in the CIA Addendum and s73 ES have been revisited by AECOM and the project construction consultants, now that the detailed design of Phase 1B (North) is known, to confirm whether the assessment remains valid or whether further information results in changes to the previous assumptions. The changes, as outlined in **Appendix 2.1**, have been taken into account for the purposes of this assessment.

Operation Impacts

Traffic and Transport Modelling for the Scheme

7.4.7 For the s.73 Application, the modelling reported in the Consolidated TA (BXC05) was based on a 2005 validation, using a bespoke SATURN (Simulation and Assignment of Traffic to Urban Road Networks) model derived from Highways England's traffic flow model for London known as 'NAOMI' (M25 Corridor study area) with impacts on public transport modelled based on TfL's London-wide public transport model known as 'Railplan'. The resultant models are collectively referred to as the 'BXC-Traffic Model' ('BXC-TM').

7.4.8 Following approval of the s73 Application and in discussion with LBB and TfL, further highway modelling has been ongoing in the interim and both for the purposes of detailed design checks and to inform the Technical Approvals process for the Highways Authorities' functions. The Brent Cross Cricklewood Detailed Design Model ('BXC-DDM', which is an area wide strategic model encompassing both public transport and highway models) was therefore produced to enable the extraction of traffic forecasts to inform the detailed highways design layout for the Development, in conjunction with local VISSIM (multi-modal traffic flow simulation) modelling and detailed highway

junction models. Further information regarding the DDM is provided in Chapter 7 of the Phase 1A (North) FIR.

7.4.9 As outlined previously, the majority of the infrastructure improvements associated with the Scheme will be delivered during Phase 1 so that they provide additional capacity and new routes early on.

7.4.10 The Phase 1B (North) proposals are enabled through the provision of the Phase 1A (North) infrastructure improvements and therefore the potential traffic and transport impacts have been assessed as part of the Phase 1A (North) FIR where the vast majority of the infrastructure is brought forward. Therefore, the methodology with regards to the traffic and transport modelling as presented in the existing EIA Documentation, specifically the Phase 1A (North) FIR, remains valid for the purposes of Phase 1B (North).

Phase 1A (North) Critical Infrastructure Re-phasing and Associated Modelling

7.4.11 An application was submitted in November 2016 to re-phase six critical infrastructure items (comprising four items of highway infrastructure and two open spaces) which previously formed part of Phase 1A (North) to the Phase 1B (South) works package. The four highway links were: Claremont Avenue (up to the junction with Tempelhof Link Road / Tiling Road); Claremont Road Junction North; High Street South (East Works); and Orchard Lane. In addition to the re-phasing of these four links, the application included an alternative design for Bridge Structure B1 (Tempelhof Bridge) which has been redesigned as part on the ongoing engagement with the highways authorities. The redesigned bridge accommodates two northbound lanes (one of which is a dedicated bus lane) and one southbound lane, with segregated pedestrian and cycle facilities provided on the western side of the bridge.

7.4.12 To support this application, modelling analysis was undertaken at both a strategic and tactical level and reported on in the Phase 1A (North) RMTR (November 2016). Strategic modelling involved using the approved DDM to identify how traffic flows and routes change between the re-phased and consented scheme. The tactical modelling analysis included an assessment of junction performance at two junctions that are being modified as part of the re-phasing, namely, Tiling Road / Tempelhof Link Road and Claremont Road / Tiling Road. The effects of the re-phasing of these four highway links and associated junction modelling works were assessed and reported in the Phase 1A (North) Re-phasing Works and Tempelhof Bridge Amendments ES Addendum, November 2016, which forms part of the EIA Documentation. LBB resolved to grant approval to the re-phasing in February 2017.

7.4.13 To satisfy TfL's technical approval process, a methodology has been agreed with TfL that defines the transfer of data for a single hour from the DDM into VISSIM and also synthesises demand for adjacent hours, as the VISSIM model represents a three hour peak period. In light of the recent resolution to grant permission for the re-phasing described above, this process is being updated and the VISSIM model modified to represent the transport infrastructure associated with the re-phasing. AECOM are currently working collaboratively with the technical approval authorities to achieve modelling approval, which will lead to 'TMAN' (Traffic Management Act Notification) approval in the summer of 2017.

Retail Floorspace Uplift

7.4.14 As explained in the preceding section, the Phase 1B (North) RMA includes additional floorspace for Retail and Related Uses (Class A1 to A5) in excess of the maximum permitted floorspace for BXE originally granted under the 2014 Permission. In the first instance, a sensitivity test was

undertaken using the Transport Matrix (TM) tool as provided in the s106 Agreement; this was supported by further sensitivity testing using the 'Re-Phased' BXC-DDM model.

7.4.15 The TM process was utilised to run a sensitivity test in order to assess the impacts of the proposed amendments in floorspace against the development quanta and associated trip generations already consented. The process sought to determine whether any additional trips are significant, or whether they fall within the acceptable limits based on the allowable variance levels set out within the TM.

7.4.16 A further sensitivity test was then undertaken using the Re-Phased BXC-DDM model. Following written agreement from LBB on 24 March 2017, the proposed increase in retail floorspace has been applied to trips associated with the shopping centre within the BXC-DDM model by way of a percentage increase (equating to a 2.8% uplift in trips). The model has then been run, and the sensitivity test model outputs have been compared against the approved model outputs in terms of both flows and delays. This assessment has been undertaken for both the proposed road links in the model area, and also for the Gateway Junctions.

Public Transport Modelling and Impacts

7.4.17 The Public Transport modelling included within the BXC-DDM was based on a revised version of TfL's Railplan, with demand coming from their London Transportation Studies (LTS) model. This together with the above traffic modelling formed the elements of the BXC-DDM.

7.4.18 The public transport modelling covers the network area, and therefore the Development as a whole. The modelling does not reflect specific Sub-Phases of the Development. Therefore, the methodology as presented for the s73 ES and other EIA Documentation remains valid at this stage.

