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TRANSPORT ASSESSMENT

Alington Estate, Little Barford

Executors of the Late Nigel Alington

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Title: TRANSPORT ASSESSMENT
 Project: Alington Estate, Little Barford
 Client: Executors of the Late Nigel Alington
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1. INTRODUCTION

- 1.1.** Richard Jackson Ltd have been commissioned by the Executors of the Late Nigel Alington to prepare a Transport Assessment (TA) in support of the sites allocation in the emerging Bedford Borough Council (BBC) Local Plan (Regulation 18 stage) for a mixed residential and commercial development at Little Barford. The location of the site is shown on Figure 1 with an approximate ordnance survey midpoint of 518356, 256536, with a postcode of PE19 6YD.
- 1.2.** The site is bound by the River Great Ouse to the West and to the north the boundary of the site is the RWE power station. To the south, the site has a boundary as indicated on Figure 1 which is the extent of the land ownership. To the east is the East Coast Main Line (ECML) railway. The site is presently primarily of agricultural uses with some associated housing and employment.
- 1.3.** The proposed development for the purposes of this TA would primarily consist of some 3903 dwellings, 3.25Ha of employment uses. Other uses including a 2.0ha of reserved land for retail use along with ancillary uses such as local shops and education facilities would be included as part of a future planning application for the site. As these would be primarily for the benefit of the development, they would have little external impact and therefore do not form part of this assessment.
- 1.4.** The site lies within the BBC area who are the Local Planning Authority and Local Highway Authority. The trunk road network is the responsibility of National Highways who were until August 2021 known as Highways England (HE).
- 1.5.** The proposed site would effectively be a new settlement, given the limited existing development at Little Barford. Precedent for such a new settlement already exists in the BBC area, at Wixams which commenced construction in 2007 and is located to the south of Bedford.
- 1.6.** This TA is based on the proposed scope included in Appendix A, updated to reflect the available data from the A428 Black Cat to Caxton Gibbet Road Improvement scheme (hereafter referred to as the A428 scheme for brevity) and traffic modelling work undertaken by AECOM on behalf of BBC in support of the next local plan. Feedback on the scope was received from BBC and is incorporated into this TA as appropriate. HE who were also consulted did not provide any feedback on the proposed scope. Should the site proceed to the planning application stage further consultation would be held with BBC and HE, with the adjoining areas of Central Bedfordshire and Cambridgeshire County Council informed of the proposals at that time.
- 1.7.** This TA will cover the following areas:
- A review of National and Local transport policy is undertaken in Chapter 2.
 - Chapter 3 reviews the existing conditions including the surrounding highway network, the available facilities for public transport, cyclists and pedestrians and the range of local amenities. An initial review of highway

safety is considered through a review of highway injury accident locations.

- The proposed development is described in Chapter 4.
- Chapter 5 estimates the level of trip generation and distribution of vehicular trips likely to be associated with the development.
- Chapter 6 provides an assessment of the likely traffic impact of the development. The conclusions derived from the assessment are set out in Chapter 7.

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2. POLICY CONSIDERATION

National Policy

- 2.1. National Planning Policy reflects and responds to growing concern over environmental issues and a greater public awareness of the problems associated with unrestrained car use. Current policies place a greater emphasis on increasing accessibility by more sustainable modes, such as walking, cycling and public transport.

National Planning Policy Framework (NPPF) 2021

- 2.2. NPPF provides advice on assessing transport, infrastructure and sustainability for new developments. The NPPF highlights that **"transport issues should be considered from the earliest stages of plan-making and development proposals"** and that **"the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed"**.
- 2.3. The NPPF identifies that priority should be given to pedestrian and cycle movements, followed by public transport. The development should address the needs of those with disabilities or reduced mobility, create places that are safe, secure and attractive minimising scope for conflicts between transport modes, allow for efficient delivery of goods and access by emergency services, and provide for the charging of plug-in and other ultra-low emission vehicles.
- 2.4. The highways acceptability criteria is identified at paragraph 111 which states that: **"development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."**

Planning Practice Guidance 2014

Travel Plans, Transport Assessments and Statements

- 2.5. Planning Practice Guidance provides advice for Travel Plans, Transport Assessments and Transport Statements and Travel in decision-taking. They are required for all development which generate significant amounts of movements.
- 2.6. Paragraph 15 sets out what information should be included in Transport Assessments and Statements. This includes information regarding the existing transport network for key modes, a review of local highway safety from injury accident data, information about the proposed development including its travel characteristic and vehicular parking provision, encouragement of sustainable travel and where relevant any measures or mitigation to improve the local transport network.
- 2.7. The scope of this required TA is included in Appendix A.

