APPENDIX 3

NOTES TO ACCOMPANY THE BXC WORKSHEETS

a) General

1. In applying the Transport Matrix, the following should be taken into account:

    - The accompanying tables relate to the peak hours as requested by LB Barnet, the TA modelled 3-hour AM and PM peak periods (0700-1000 and 1600-1900 respectively) that were then related to the AM and PM peak hours of 0800-0900 and 1700-1800. The peak periods were related to the peak hours by applying a factor of 0.54 to the public transport forecasts and 0.33 to the highway forecasts. The Saturday typical peak hour modelled relates to 1400-1500;
    - The bus forecasts in the tables are assumed to include the Rapid Transit System (RTS) patronage as well;
    - Worksheets T2-10 currently identify the distribution of development floorspace based on the assumed phasing set out in the Indicative Phasing Parameter Plan 029. Changes to these indicative phases may be approved by the planning authority in accordance with the anticipated planning conditions. Where such approval is granted it will be appropriate to update these worksheets to identify the updated development quantum for each phase in so long as it is consistent with Appendix 5 of the RDSF.
    - It is considered that if the timing of development changes, so too will the timing of the associated trigger(s) e.g. if a plot is brought forward in time, so too the trigger would similarly be brought forward in time, and vice versa.

b) Gateway Junction Worksheet

2. The following section provides an explanation of how the Gateway Junction Worksheet ((see Worksheet T24) has been formulated. The worksheet provides details of the Base Year, 2016 and 2026 End-state flows. Also included are details of how the strategic flows as predicted by the TA's strategic SATURN highways model have been adjusted to provide sets of validated flows that were used in the detailed junction capacity assessments. The flow adjustments applied in this worksheet, where it has been possible to apply these, are derived from a methodology that has been agreed with LB Barnet and TfL.

3. This method has been detailed in BXC05 TA, Vol.2 Appendix IV (L1). The basis for the adjustments is the reference back to fully observed turning flows at the corresponding junctions. The adjustment formulation follows:

    $DM_{flow} = BY_{obs} + [DM_{mod} - BY_{mod}]$

    $DS_{flow} = BY_{obs} + [DS_{mod} - BY_{mod}]$

    Where:

BY = Base Year
DM = Do Minimum
DS = Do Something
flow = directional flow on approach/exit to intersection for analysis purposes
obs = observed flow as used in base year junction analysis
mod= modelled traffic flow from SATURN model

4. The second term in each case is set to zero if the original result is negative.

5. Therefore the actual observed turning movements at existing junctions will influence the degree of adjustments made to modelled turning movements for junction assessment use.

6. Note that the gateway junction configurations vary between the different scenarios considered, according to the BXC proposals.

7. All junction flows in the table represent demand flows in pcu/hr that are forecast within the TA to use each particular junction. The junction assessments then provide the actual throughput based on the forecast detailed signal operation. Any residual flows appear as queues on the junction approaches which then dissipate outside the peak period being considered.

8. Specific detailed comments in relation to the junction flows are made as follows:

- The flows quoted for the DS 2026 at the A406/A41 Mid-level Junction Group (as used in the detailed junction assessments) include movements to/from A41 overpass at the Whitefield Ave junction.
- At the A406/A5/M1 junction, the DS flows for 2026 could not be adjusted as this was not possible due to significant changes to the junction configuration in the scheme, compared to the existing layout and hence the base count data available.
- At the A406/A5/M1 junction, the DS 2016 flows were not adjusted to maintain compatibility with the DS 2026 situation.

c) <u>Definition of Trips, Trip Rates and Mode Split</u>

Introduction

9. The Transport Matrices place a significant emphasise on trips and mode split. This section describes what a trip is; how a trip should be measured and monitored through the surveys proposed in the FTP; shows how the mode splits from the Development Framework relate to those modelled in the TA; and presents the TA model results in way that demonstrates and thus provides a robust confidence that the mode split progressions will follow the forecast progressions to meet the End-state targets.

10. The TA describes the person trip rates[1] that have been largely derived from the TRAVL and TRICS databases which have been used in the assessment

[1] Trip rates are defined as the number of trips per 100 m^2

of the scheme; these provide rates by land use and by mode for defined time periods throughout the day, based on surveyed sites with similar characteristics. Car driver/passenger, public transport and soft modes are all included in the databases. The trip rates from TRICS and TRAVL are based on main-mode or final mode of travel, this is either the mode of travel used for most of a journey or the mode by which people arrive at their destinations. Multi-leg journeys which use different modes for each leg of the journey are not specifically recorded in TRICS and TRAVL. In the assessment of the BXC development, main-mode was used to derive the initial trip rates that were then input into the demand modelling process.

11. Development related trips have been derived by applying the defined trip rates to the end-state quantum of development for each land use. This takes into consideration cross visitation, which takes account of visitors to the BXC development site using more than one land use e.g. retail and leisure.

12. The generated trips which have been included in the highway and PT modelling include car driver, bus, underground, rail and walk. The modelling does not specifically take account of pedal cycle, motor cycle, taxi and coach trips.