Significance Criteria

7.4.19 The identification of any likely significant effects involves the exercise of judgement as to the significance of effects based on the quantitative data available. Therefore, the quantitative data has been considered and professional judgement applied to determine whether the impacts identified in the s73 ES (supported by the Consolidated TA) and other EIA Documentation remain valid in terms of the likely significant effects and any necessary mitigation, and / or where new information has been considered necessary. This approach to determining significance remains unchanged from that adopted in the s73 ES and other EIA Documentation.

Limitations and Constraints

7.4.20 As outlined above, the BXC-DDM modelling works are currently ongoing to inform the detailed design for technical highways approval. The Highways Forecasting Report, as provided as Appendix 7.4 to the Phase 1A (North) FIR, sets out the results of the future year model scenarios as reported by the BXC-DDM, and discusses the results in terms of the proposed highway design, concluding that the proposed infrastructure accommodates the additional traffic generated by the Development.

7.5 Consultation

7.5.1 The transport modelling assessment and methodologies have been developed through extensive consultation with both LBB and TfL over recent months. These ongoing discussions with LBB and TfL informed the development of the BXC-DDM, and the modelling assumptions and forecasting details used to assess the effects of the Phase 1A (North) Infrastructure Re-Phasing. The

approach to modelling the proposed 4,192m^2 floorspace uplift in retail and related uses has also been discussed and was agreed by LBB on 24 March 2017.

7.5.2 TfL and LBB provided comments on the EIA Scoping Report which forms part of LBB's Scoping Opinion (**Appendix 4.2**). The key comments raised and the responses to each are presented in **Table 4.1** in **Chapter 4: Approach to the Revised ES Further Information Report**.

7.6 Baseline Conditions

7.6.1 An extensive baseline description of traffic and transport conditions was included in Volume 1 of the Consolidated TA (Main Report) as presented in the s.73 ES.

7.6.2 Since the preparation of the Consolidated TA, further baseline data was obtained to inform the Phase 1A (North) detailed design and further studies, as described under 'Assessment Methodology'. The updated baseline information is presented in the BXC-DDM Traffic Survey Report which comprised Appendix 7.3 to the Phase 1A (North) FIR.

7.6.3 In addition, Chapter 2 of the Phase 1B (North) RMTR (**Appendix 7.1**) provides a comprehensive review of the existing transport conditions within the agreed study area. This baseline is summarised below to provide context on the existing network and transport provision against the Development proposals contained within Phase 1B (North).

Public Transport Accessibility Level (PTAL)

7.6.4 PTALs are a detailed and accurate measure of the accessibility to the public transport network of a locational point, which takes into account the walk access time and the service availability. The method is a way of measuring the density of the public transport network at a particular point. The PTAL levels are divided into bands from 1 (Very Poor) to 6b (Excellent). The PTAL levels of the Site are shown on Figure 1 of **Appendix 7.1** illustrating the most up to date (2012 is the most recent data available for LBB) PTAL heat map derived by TfL for the whole Borough. This map utilises London Underground Limited (LUL) / Docklands Light Railway (DLR), National Rail, London Overground and London Buses data from 2015 across most of London, however data for LBB is only available for 2012. The areas of highest existing accessibility are clustered around Brent Cross Bus Station, one of London's largest bus stations, Brent Cross LUL Station and Cricklewood Rail Station. North of the A406 the residential areas to the northwest and northeast of the BXSC have particularly low PTAL scores.

Pedestrian and Cyclist Amenities

7.6.5 As reported in the consented Consolidated TA (BXC05) the existing cycle and pedestrian provisions in the area are very limited with access restricted by the Site location and the significant severance resulting from the A406, A5, A41, M1 and the Midland Mainline (MML) railway transport corridors.

7.6.6 Details of the existing pedestrian and cycle network in and around the Site are provided in **Appendix 7.1**.

7.6.7 The Capital Ring strategic walking network sections 10 and 11 pass 100m north of the BXSC along Park Road / Beaufort Gardens. They provide a good walking link between Brent Reservoir and Hendon Park as well as providing a good pedestrian access route between both Hendon rail station and Hendon Central LUL station.

7.6.8 Pedestrian provision within the Site is primarily via footways adjacent to the existing access roads. There are footpath links through the open space of the Clitterhouse Playing Fields to the north of BXSC, footpath links with Brent Terrace, and footpath links between Brent Cross LUL station and BXSC. There is also a footpath along the whole length of the western side of the residential properties in Brent Terrace. In general, the pedestrian environment is poor.

7.6.9 The pedestrian constraints identified around the area are:

- The A406 and the River Brent form a barrier to pedestrian movements. The only points at which pedestrians can access the area are:
  - Narrow footways across the Tempelhof Bridge linking to BXSC;
  - Long pedestrian footbridges over the M1/A406 junction including across the A406 at Staples Corner;
  - A footbridge over the A406 east of the A41/A406 junction;
  - A pedestrian footpath route below the A41 flyover and mid-level roundabout at the A41/A406 junction;
  - To the east, the A41 Hendon Way segregates the site from Temple Fortune, Golders Green and Childs Hill with pedestrian access limited to two subways, one located north of Marble Drive and the other to the south of Clitterhouse Playing Fields;
  - To the west, pedestrian access is severed by the A5 Edgware Road and the MML railway. Pedestrian access is only possible to the south of the BXC site along Cricklewood Lane and to the north via the complex route via bridges over the Staples Corner junction; and
  - To the south, access is relatively free with pedestrians able to use Claremont Road and Brent Terrace. Access is also possible across Clitterhouse Playing Fields to and from Purbeck Drive.

7.6.10 Cycle facilities are currently poor with little connectivity across the Site. Discussions with TfL throughout the development of the Scheme has indicated that there is a current lack of facilities including controlled crossing points and anti-pedestrian paving for cyclists on Prince Charles Drive, Tempelhof Bridge, Tiling Road, Claremont Road and Shirehall Lane.