Local Policy

- 2.8. The Bedford Local Transport Plan 2011-2021 (LTP3) forms the overarching transport strategy for BBC including a vision for walking, cycling and public

transport are the natural choices of travel for the majority of journeys. It includes for Transport Assessments to consider the impact of new development and Travel Plans to improve levels of accessibility through the provision of information on the location of amenities and how they are accessed.

- 2.9. The Bedford Borough Local Plan 2030, adopted in January 2020 forms the current local plan in BBC and covers the period to 2030. In addition, the Allocation and Designations Local Plan 2013 remains relevant in the BBC area. The plan notes significant changes to national planning policy for high housing numbers beyond the adoption of the 2030 plan along with significant transport infrastructure decisions due including the proposed A428 scheme and the East West Rail link. The timetable for the next local plan is set out in Policy 1 as commencing within 1 year of adoption and requiring the next plan to be submitted for examination within three years (i.e. by circa January 2023).
- 2.10. With respect to transport, future development would be expected comply with Policy 31 which covers access impacts. This includes highway capacity, parking provision, safety, public transport, walking and cycling, access for those with disabilities, along with servicing and emergency vehicle needs. Development would be expected to implement or contribute towards measures to mitigate adverse impacts. Policy 87 covers public transport, where limited or no services are available the development should provide suitable infrastructure from an early stage with every dwelling usually being within 400m of a bus stop with a minimum hourly service frequency, real-time information or similar should be included and contributions to off-site interchange facilities may be required. Policy 88 covers impacts on highways and rail, air quality and noise, sustainable transport enhancements and, highway safety. Electric vehicle charging for a minimum of one charging point per dwelling plus provision at local centres is set out in Policy 89. Public Rights of Way enhancements are covered under Policy 91 also with reference to the Borough of Bedford Rights of Way Improvement Plan.
- 2.11. The Local Plan 2040 – Draft Plan Strategy Options and Draft Policies Consultation (June 2021) sets out how the next local plan is expected to be adopted in late 2023. The document sets out that many of the adopted policies will remain valid given the limited time that has passed. The plan is therefore focused on growth and spatial strategy options. This included housing needs from 2020 to 2040, with the annual requirement being higher than that of the adopted local plan and notes that some infrastructure now considered to be committed may assist the delivery of higher dwelling numbers. The local plan consultation sets out a number of options for potential growth in the BBC area which includes the site considered by this TA at the strategic level.

Compliance with Planning Policy

- 2.12. This TA has been prepared to support the emerging local plan process with respect to the site being allocated for future development. The strategic effects of the development have been considered separately by BBC, therefore this TA reviews the provisional key aspects of the development including its access as far as the trunk road network.

- 2.13. The NPPF identifies the need for a TA to assess the potential impact of the development proposals to demonstrate that the impact of the development will not be severe. The TA will demonstrate the opportunities for future sustainable travel to show the development proposal would be sustainable on transport grounds in accordance with the requirements of the local planning policy. In addition to the review of sustainable travel, this TA will also provisionally consider traffic capacity and highway safety and any mitigation measures that may be required to facilitate the delivery of the development. As this TA is intended to support the local plan allocation of the site, any issues identified issues would be further reviewed at the planning application stage should the site progress.
- 2.14. In addition to the above the NPPF also identifies that developments which will generate significant amounts of movement should be required to provide a travel plan. Should the site ultimately proceed, travel plan(s) would be expected to be implemented for the various site uses.

3. EXISTING CONDITIONS
Site Location & Existing Access

- 3.1. Little Barford is a hamlet within BBC located some 11km to the northeast of Bedford and 3km to the south of St Neots. Cambridge lies some 27km to the west. A small number of houses line Barford Road through the hamlet.

Pedestrian & Cycle Network

- 3.2. Footway is present on the east side of Barford Road through the existing residential area which is subject to a 40mph speed limit in the vicinity of the site and to the north (the national speed limit of 60mph applies to the south). Further footway on the western side of Barford Road is available to the north of the power station which lies to the north of the site.

- 3.3. There are no Public Rights of Way (PRoW) within the site to the east of Barford Road, however Little Barford FP1 is partially within the site on the west side of Barford Road. The route Little Barford FP1/Little Barford FP4/St Neots FP37 provides a connection between Barford Road and St Neots passing under the A428 near to the River Great Ouse.