13. Within the Public Transport mode (PT) there are defined sub-mode split progressions for bus, rail and Underground. It is considered that the main objective for the BXC development site is to maximise sustainable travel and that the relative split between the PT sub-modes and soft modes is of lesser importance. The PT sub-mode split is harder to model than the PT/car split and it is this latter split that is considered of paramount importance. Clearly however all modes will need to be monitored to ensure that there is an appropriate balance between the use of all modes.

Units of Flow

14. The public transport modelling has been undertaken in units of “persons”.

15. All traffic flows have been specified in units of “passenger car units” (pcu).

16. All the junction assessments reported in the TA have been undertaken with demand inputs as pcu/hr extracted from the SATURN model and therefore accommodate all vehicle types as follows:

    - User Class 1 - Car / LGV
    - User Class 2 - HGV (includes OVG1/OGV2)
    - Bus

17. Where conversion to vehicle movements has been required, the following factors were applied:

    - Car/LGV = 1.0 pcu
    - HGV = 2.5 pcu
    - Bus = 2.0 pcu

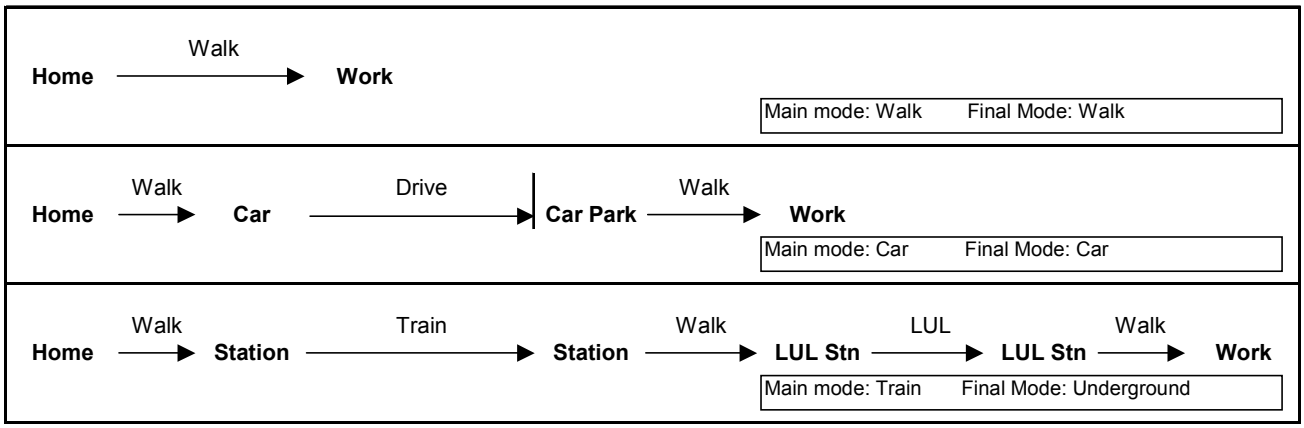
18. The following occupancy factors were used to convert person trips to car trips:

- AM Peak = 1.30 persons/car
- PM Peak = 1.48 persons/car
- SAT Peak = 1.62 persons/car.

Definition of a Trip

19. A trip is considered to represent a movement between two points, with an associated purpose, such as work or education. Trips can be related to different "dimensions" e.g. persons, vehicles or passenger car units. Trips can typically be formed of a number of legs, each of which uses a difference mode. The figure below shows examples of 1-leg, 3-leg and 5-leg journeys, with the distinction between main and final mode.

Example Showing Definition of Multi-leg Trip Components



20. In the monitoring of trips to the BXC development site, it is recommended that the "final" mode is assumed in determining the mode split. This will be consistent with the TA. In the examples above, where mechanised modes have been used, the final mode is taken to be the last mechanised mode used i.e. the last walk leg of the journey is not counted, unless it is the only leg of the journey.

21. When monitoring outbound trips from the BXC site, the "initial" mechanised mode used should be assumed in the derivation of the mode split, unless the trip is entirely walk. The initial main-mode for trips inbound to the BXC site represents the mode by which travellers arrive at the site, rather than the modes used on other legs further from the site.

22. A correspondingly similar definition should be used for those trips monitored as wholly within the BXC site.

Measurement of Trips

23. Monitoring and reviewing of trips is a key element of the FTP, and is required to establish the number and mode split of trips to the BXC site. It is recommended above that the final/initial mode is used in the assessment of mode split, as these represent the modes by which travellers arrive at/depart

from the site. In doing so, the distinction needs to be clearly made between travellers who walk for most of their journey and those who are walking from a public transport stop.

24. The issues to be considered in measuring trips as part of the monitoring process are summarised below:

- Different survey methods will be appropriate for different land uses, these are likely to include:
  - travel diaries;
  - household interviews;
  - staff surveys;
  - customer surveys;
  - traffic counts at key locations (plot or development zone based);
  - public transport passenger counts;
  - counts of goods vehicles, number and timing;
  - use of cycle parking spaces;
  - use of car parking spaces; and
  - occupancy surveys of cars and PT vehicles.
- Detailed surveys will allow the identification of the amount of cross visitation that occurs on-site.
- Details of multi-leg journey elements should be recorded and identified from the surveys.
- Construction vehicle flows.
- Monitoring of queue lengths and signal timings at the same time as when junction counts are performed to inform the detailed design process.