7.6.11 There are several designated cycle routes and combined cycle / pedestrian routes in the area, some of which form part of the TfL cycle network, but they are difficult to identify on the ground. In general, provision between the Site and the adjacent residential areas is constrained by the existing major transport corridors and the River Brent, which together form a barrier around much of the Site.

7.6.12 TfL have proposed to extend the Cycle Superhighways scheme towards the regeneration area with the proposed CS11 route. The proposed Cycle Superhighway starts in Central London and will provide improved connections to and from the centre of London for cyclists along the A41.

Highway Network

7.6.13 The following local roads are of importance to Phase 1B (North) as they represent the local road network in the vicinity of the proposals:

- Prince Charles Drive;
- Tilling Road;
- Tempelhof Avenue;
- Edgware Road (A5); and
- Brentfield Gardens.

7.6.14 A description of these roads is provided in Section 3.1 of the RMTR (**Appendix 7.1**).

Baseline Traffic Flows

7.6.15 The Consolidated TA Main Report (BXC05) sets out the baseline traffic information upon which the Scheme's impacts have been assessed. In order to support the continued development of the detailed design, a series of traffic surveys were undertaken in June and July 2013 with additional surveys in October and November 2013.

7.6.16 The results of the 2013 traffic surveys are presented in the BXC-DDM Traffic Survey Report contained as Appendix 7.3 to the Phase 1A (North) FIR. This data was used to inform the BXC DDM Transport Modelling process and inform the detailed design of the proposed transport improvements that are to be delivered under the new planning consent and also to identify and assess any significant impacts on local roads and identify any mitigation that may be required.

7.6.17 This analysis and assessment demonstrates that the required infrastructure is delivered at the appropriate time, ahead of demand, as controlled by the triggers (defined in BXC05). AECOM have since produced the Detailed Design Model (DDM) and VISSIM model described previously to support the technical approval process in accordance with a scope agreed with LBB, Highways England and TfL.

7.6.18 The following documents were produced and submitted to LBB previously as part of the EIA Documentation for the Scheme and remain appropriate for baseline purposes:

- BXC-DDM Traffic Survey Report, February 2014 (Appendix 7.3 to Phase 1A (North) FIR); and
- Highway Forecasting Report, May 2015 (Appendix 7.4 to Phase 1A (North) FIR.

7.6.19 It is therefore considered that the Consolidated TA (BXC05) and its use of baseline data remains an effective benchmark against which to assess the detailed proposals contained within this Phase 1B (North) ES FIR and the Phase 1B (North) RMTR.

Existing Road Personal Injury Collisions and Safety

7.6.20 A review of the most recent Personal Injury Accident (PIA) data (1 June 2013 to 31 May 2016) is contained within Chapter 3.3 of the Phase 1B (North) RMTR (**Appendix 7.1**).

7.6.21 A review of the data shows that there are no accident patterns in the vicinity of the Phase 1B (North) development area, or the key junctions within the vicinity of the Site that could be exacerbated by the Development that have not already been considered during the detailed design process for the Phase 1A (North) highway network.

Buses and Coaches

7.6.22 A range of bus services, operated on behalf of TfL London Buses, pass through or close to the Site. The majority of the bus services start from or pass through the existing bus station at BXSC. This bus station serves BXSC and also operates as a local bus hub. Other bus hubs in the vicinity are located at North Finchley and Golders Green.

7.6.23 Bus stops are located approximately every 350m along each road in the area which carries bus routes. The bus station adjacent to the shopping centre has four stops for bus services and space for approximately 15 buses to stand away from the stops. The area is well served by the bus route network, with frequent services to a variety of destinations in London. The bus route network in the area is centred on Brent Cross Bus Station, which is the terminus for a number of

services. A plan showing the existing bus routes in and around the Site is contained in Appendix F of **Appendix 7.1**.

7.6.24 Bus lanes are provided at a number of locations in the vicinity of the Site. A significant proportion (approximately 30% by length) of the A5 Cricklewood Broadway and Edgware Road between the A406 and A407 are specified as bus lanes. This reduces single and dual carriageway two-lane operation to a single lane of general traffic over the relevant sections. There are no bus lanes on the immediately adjacent sections of the A41 Hendon Way or A406 North Circular. Detailed bus data showing the number of passengers boarding and alighting key services and including Bus Origin and Destination Survey (BODS) data and key point data collected by TfL London buses is contained within Section 3 of the PTR:P1. It has been confirmed by TfL in January 2017 that this remains the most recent BODS data for these services.

7.6.25 Coach parking for one vehicle at the northern end of the Site is provided at BXSC, for shopping trips to the centre by organised coach parties.

7.6.26 There are no express or limited-stop coaches that stop in Brent Cross Bus Station. However, there are a number of Greenline express coach services (as well as other services) that stop on the A406 North Circular Road at stops J1 (on the southwest bound A406 on-slip from the Mid-Level Roundabout) and J2 (on the northeast bound A406 Off-slip approaching the Mid-Level Roundabout) which provide 24 hour connections to a number of destinations including airports. Details of these services are provided within Section 3 of the PTR:P1.

Rail

7.6.27 The National Rail lines in the vicinity of the Site are shown in Figure 2.7 in Volume 1 of the Consolidated TA (BXC05) (**Appendix 7.2**) and remain unchanged. The MML railway corridor passes through the western edge of the Site and comprises three pairs of railway lines:

- The slow lines (on the east side);
- The fast lines (in the centre); and
- The Hendon freight lines (on the west side).

7.6.28 The Site is served at the southern end by the existing Cricklewood Railway Station. Hendon station is around 3km to the north outside of the Site boundary. The existing station at Cricklewood has some 1.5m passengers per annum (Office of Rail Regulation (ORR) data for 2014/15) an increase from the 1.07m passengers per annum (ORR data for 2011/12) quoted in the PTR:P1 and is in line with the 1.54m passengers per annum quoted from the 2006/07 ORR data in BXC05. Passenger movements at both stations have continued to rise since 2010/11.