Public Transport

- 3.4. A **Thursday's only bus service provides a weekly shopping trip connection to St Neots on route 193** which is operated as the Ivel Sprinter by East Beds Community Bus Ltd.

- 3.5. The nearest existing bus routes are otherwise from stops within the Tesco Extra food superstore accessed from the B1043 Barford Road/Chapman Way junction in St Neots to the north.

- 3.6. The nearest rail services are available from St Neots station approximately 5.0km to the north of the site. The station is therefore within potential cycling distance of at least part of the site. Direct services operate between Peterborough and Crawley via London.

Highway Network

- 3.7. The A428 to the north of the site provides the primary route for travel to the east, and north (via the A1). For travel to the south, access to the A1 is at the junction with Tempsford Road. The A1 Tempsford junction is split with the A1 southbound off slip located some 1.9km to the north of the main part of the junction. The A1 Tempsford junction to the south or the A428 to the west can be used for travel to/from Bedford and the west via the A421.

- 3.8. A 7.5T weight restriction is present on Barford Road through Little Barford (south of the power station access) to the junction with the A1 Tempsford north junction (southbound off slip) to the south. The restriction is except for access in the southbound direction.

- 3.9. It is expected that the A428 will be re-routed from its existing alignment to the north of Little Barford to a new alignment to the south and east of the

site as part of the A428 scheme. The A428 scheme has reached the Development Consent Order (DCO) stage and is therefore considered to be committed (but subject to minor modifications). The scheme location plan from DCO document TR010044/APP/2.1 is shown in Appendix B. It is expected to be open to traffic prior to the completion of the development considered in this TA outlined in Chapter 4.

Existing Local Amenities

- 3.10. To the north of the residential area lies Little Barford Power Station and an employment area which is immediately south of the existing A428. The town St Neots lies further to the north of the employment area.

Traffic Data & Modelling Review

- 3.11. Traffic modelling work in the area has recently been undertaken to support both the A428 scheme Development Consent Order (DCO) application for HE and in support of the next BBC local plan.

Highways England

- 3.12. The A428 scheme DCO includes considerable supporting documentation. The documentation indicates that for the AM and PM peaks an average hour in a 3 hour peak period has been modelled, with most traffic flows converted (along with modelled interpeak flows) to and reported as Annual Average Daily Traffic (AADT).

- 3.13. The AM and PM peak hours for the A428/Barford Road junction have however been modelled in Junctions 9 and included as part of the scheme submission in the Transport Assessment Annex reference TR010044/APP/7.3 dated 26/02/21. The A428 scheme documentation indicates that an area wide average peak hour to peak hour factor has been applied to the flows to provide an approximation of the single AM and PM peak hours for the assessment of junction capacity. The 2040 flows assessed are effectively the equivalent of a **'committed development scenario'** as the Wintringham Park site which was identified as being committed in the scoping correspondence in Appendix A is specifically referred to in the A428 scheme Transport Assessment reference TR010044/APP/7.2 dated 26/02/21.

- 3.14. The 2040 traffic modelling results with the A428 scheme included indicated volume to capacity results presented as Ratio of Flow to Capacity (RFC) were a maximum of 0.80. **As the traffic data was input using the 'One Hour' profile** an artificial peak profile has been applied to the average peak flows which allows for some variation in junction performance during the Junctions 9 modelled period.

Bedfordshire Borough Council

- 3.15. The proposed development at Little Barford has been considered for BBC by AECOM in their **report entitled "Bedford Borough Transport Model, New Settlements and the Black Cat Junction"** dated 29th April 2021. The document considers the strategic implications of a site at Little Barford in isolation and in addition to a further site west of the A1 near Wyboston. For Little Barford 3,085 dwellings are assessed at 2040 and 3,955 dwellings at 2050.

These proposed dwelling numbers are close to our projected development quantum of 3,903 dwellings. Whilst no employment has been included, the level proposed in Chapter 4 is unlikely to materially affect the conclusions of **AECOM's assessment**.

- 3.16. The assumptions for the Little Barford site made by AECOM included access to Barford Road and to Potton Road. As set out in Chapter 4, the proposals considered in Chapter 4 do not include a link to Potton Road as a connection to the A428 scheme would be preferable. A Sandy to St Neots bus service was also proposed.
- 3.17. The document notes a possible safety mitigation might be required to the south of Little Barford and potentially to the A1 SB off slip for Tempsford. These issues are not considered to be significant at the local plan allocation stage, however they would be considered at the planning application stage should the site progress.
- 3.18. The AECOM assessment was made without and with general local plan mitigation, with the mitigation being insignificant to the site at Little Barford. The document concludes that no capacity mitigation is needed due to the proposed development as the A428 scheme, **"reduction in traffic flows along the existing route provides capacity, primarily at the junction with Barford Road, to accommodate the forecast development traffic"**. Volume to capacity results for the AM peak are presented in Table 3.7 of the AECOM document indicating that in the 2018 base case, the worst-case arm of the existing A428/Barford Road junction was at 54% of capacity. By 2050 with the A428 scheme and Little Barford and Wyboston sites completed was 41%. This includes the local plan mitigation which is slightly detrimental to the A428/Barford Road junction.

Assessment of Traffic Data

- 3.19. The assessment of the A428/Barford Road junction for the HE A428 scheme shows the junction being closer to capacity than the data for the BBC local plan. This is despite the A428 scheme assessment being at 2040 without the development proposed herein (i.e. **an effectively 'with committed development' scenario**) than that of the BBC local plan at 2050 with a development at Little Barford included (i.e. a 'with development scenario').
- 3.20. On this basis therefore the traffic data from the A428 scheme Junctions 9 assessment at 2040 with A428 scheme included has been taken as a baseline for comparative purposes in this assessment. This is because the baseline is more robust than the BBC alternative.
- 3.21. Further traffic data from the A428 scheme has been obtained from HE/AECOM for parts of the A1/Tempsford junction. These include the A1SB off slip/Barford Road priority junction and the three slip roads at the southern part of the A1/Tempsford junction. The data covers the AM and PM peaks however it is not clear if this represents the average hour for the peak periods or if an average to peak hour factor has been applied by HE/AECOM.
- 3.22. The vehicular flow for the 2040 AM and PM peaks are shown on Traffic Flow Diagrams 1 and 2 located in Appendix C.

Local Highway Safety

- 3.23. Local highway safety has been reviewed through highway injury accident locations viewable via www.crashmap.co.uk for the three year period to 2019 (avoiding COVID-19 travel restrictions). The study area considers Barford Road between the A428 to the north and the A1 southbound off-slip priority junction with Barford Road to the south.
- 3.24. At the southern end of the study area, there were no accidents at the slip road junction with Barford Road. There were however five accidents located to the north between 150m and 450m of the junction. Of these four were of **'slight' severity and the remaining a fatal**. The accidents were located at or near to a bridge over a small watercourse, adjacent to the northern end of PRow Tempsford FP1.
- 3.25. A further four accidents occurred further to the north on Barford Road, **three of these were 'slight' with the remaining a 'serious' severity accident**.
- 3.26. During **this period there were 5 'slight' severity accidents at the A428/B1043** Barford Road/Barford Road junction which do not appear to be clustered around any single approach.
- 3.27. Traffic flows in the area are expected to change prior to the completion of the development considered herein due to the expected implementation of the A428 Black Cat to Caxton Gibbet Road Improvement scheme. The scheme will provide a new route for traffic on the A428 to the south and east of Little Barford. This may have a positive effect on the accident rate on the area.
- 3.28. The accident records for around the northern end of Tempsford FP1 should be reviewed further at the planning application stage to determine if a safety scheme might be required at this location. Measures to ensure that any future pedestrian/cycle movements between the site and St Neots, are considered in Chapter 4, such that potentially vulnerable users need not negotiate the existing roundabout on the A428.

Compliance with Planning Policy

- 3.29. There are limited opportunities for travel to local amenities/services on foot or by cycle or by public transport options in the area. These would need to be addressed by the development proposals to ensure that the development location can be considered sustainable with alternative transport infrastructure to that of the private car.
- 3.30. Changes in traffic flows that might be expected as a result of the A428 Black Cat to Caxton Gibbet Road Improvement scheme may change the accident rate in the local area. Measures to provide for pedestrian/cycle trips to/from St Neots are considered in Chapter 4. The route towards Tempsford the south may require further investigation at the planning application stage. Any future development, would be expected to provide any necessary mitigation such that it would be unlikely to result in significant impact upon the satisfactory functioning or safety of the highway network in accordance with policy.