7.6.29 The data shows a 10.1% reduction in annual passenger movements at Hendon Station and 29.2% reduction at Cricklewood Station in 2015/16. However, in the production of the 2015/16 statistics the ORR 'Estimates of Station Usage 2015-16 Methodological Report' (Jan 17) states that in the production of the 2015/16 statistics an update has been made using the Oyster Clicks Model data to improve the allocation of demand relating to London Travelcards. The report states that as a result of these changes there are a large number of significant changes to estimated station usage at stations within the London Travelcard Area and urges caution in comparing statistics from different years. To aid comparisons the data provides an additional "estimated absolute change in usage due to 2015/16 London Travelcard Methodology" field within the data set.

7.6.30 Adjusting by this value shows that in real terms both Hendon and Cricklewood Stations annual passenger movements have remained relatively unchanged between 2014/15 and 2015/16 with reductions in passenger numbers at both stations of less than 1%.

7.6.31 'Thameslink' services are currently operated by Govia Thameslink Railway (GTR) serving Cricklewood Station and Hendon Station and provide four stopping 4-car trains per hour on the slow lines in each direction for the majority of the weekday from Luton / St Albans to the north through Kings Cross / St Pancras and beyond to the south. Other Thameslink services pass non-stop, serving stations as far as Bedford to the north and Gatwick and Brighton to the south. During the peak periods up to 15 Thameslink trains per hour pass each way on the slow and fast lines. A plan showing the existing railway network is contained in Appendix G of **Appendix 7.1**.

London Underground

7.6.32 The Edgware branch of the Northern line passes to the east of the Site and the Jubilee Line passes to the southwest through Willesden Green and West Hampstead. The nearest LUL station to the Site is Brent Cross Underground Station, which is located to the southeast of the A406/A41 junction. The station is isolated from the development area by the A41, and the pedestrian links through the A406/A41 junction to BXSC and the A41 underpass to the eastern lands of the Site are tortuous and not especially user friendly. The LUL station to the north of Brent Cross is Hendon Central, which is approximately 750m from the BXSC. The route to the shopping centre from Hendon Central is more legible, experiences less severance and is considered to feel safer than the route from Brent Cross station. Details of passenger numbers for the London Underground at Hendon Central and Brent Cross stations are provided in **Appendix 7.1**.

Taxis

7.6.33 There are currently two informal and one formal taxi pick-up / drop-off points in the vicinity of BXSC. The formal Hackney Carriage rank is located immediately outside and along the southern boundary of the bus station, on Prince Charles Drive. It is a one-way system accessed and egressed via Prince Charles Drive eastbound carriageway. The rank can accommodate up to nine waiting taxis. The taxi rank is currently located in an area affording poor visibility and accessibility to passengers from the shopping centre.

7.6.34 Existing taxi facilities remain as per those described in the PTR:P1 and therefore this baseline data is considered to remain valid.

7.7 Assessment and Mitigation

Construction

Potential Impacts

7.7.1 The Construction Impact Assessment Addendum (CIA) (BXC 21) formed the basis of the assessment of construction traffic impacts in the s73 ES. Section 18 of the Consolidated TA (BXC05) also provided an assessment of the construction impacts.

7.7.2 The Indicative Construction Programme (ICP) set out in the s73 Application has now been updated to reflect the changes to the date of commencement of works and changes in construction sequencing within the Phase 1 works programme, as set out in **Chapter 2**.

7.7.3 The RMTR (**Appendix 7.1**) provides detail on the transport impacts of construction for this sub-phase. Further commentary with regard to the potential construction traffic impacts related to Phase 1B (North) is provided below.

Construction Consolidation Centre

7.7.4 The CIA Addendum Technical Note (**Appendix 2.1**) identifies the use of a Construction Consolidation Centre (CCC) or Logistics Centre as a mitigation measure to reduce the number of vehicles using the already saturated infrastructure adjacent to the Site. A CCC is a distribution facility through which material deliveries are channeled to construction sites. Specialist material handling, storage and consolidated delivery combine to improve the overall resource efficiency of a construction project.

7.7.5 Condition 1.9 of the 2014 Permission requires the submission of a CCC Feasibility Study for each phase or sub phase of the Development and this Study was approved by LBB. The construction traffic impacts of the CCC cannot be considered in detail within this Phase 1B (North) FIR as the final option has not yet been confirmed. In terms of construction traffic however, the CIA Addendum Technical Note (**Appendix 2.1**) presents a worst-case scenario as it does not assume that a CCC is in place. It is noted that, according to the Waste and Resources Action Programme's (WRAP) website (www.wrap.org.uk), while data varies from project to project, use of a CCC can reduce freight traffic to construction sites by up to 70%.

Planning Condition Requirements

7.7.6 Pre-commencement Planning Condition 12.1 attached to the 2014 Permission requires that a Construction Transport Management Plan (CTMP) must be completed and approved by the local authority (LBB) prior to construction of the first phase of Development. This will be developed as construction details are finalised by the contractors and once construction transport routes, the CCC location(s) and volumes of import and export materials from the Site are agreed. This condition will therefore manage the construction transport impacts to limit potential impacts.

Effects associated with Road Closures

7.7.7 Section 5.2 of the CIA Addendum describes the indicative road closures and lane restrictions schedule for the Development as a whole that are likely to be required in order to allow for the delivery of construction works. These have not changed as a result of the updates to the CIA and ICP in relation to the Phase 1B (North) works. Further details of the road closures and diversions, either permanent or temporary, will be developed along with detailed traffic management plans in line with the programme to discharge pre-commencement conditions for Phase 1B (North).