4. PROPOSED DEVELOPMENT

- 4.1. The development for the purposes of this TA would primarily consist of some 3,903 dwellings, 3.25Ha of employment uses. Other uses including 2.0ha of land reserved for retail use and other ancillary uses including local centre amenities and schools are expected to be included but are not specifically assessed at this stage as they be primarily for the benefit future occupiers of the development rather than trip generators in their own right.
- 4.2. The proposed development lies to the east and west of Barford Road, Little Barford and to the east of the East Coast Main Line railway. The majority of the site would be residential with some commercial and retail development is expected on the west side of Barford Road. The highway access and development parcels are shown in Appendix D.
- 4.3. The development is expected to be progressed in phases which for the purpose of reviewing the potential transport impacts are taken as follows:
- Phase 1: 3.25ha of employment and 201 dwellings located either side of Barford Road and west of the East Coast Main Line railway at the northern end of the site;
 - Phase 2: A further 1,053 dwellings either side of Barford Road, plus the 2.0ha of retail (the latter of which is not assessed) all west of the East Coast Main Line railway; and
 - Phase 3: The remaining 2,649 dwellings located to the east of the East Coast Main Line railway.
- 4.4. The build programme for the development is not yet known, however for the purpose of this assessment the development is taken as being complete by 2040.

Access, Parking and Manoeuvring

Proposed Access

- 4.5. A number of access points will be required to/from Barford Road for Phases 1 and 2 of the development. The exact locations and formats of the junctions have yet to be determined and would be detailed at the planning application stage, should the site progress. The accesses would be designed based on the applicable design standards/guidance and capacity requirements. Access for pedestrians and cyclists would also be available at the vehicular points to Barford Road as appropriate.
- 4.6. For Phase 3, access would be required across the East Coast Main Line railway to provide a connection to Barford Road. The locations of these are shown indicatively in Appendix D with preliminary designs for the new crossings of the rail line shown on Drawings 60830/S/004 and 005. The rail crossing will include for pedestrians and cyclists. Additionally, an existing rail underpass, presently used for farm traffic within the site would be retained for use by pedestrians and cyclists.
- 4.7. The A428 scheme passes through the proposed site and a direct access to it from a new junction on the sites eastern boundary would be beneficial,

particularly to Phase 3 of the development. For Phase 3 traffic for Cambridge, Bedford and the A1 south would all likely use this junction. Some traffic from Phase 2 towards Cambridge would also likely use such a junction. Drawing 60830/PP/017 shows where such a junction based on DMRB guidance could be located **with the land required being within the applicant's control**. The junction would require permission from Highways England which is not guaranteed and therefore the traffic assessment considered in Chapters 6 & 7 do not include this access.

Discounted Access Options

- 4.8. An access to Potton Road is potentially available. A link to Potton Road would have some benefit of Phase 3 and potentially some Phase 2 traffic heading to Cambridge and some Phase 3 traffic towards the A1. The traffic could join the existing A428 via the committed Wintringham Park development, however the attractiveness of using Potton Road to reach St Neots would be limited by a third-party pedestrian and cycle scheme at the Potton Road/East Coast Main Line bridge, reducing traffic to a single lane shuttle working arrangement. Given that the costs would be similar to a direct access to the new A428 (a crossing of which would be needed to reach Potton Road) and that the route would be less useful, it is not considered further at this stage.
- 4.9. Direct access to the A428 between the East Coast Main Line railway and Potton Road was also considered, but discounted as such a route would be parallel to the existing Barford Road and offer limited benefits whilst disrupting the free flow of movements on the existing A428 alignment.

Parking and Manoeuvring

- 4.10. A detailed development layout has yet to be progressed, however should the site progress, matters of parking for the various uses and along with manoeuvring of both servicing (including refuse) vehicles and access for emergency services would be provided in accordance with BBC policy as identified in Chapter 2. Electric vehicle charging is expected to be included in the more detailed proposals for the site.

Pedestrians and Cycles

- 4.11. There are presently limited pedestrian facilities to the proposed site. As part of Phase 1 a new foot/cycleway would be provided along the east side of Barford Road to provide a connection between the proposed development site and existing facilities at the Barford Road/Chapman Way junction in St Neots. Footway will also be provided on the west side of Barford Road where not already present between the site and Barford Road/Chapman Way, with some sections being of foot/cycleway to link development and amenities on the west side of Barford Road with the new foot/cycleway provision on the east side. This can be seen on Drawing 60830/PP/014.
- 4.12. An amendment to the power station access to Barford Road would be beneficial to accommodate the routes which would also include toucan crossings of Barford road and the existing A428 as illustrated on Drawing 60830/PP/014. The proposed foot/cycleway would be subject to the Road Safety Audit process at the planning application stage should the site progress.