7.7.8 In considering the scale and temporary nature of the road closures associated with Phase 1B (North) and given that in most circumstances this will be of a very short duration at times of lowest traffic volumes (i.e. overnight) to ensure minimal disturbance, it is considered that the impacts on road users will be temporary, **minor adverse** to **negligible**. This is consistent with those effects reported in the s73 ES and other EIA Documentation.

Construction Access Routes

7.7.9 Details of construction access will be subject to approval under relevant planning conditions relating to the CTMP. The CIA Addendum proposed mitigation measures that "*will avoid any unnecessary reduction in the network capacity so general traffic is not significantly affected"* and identified the forecast period of maximum traffic impact due to the construction traffic flows.

7.7.10 **Figure 7.1** illustrates the likely Phase 1 (North) access routes during construction as shown within Section 3.0 of the CIA Addendum. The CIA Addendum Technical Note (**Appendix 2.1**) states that the proposed routes remain valid with respect to Phase 1B (North) and provides detail as to why they do.

7.7.11 The construction routes previously identified for the s73 ES and other EIA Documentation (specifically within the Phase 1A (North) FIR) therefore remain applicable for this assessment. The routing of construction-related trips to and from the Site would be controlled by the CTMP to appropriate routes only and these will be agreed with the authorities.

Construction Effects on Pedestrians and Cycles

7.7.12 Maintaining connectivity of the Site throughout construction works for pedestrians, cyclists and buses has been a primary consideration in developing the programme and delivery of the construction works.

7.7.13 During the construction of Phase 1A (North) some of the key pedestrian, cyclist and vehicular bridges will be replaced within the Development and the programming and sequencing of the works will ensure that connectivity and suitable routes for these users are maintained during the ongoing construction works for the Scheme.

7.7.14 Where any construction works restrict pedestrian or cyclist route access through closed sections of local roads, alternative route arrangements will be provided to allow a path around the site of works providing a segregated area to protect pedestrians and cyclists from equipment movement or operations when passing. Details of pedestrian routings during construction will form part of the CTMP.

7.7.15 As indicated in the CIA Addendum, communications programmes are to be used to work with TfL and local resident groups to develop solutions as and when needed for any potential issues caused by the construction works throughout the Site. This would include steering groups for each of the primary user groups. These measures remain unchanged as confirmed by the CIA Addendum Technical Note (**Appendix 2.1**). Pre-RMA Planning Condition 1.18 (the establishment of a Consultative Access Forum) and Condition 1.26 (preparation of an Inclusive Access Strategy and Wayfinding Strategy) attached to the 2014 Permission have now been discharged.

7.7.16 Taking into account the measures which have already been committed to by the Applicant, including the CMTP, CEMP and also proposals for a CCC, the impacts of construction effects on pedestrians and cyclists are considered to be at worst, **minor adverse**. It is important to note that construction of Phase 1B (North) would not proceed independently and work would also be progressed on other Phases of the Development in parallel, i.e. Phase 1A (North).

7.7.17 The CIA Addendum Technical Note (**Appendix 2.1**) states that the principles set out above with regards to pedestrian and cycle routes remain applicable, and that should any route be unavailable during construction, alternative routes will be provided. Therefore, the construction impacts on pedestrians and cyclists as reported previously for the s73 ES and other EIA Documentation, remain valid.

Construction Effects on Public Transport (Bus Routes)

7.7.18 As reported within the CIA Addendum, the level of construction works proposed to infrastructure will result in disruption to existing bus routes and bus stops within the local area. A review was undertaken to identify the impacts likely to result from the programmed works. Section 7.0 of the CIA Addendum provides an indicative schedule of bus routes affected and possible mitigation

measures. These measures remain unchanged within the CIA Addendum Technical Note (**Appendix 2.1**).

7.7.19 It is now proposed that the existing bus station will remain open and in use until construction of the new permanent bus station allows for its closure. Therefore it is no longer necessary to provide a temporary bus station.

7.7.20 In consideration of the potential public transport disruption during the construction phase and the proposed temporary bus stops and bus route diversions, it is considered that the necessary measures are established to result in **negligible** impacts to local residents and visitors, as reported for the S73 ES and other EIA Documentation.

7.7.21 Construction of Phase 1B (North) will have no significant impacts on rail or other forms of public transport given that bus infrastructure and routes will be maintained (as stipulated above) and no rail infrastructure is affected by the P1BN proposals.

Construction Effects on Traffic Flows, Congestion and Delays

7.7.22 **Figure 7.2** illustrates the estimated volumes of heavy good vehicles (HGVs) and **Figure 7.3** shows the estimated light good vehicles (LGVs) during the construction period of Phase 1 delivery for the Development, as taken from the CIA Addendum Technical Note (**Appendix 2.1**). As set out in Chapter 2, these estimates have been amended in light of the changed date of commencement (now programmed to begin in 2018 rather than 2016 as previously assessed) and changes to the construction sequencing within the Phase 1 works programme.

7.7.23 The updated construction information and programme has resulted in revised estimates of both HGVs and LGVs for Phase 1 when compared to the previously assessed CIA Addendum. These updated forecasts have been calculated using a correlated factor reflecting the reduced timeframes now programmed for the same volume of overall works within Phase 1. Therefore, the construction traffic estimates increase within Phase 1 when compared those estimates previously reported.

7.7.24 Revised expected quarterly aggregate HGV and LGV vehicle flows are provided within the CIA Addendum Technical Note (**Appendix 2.1**). These movements are provided as cumulative vehicle movements per quarter, consistent with previous forecasts.

7.7.25 Previous estimates of construction traffic suggested approximately 3,000 HGVs per quarter in the first year of construction (stated as 2016), building up to a maximum of 9,000 HGVs in quarter 3 (Q3) of 2020, then decreasing back to 5,000 HGVs in Q1 2023 and dropping significantly to 500 HGVs in Q2 2023 when Phase 1 was due for completion. The CIA Addendum also reported predicted volumes of LGVs commencing around 10,000 vehicles in 2016 up to a maximum of approximately 38,000 vehicles related to construction in Q3 2020.