- 4.13. In addition to the new foot/cycle link to St Neots, the existing PRow route between the site and St Neots (Little Barford FP1/Little Barford FP4/St Neots FP37) would be improved where possible. Within the site such works would be undertaken by the developer, with any offsite works potentially funded through a Section 106 agreement.
- 4.14. Further details on the development of sustainable transport facilities, including phasing, are included in Appendix E.

Public Transport

- 4.15. The development will enhance the existing public transport availability with all development ideally being within 400m of the main public transport corridor and 1200m at an absolute maximum. The maximum bus stop distance could be reduced to 400m depending on the final bus route through the development. A typically half-hourly frequency service to/from St Neots would operate from accessible bus stops which would include real time passenger information. The service would also likely include stops at the power station, industrial estate, Tesco superstore and leisure centre. To the south the service may be extended to/from Sandy or Biggleswade.
- 4.16. The proposed East-West rail link may result in a new station either within or to the south of the proposed site which would therefore be closer than the existing provision in St Neots. The location of the station has yet to be finalised, however the proposed development would seek to ensure that suitable foot and cycle links between it and the site would be available, where possible.
- 4.17. A Public Transport Hub within the site could be provided with Car Club provision allowing for reduced car ownership for the future occupiers whilst retaining car availability for occasional need.
- 4.18. Further details are included in Appendix E.

Construction Traffic

- 4.19. It is difficult to ascertain construction vehicle movements associated with the development until a contractor is on the project team. It is likely that at the, a Construction Management Plan (CMP) would be conditioned as part of any future planning permission for the site. This will allow input from a Principal Contractor (PC) on vehicle numbers, routing and programming.
- 4.20. **Given the site's location, construction traffic is likely to** reach the development via Barford Road and either the existing A428 to the north or the A1 to the south. In the later stages of the development access may be available from the new alignment of the A428, at which point access from Barford Road would likely cease.
- 4.21. Any abnormal loads associated with on-site construction vehicles will be managed with respect to the current BBC and HE abnormal load policies. Such movements may be required to construct the proposed crossings of the East Coast Mainline Railway.

Compliance with Planning Policy

- 4.22. The development will be expected to be provided in accordance with design guidance and policy as applicable with further details provided at the planning application stage, however where relevant adopted policy has been considered in the initial proposed to support the site at the local plan allocations stage.

5. TRAFFIC FORECASTING

- 5.1. In order to assess the future impact of the development proposals on the local highway network, it is necessary to forecast the future traffic flows based on the traffic data described in Chapter 3. This section considers the **'base' traffic position and details the trip generation and distribution of traffic** for the proposed development.

Baseline Traffic Flows

- 5.2. As set out in the scoping included at Appendix A, the assessment year for the highway network is 2040 which is the horizon year of the next local plan. The scoping was however based on using observed traffic flows then applying forecast for growth, committed development and the reassignment of traffic as result of the A428 scheme. Since considering the initial scope for this assessment, traffic flows for 2040 with the A428 scheme and an allowance for committed development have become available from the A428 scheme specifically for the existing A428/Barford Road junction and for key aspects of the A1/Tempsford junction as set out in Chapter 3.

- 5.3. The 2040 committed traffic flows upon which the proposed development can be added and tested are as shown on Traffic Flow Diagrams 1 and 2 located in Appendix C.

Existing Development Trip Generation

- 5.4. The site is presently primarily in agricultural use with minimal trip generation, which for the purpose of the assessment will be taken as nil.

Proposed Development Trip Generation

- 5.5. The TRICS database has been used to estimate the likely weekday vehicular trip generation for the development proposals as set out in the scoping correspondence which included the relevant TRICS outputs in Appendix A.
- 5.6. The site selection for the residential element is for houses privately owned (a worst case), in excess of 350 dwellings, in an edge of town or suburban area, in England (excluding sites in Greater London). The data contained sites with and without a Travel Plan (TP) (as the site will be required to have one).
- 5.7. For the employment element, industrial estate trip rates by site area have been considered for sites between 2ha and 10ha. The site selection includes sites in an edge of town, neighbourhood centre, free standing or suburban area. There were no sites with a TP in the data set.
- 5.8. The vehicular trip rates and corresponding development trips are summarised in Table 5.1.