7.7.26 The revised estimates presented in the CIA Addendum Technical Note (**Appendix 2.1**) indicate that for the first snapshot year of Q3 2020 the HGV percentage increase over that presented previously is 22.5% (approximately 11,582 HGVs in total). The constriction of the construction period has resulted in an increase throughout all quarters within Phase 1, with approximately 4,462 HGVs in the opening quarter of Q2 2018, building to the maximum forecasts in Q3 2020, before reducing back to approximately 5,615 HGVs in Q1 2021 with estimates not exceeding 11,582 HGVs per quarter until the completion of Phase 1.

7.7.27 The CIA Addendum Technical Note also presents revised estimates for LGVs, predicting a maximum of 46,642 LGV movements in Q3 2020 (peak construction period for Phase 1). This represents an increase of 23.3% over the three months that make up Q3.

7.7.28 As set out in **Appendix 2.1**, the updated construction traffic estimates above form part of a partial update to selected information presented in the CIA Addendum. The CIA Addendum Technical Note does not comprise a comprehensive review of all information within the CIA Addendum. With respect to the assessment of construction traffic, the note does not reproduce the Phase 1 daily movements on a junction basis as previously provided in the CIA Addendum. The s.73 ES Chapter 7 reported on the construction traffic AM and PM peak hours across the strategic Gateway Junctions that provide access to the proposed worksites. The s73 ES presents the cumulative traffic impacts in Table 7.1 which demonstrates that the predicted change in flows arising as a result of construction traffic will be greatest at the M1/A406 junction where increases of 2.61% and 1.90% in the AM and PM peaks (respectively) are expected to occur. The change of 2.61% occurs as a result of an additional 157 vehicles on the network at that time. The magnitude of change, and the actual number of additional vehicles, is not anticipated to give rise to a significant transport or environmental impact at these or any other junctions given the relatively low percentage increases of 2.61% and 1.90% in the respective peaks.

7.7.29 In order to assess the potential impact of the increases forecast in the CIA Addendum Technical Note on the cumulative impact assessment previously undertaken and presented in the s73 ES, a sensitivity test has been undertaken on the construction traffic volumes previously presented in Table 7.1. of the s.73 ES. The forecast increase of 23% on both LGV and HGV construction vehicles during the peak construction period has been applied to generate the forecast uplift on the volumes previously reported. The results of this test are shown in **Table 7.1** below.

Table 7.1: Construction Traffic Impacts

Junction	Background and S73 Scheme Traffic Flows	Construction LGVS	Construction HGVs	Magnitude of Change %
AM Peak Hour				
M1/A406	6,522	160	33	2.96
A5/A406	5,438	57	12	1.27
A41/A406	4,011	57	12	1.72
PM Peak Hour				
M1/A406	7,213	160	11	2.37
A5/A406	5,914	57	4	1.02
A41/A406	3,701	57	4	1.63

7.7.30 As **Table 7.1** demonstrates, the predicted change in flows arising as a result of the 23% uplift test will continue to be greatest at the M1/A406 junction where increases of 2.96% and 2.37% in the AM and PM peaks (respectively) are expected. The predicted change in flows at both the A5/A406 and A41/A406 junction all remain well below 2%.

7.7.31 The magnitude of change between the maximum increase of 2.61% reported in the s.73 ES and the maximum increase of 2.96% demonstrated in the 23% uplift test above is less than 0.4%. The 2.96% increase occurs as a result of an additional 193 vehicles on the network at that time in the AM peak. This is an increase of 36 construction vehicles over the 157 assessed in the s.73 ES.

7.7.32 Given the magnitude of change, and the actual number of additional vehicles, the potential increase in construction traffic as forecast in the CIA Addendum Technical Note (**Appendix 2.1**) is not considered to give rise to a significant transport or environmental impact at these or any other junctions. Therefore, it is considered that the conclusions reached within the s.73 ES and other

EIA Documentation in respect of construction traffic remain valid and applicable to this reserved matters application for Phase 1B (North).

7.7.33 Further construction logistics design and planning will be undertaken prior to the start of construction works for Phase 1B (North) which will provide further and more detailed information on the exact arrangements for transport and access during the construction period. The following pre-commencement Planning Conditions of the 2014 Permission will be submitted to LBB for approval prior to the start of construction (in 2017):

- Condition 12.1: Construction Transport Management Plan (Site Wide); and
- Condition 12.2: Construction Worker Travel Plan.

7.7.34 In light of the HGV and LGV predicted volumes throughout the construction period, it is noted that the impacts are variable over the programme with the highest volumes in 2020, whilst other periods are significantly lower. The s.73 ES concluded that the magnitude of change, and the actual number of vehicles, is not anticipated to give rise to a significant transport or environmental impact at the junctions assessed (M1/A406, A5/A406, and A41/A406) or any other junctions, and there is no change to this conclusion as indicated above.

Mitigation

7.7.35 No new or different mitigation measures over and above those identified in the s.73 ES and other EIA Documentation, including the Consolidated TA, have been identified as being necessary as part of the Phase 1B (North) RMA in relation to construction traffic. Pre-commencement Planning Conditions 12.1(Site-Wide CTMP) and Condition 12.2 (Construction Worker Travel Plan) of the 2014 Permission will form the main mitigation measures for the construction period in relation to transport and are considered to remain valid and appropriate. No further mitigation measures are considered necessary.

7.7.36 As stated in the Potential Impacts section of this Chapter, the construction traffic flows presented in the s.73 ES and the subsequent CIA Addendum Technical Note (**Appendix 2.1**) do not assume the use of a CCC, which could significantly reduce construction traffic to and from the Site. Use of a CCC therefore could potentially further reduce the significant of impacts associated with construction traffic impacts and associated impacts on pedestrian and cycle amenity.

Residual Impacts

7.7.37 Following further assessment of the scale and period of the construction works, and the assessment in regards to construction traffic and the short term nature of the disruption during the construction period, along with conditioned transport plan measures, the residual impacts are considered to remain as stated under Potential Impacts and as previously reported in the s73 ES and other EIA Documentation.

Operation

Potential Impacts

Background

7.7.38 The impacts of the Scheme on traffic and transport were set out in detail in the Consolidated TA (which formed an appendix to the s73 ES) and a summary was provided in the s73 ES. These impacts were subsequently confirmed in the Phase 1A (North) FIR, and subsequent EIA

Documentation, including the Phase 1A (North) Re-phasing Works and Tempelhof Bridge Amendments ES Addendum.

7.7.39 The development of the Scheme has included the iterative design of the transport and infrastructure proposals in line with the forecast movement of vehicles and people through the area of influence. Traffic modelling (both the BXC-TM and BXC-DDM) has been used to ensure that the Development accommodates the forecast traffic volumes. Measures to mitigate potential impacts of the Development on traffic and transport have therefore been incorporated within the detailed design of Phase 1A (North), as previously assessed within the s73 ES and other EIA Documentation, and form an inherent part of the wider Integrated Transport Strategy (ITS).

7.7.40 The main infrastructure elements will be delivered during Phase 1A (North). By delivering these improvements early in the overall phased-built out of the construction programme (as outlined in the ICP, **Appendix 2.1**), the highway, pedestrian and cycle networks will be prepared for the proposed development due to come forwards during Phase 1 as well as subsequent phases. The Phase 1B (North) highway proposals therefore represent the interface between the Phase 1B (North) development plots and their accesses and the Phase 1A (North) highway network and / or the existing highway network. Detailed highway layout plans showing this proposed interface are contained within **Appendix I** of the Phase 1B (North) RMTR (**Appendix 7.1**). It is considered therefore that there are no new or different potential impacts from the Phase 1B (North) element of the Development in terms of traffic and transport that have not already been assessed through the s73 ES and other EIA Documentation (specifically the Phase 1A (North) FIR).

Highway Impact and Junction Assessment

7.7.41 The Consolidated TA provided detailed analysis of the impact of the Development on the highway and junction capacity. This analysis presented in the s73 Application was based on the outputs of the BXC-TM. Since the BXC-TM has been prepared, further modelling has been undertaken using the BXC-DDM for the purposes of informing detailed design, as set out in the Assessment Methodology section of this Chapter.

7.7.42 During the design of the Phase 1B (North) proposals, a number of Phase 1A (North) highway details were required to be amended as a result of requirements to facilitate the emerging Phase 1B (North) proposals. These are considered to be minor in nature and have been incorporated into the ongoing detailed design process of the Phase 1A (North) highway proposals and are as follows:

- Signalisation of Prince Charles Drive Western Roundabout - identified as a result of detailed design modelling;
- Eastern and Western Taxi provision;
- BXSC basement servicing ramp;
- Plot 101 Access;
- Hotel Access; and
- M&S Click and Collect Access.

7.7.43 In addition, as reported earlier in this Chapter, the Phase 1B (North) detailed design incorporates a floorspace uplift of 4,192m^2 for Retail and Related Uses compared with what is consented for BXE in the 2014 Permission. The outcome of the TM sensitivity test undertaken to determine the potential effects of this floorspace increase compared with those previously reported in the s73 ES and other EIA Documentation demonstrates that the proposals fall within the acceptable limits when examined against the additional trips identified within the pre-demand model (TM Tables

T11-T19). The cumulative forecast trips identified within the post-demand model (TM Tables T20-T22) also fall below the thresholds during all three peak periods as each phase comes forward, including during Phase 1 and at End-State. Furthermore, the proposals fall within the acceptable limits when examined against the potential impacts at the five 'Gateway Junctions' (TM Table T24) and construction traffic movements (TM Table T25). Lastly, there are no changes to the triggers as a result of the proposed amendments to the floorspace. The TM sensitivity test therefore supports the qualitative conclusions that the increased floorspace proposals are non-material in terms of the additional trips which are forecast to be generated.

7.7.44 The BXC-DDM Uplift test demonstrates that the impact of the proposed increase in retail floorspace is limited with respect to the forecast level of traffic flow, and associated delay, on both the links and junctions within the model study area.

7.7.45 It is considered therefore that there are no new or different potential impacts from the Phase 1B (North) element of the Development in terms of traffic and transport that have not already been assessed through the s73 ES and other EIA Documentation (specifically the Phase 1A (North) FIR).

Public Transport

7.7.46 The Phase 1B (North) RMA includes a number of public transport improvements, full details of which can be found in Appendix M of the Phase 1B (North) RMTR (**Appendix 7.1**).

7.7.47 These improvements include a new bus station which is being provided at the southern side of the new BXSC. The design of the bus station has been carried out in accordance with Transport for London's (TfL) design requirements. Full details of the bus station are found in Appendix M of the Phase 1B (North) RMTR (**Appendix 7.1**). Phase 1B (North) will provide temporary new infrastructure for bus passengers and services during the construction phase. There will be some alterations to service routing resulting from the infrastructure changes, although existing bus journey time frequencies and reliability will be maintained. It is anticipated that the impact resulting from the Development, taking into account the details of Phase 1B (North), would remain as previously reported in the s.73 ES and other EIA Documentation, (i.e. it would be **negligible)**.

7.7.48 Phase 1B (North) would not result in any direct impacts to rail or London Underground infrastructure and therefore these have not been considered further in this Chapter. In any event, the Phase 1 scheme was found to have a negligible effect on the predicted flows on London Underground and National Rail networks.