Table 5.1 – Trip Rates and Vehicular Trip Generation

Vehicular Trip Rates & Trips	AM Peak		PM Peak		12 Hour	
	Arr	Dep	Arr	Dep	Arr	Dep
<i>Employment per 1ha (TRICS)</i>	15.318	5.919	4.289	14.458	95.405	96.677
Employment Trips (3.25ha)	50	19	14	47	310	314
<i>Private Housing Trip Rate (1 Dwelling)</i>	0.122	0.360	0.333	0.158	1.967	2.013
Phase 1 Private Housing Trips (201 dwellings)	25	73	67	32	396	405
Phase 2 Private Housing Trips (1,053 dwellings)	128	379	351	166	2,071	2,120
Phase 3 Private Housing Trips (2,649 dwellings)	323	953	882	418	5,210	5,331
Total Development Trips	526	1,424	1,314	664	7,987	8,171

- 5.9. At this stage the nature of any on-site facilities is not known, but are likely to be primarily focused on the needs of the occupiers of the future development with little off-site vehicular travel demand/generation. On this basis and as agreed with BBC at the scoping stages, the trips shown in Table 5.1 above have not been reduced to consider the potential for any internal trips within the development which would not then become external trips from the development.

Travel Plan

- 5.10. The development would be of sufficient size to require the provision of a Residential Travel Plan and potentially, a Framework Commercial Travel Plan. Interim plan(s) would likely be developed to support any future planning application for the site. The Travel Plans would ultimately seek to minimise vehicular trip demand particularly by that of a single occupancy private car. Further details on potential Travel Plan measures for the residential element of the site are included within Appendix E. At this stage however no reductions to the development trips shown in Table 5.1 have been considered in the interests of a robust assessment.

Trip Distribution and Assignment

- 5.11. Traffic distribution has been considered based journey to work data from the 2011 Census which provides details of journeys to work places at the Middle Layer Super Output Area (MSOA) level. The data is available for residents going to work and for employees from home. The distribution for both has been calculated for the Huntingdonshire 021 zone for the combined modes of **"diving a car or van", "motorcycle" and "taxi"**, with all Census trips considered, which is then assigned to the local network based on the most likely routes.
- 5.12. Whilst the development is actually within the zone Bedford 004, the area covered is rather large and extending from the edge of St Neots to the edge of Bedford. The distribution of trips for Little Barford is more likely to be similar to Huntingdonshire 021 which represents an area to the north of the

A428 / Barford Road junction. Huntingdonshire 021 is roughly bound by the A428, the East Coast Main Line railway, Cambridge Street, Fox Brook, and the River Great Ouse. Huntingdonshire 021 was also the basis for traffic distribution calculations for the committed development of Wintringham Park (application [17/02308/OUT](#)). This approach was also agreed with BBC, see Appendix A.

- 5.13. Trips to/from the A1 (north), A428 (east), Great North Road and St Neots would use Barford Road to/from the A428 junction. Trips for the A1 (south) would use Barford Road to/from the south. Trips for the A421 (to the west) would likely be split between the routes to the north and south. Given the layout of the A1 Tempsford junction to the south, departing trips are routed via the A428 (west) to the A1 as this is the shortest route. For arrivals the route from the south is shorter and therefore trips from the A421 (west) will route via the A1 (south) then on to Barford Road to the south of Little Barford. No assignment of traffic within the TA assumes a connection to the proposed A428 or Potton Road at the present time.
- 5.14. The development would offer residential and employment development, with further existing employment available at the northern end of Little Barford. Trips within Bedford 004 will therefore be taken as a proxy for internal to Little Barford not reaching either the A428 (to the north) or the A1 (to the south).
- 5.15. A copy of the analysis was included with the scoping information at Appendix A, with the resulting distribution, including key origin/destinations is summarised in Table 5.2. A simplified, indicative graphical representation of the trip distribution for the category of **“driving a car or van” only for** Census zones with a minimum of 6 trips is shown on Figures 3 and 4 from the summary data presented on the DataShine Commute website with the full data used as described above used for the assessment.

Table 5.2 - Trip Distribution

Route No	Route Name	Primary Origins / Destinations	Resi. Split	Emp. Split
0	Little Barford Internal	Little Barford	6.3%	1.7%
1	A1 (north) via A428 (west)	Huntingdon, Alconbury, Spaldwick, Buckden	20.2%	20.5%
2	B1428 via A428 (west)	St Neots	11.5%	17.2%
3	Barford Road, St Neots	St Neots	19.1%	35.1%
4	A428 (east)	Cambridge, Godmanchester, Papworth	20.9%	10.7%
5	A1 (south)	London, Sandy, Biggleswade	12.8%	7.1%
6	A421 (west)*	Bedford	9.1%	7.7%

* Departures routed via A428 (west), arrivals via Barford Road (south)

- 5.16. For trips likely to be internal to Little Barford, an alternative distribution using the same methodology as above but for the Bedford 004 zone identified 5.9% of residential trips staying within the zone and 6.8% of commercial (employee) trips staying within the zone. The distribution shown in Table 5.3 is therefore considered to be appropriate with respect to those traveling outside of Little Barford.