Taxis and Coaches

7.7.49 Two new taxi ranks will be provided as part of the Phase 1B (North) proposals, one on the eastern side of the development and one on the west, and in close proximity to BXSC and its main pedestrian accesses. This proposed taxi provision represents an increase over the existing provision, and as it offers increased provision at two different locations provides an improvement over the existing situation. The proposed provision will adequately provide for the additional demand which will be generated by BXSC during future phases.

7.7.50 Coach stops J1 and J2, located in the vicinity of the A406/A41 junction, will be relocated as part of the Phase 1A (North) RMAs and the effects upon taxis and coaches remain as assessed in the Phase 1A (North) FIR, namely **negligible**.

Pedestrian and Cyclists

7.7.51 In line with the 2014 permission, extensive facilities have been designed into Phase 1B (North) to provide safe and convenient routes for pedestrian and cyclists.

7.7.52 The proposed pedestrian and cycle networks for Phase 1B (North) will provide comprehensive connections between the Development and the surrounding areas. A plan showing the proposed pedestrian and cycle network for Phase 1B (North) is contained in Appendix L of the Phase 1B (North) Pedestrian and Cycle Strategy (**Appendix 7.2**). The plan shows how the Phase 1B (North) proposals connect to the Phase 1A (North) network of local streets which provides substantially improved pedestrian and cycle routes. The Development provides 24 hour pedestrian and cycle access to the new Brent Cross Bus Station, taxi rank facilities and the improved night time economy provided by BXSC.

7.7.53 Further detail on the routes and cycle parking provision within the Site, including any detail regarding specific sites and improvements, is provided within the Pedestrian and Cycling Strategy for Phase 1B (North) (**Appendix 7.2**) submitted under Condition 2.8 attached to the 2014 Permission. Details of the type and nature of pedestrian and cycle provision (i.e. segregated / shared use), footway and cycle path widths and type of crossing facilities are set out within this Strategy.

7.7.54 The provision of safe, convenient cycle and pedestrian routes, new crossings together with cycle parking provision will improve the connectivity, safety and amenity of the Site for pedestrians and cyclists, resulting in a **minor** to **moderate beneficial** impact to pedestrians and cyclists.

7.7.55 The pedestrian and cycle infrastructure proposed within Phase 1B (North) will increase the opportunities for access to the Site by these modes and is anticipated will have a **moderately beneficial** impact upon journey length for pedestrian and cycle trips. Additionally, the proposals are anticipated to provide a **moderately beneficial** relief from existing community severance and improvement in the amenity of pedestrian and cycle routes serving the Site.

7.7.56 No new or different impacts are predicted from the Development with the Phase 1B (North) RMA submission and therefore impacts remain as per those previously reported in the s73 ES and other EIA Documentation.

Car Parking

7.7.57 The profile and level of parking provision throughout the Scheme has been agreed in the 2014 Permission, and these details form part of the S106 Agreement.

7.7.58 Full details of the parking proposals are contained within the Phase 1B (North) Car Parking Standards and Strategy Report (**Appendix 7.3**). The Phase 1B (North) proposals include car parking for residential Plot 113, and the New Town Centre.

7.7.59 The profile and level of residential car parking provision was agreed in the 2008 Permission and again in the 2014 Permission and these details form part of the S106 Agreement.

Servicing and Delivery

7.7.60 Details on the servicing and delivery aspects of Phase 1B (North) are contained within the Servicing and Delivery Strategy: P1BN **(Appendix 7.4).** This strategy provides details on how servicing vehicles will access the various elements of the Phase 1B (North) development and their dwell times etc and shows that such activity would not give rise to any significant impacts on traffic or other road users in respect of the Phase 1B (North) RMA.

Conclusion

7.7.61 Based on the above information, all significant environmental impacts in relation to operational traffic as identified in the s73 ES and other EIA Documentation remain valid, taking into account the detailed design for Phase 1B (North).

Mitigation

7.7.62 The proposed delivery of infrastructure improvements within Phase 1A (North) will ensure that the vast majority of major infrastructure elements within the Development are completed to allow the delivery of the development quanta for Phase 1. This is in line with the inherent mitigation built into the detailed design of the wider Scheme, providing additional capacity on the transport network in the area of the Development prior to the commencement of any major works.

7.7.63 Condition 37.8 of the planning permission requires the monitoring of the transport network on a regular basis. Further details will be provided in the Monitoring Strategy Report (47065005-TP-RPT-040) prepared in compliance with this condition.

7.7.64 No further mitigation measures are required over and above those which are now inherent in the Phase 1B (North) RMA and those previously identified in the s73 ES and Other EIA Documentation.

Residual Impacts

7.7.65 The traffic and transport demands of the Development will be accommodated on the highway, public transport, pedestrian and cycle networks through the provision of appropriate new junction and access arrangements. The s73 ES and other EIA Documentation identified an overall **minor adverse** residual impact (i.e. the likely impact of the Development, taking account of proposed mitigation measures) associated with increased traffic, which will include some congestion on the highway network.

7.7.66 This impact is considered to remain valid based on the findings of the BXC-DDM modelling, taking into account the Development with the detailed design of Phase 1B North. Notwithstanding, the mitigation inherent within the Phase 1B (North) RMA will also deliver significant improvements to facilities for public transport users, pedestrians and cyclists, including dedicated links, safe crossing locations and increased accessibility to public transport services / facilities, thereby reinforcing the potential for a shift to more sustainable travel modes.

7.7.67 A summary of the residual impacts associated with traffic and transport is included within **Chapter 22: Summary of Residuals Impacts and Mitigation**.

References

[i] Minor Alterations to the London Plan (MALP), 2016.
[ii] Further Alterations to the London Plan (FALP), 2015.
[iii] Minor Alterations to the London Plan (MALP), 2016.
[iv] Department for Transport Draft Cycling Delivery Plan, October, 2014
[v] Department for Transport Cycling Delivery Plan consultation response from the Mayor for London, November 2014
[vi] Greater London Authority: Human Streets: The Mayor's Vision for Cycling, three years on (March 2016)