- 5.17. The traffic distribution for the proposed development (excluding those trips which remain within Little Barford itself) is shown graphically in Appendix C for each phase of development separately along with cumulative flows at 2040. For Phase 1, which includes the employment element, this is shown both separately from the residential and combined. The cumulative 2040 with all phases of development concludes on Traffic Flow Diagrams 17 and 18 within Appendix C.

6. HIGHWAY ASSESSMENT

6.1. The potential impact of the development has been considered with respect to key junctions on the local highway network. Given the size of the proposed development, there is potential for a number of development vehicular trips at the following junctions:

- A. A1 / Tempsford / Church Street junction
- B. A1 / A421 Black Cat Roundabout
- C. A1 / A428 Junction and slips roads
- D. A428 / Barford Road
- E. Barford Road / Little Barford Power Station
- F. Site Accesses
- G. B1043 Barford Road / Chapman Way
- H. B1043 Barford Road / B1046 Cromwell Road
- I. B1046 Cromwell Road / Potton Road

6.2. A location plan of the above junctions is included with the scoping correspondence in Appendix A. A review of each of the above locations is considered below.

A: A1 / Tempsford / Church Street junction

6.3. This grade separated junction features access to the A1 in both directions and a northbound off-slip. The southbound off-slip provision, meets Barford Road at a priority junction located some 1.9km to the north of the main part of the junction.

6.4. The main part of the junction includes two roundabouts (to the north of the three slip roads) and a priority junction on the western side. The southbound off slip meets with Barford Road at a simple priority junction.

6.5. Following feedback on the scoping included in Appendix A, the development impact has been considered on a percentage assessment at each of the key components at local plan allocations stage and is based on the 2040 traffic data from the A428 scheme. Capacity modelling of the individual junction components may be considered in a future TA which would be prepared at the planning application stage depending on the scoping opinion of the relevant highway authorities at the time. The total junction volume and development impact is considered in Table 6.1 for the 2040 AM and PM peak periods.

Table 6.1 Change in Flows at A1/Tempsford Junction components

Component	2040 AM Peak			2040 PM Peak		
	No Dev Veh	All Dev Veh	% Change	No Dev Veh	All Dev Veh	% Change
A1 NB North of Tempsford	1538	1538	0.0%	1483	1483	0.0%
A1 NB South of Tempsford	1634	1699	4.0%	1585	1752	10.6%
A1 SB North of Tempsford	1519	1566	3.1%	1632	1751	7.3%
A1 SB South of Tempsford	1551	1733	11.7%	1748	1831	4.7%
A1 SB Off Slip/ Barford Road Priority Junction (all Movements)	402	695	73.0%	557	926	66.3%

- 6.6. The slip road merge/diverge arrangements have been considered based on DMRB CD 122 criteria, **with reference to Figure 3.12a of CD 122 'All-Purpose Road Merging Diagram' and Figure 3.26a of CD 122 'All-Purpose Road Diverging Diagram'**. The existing diverges are of single lane auxiliary diverge, layout A, option 2. The existing junction merges are of taper merge layout A, option 1. The with development flows indicate that the existing merge and diverge arrangements would remain suitable for the completed development.

B: A1/A421 Black Cat Roundabout

- 6.7. Any traffic for the A421 (towards Bedford) is likely to pass through the Black Cat Roundabout. At this stage, it is assumed that an A428 scheme is effectively committed which will result in a significant change to the existing junction providing substantial additional capacity. As the improvement would allow for future growth, no assessment of this junction is considered to be required at this time.

C: A1 / A428 Junction and slips roads

- 6.8. Traffic for the A1 to the north and some of that for the A421 would pass through this junction. With the proposed diversion of the A428 removing a significant amount of traffic from this location (particularly that of the A1 to the south), no assessment of the junction or slip roads is considered to be required at the local plan site allocation stage.

D: A428 / Barford Road

- 6.9. A significant number of development trips would pass through this 4 arm roundabout junction. The junction has therefore been assessed for capacity using Junctions 9. The model considers existing geometry for the base flows based on topographical survey. Given the unequal lane usage potential, the model has been run in Lane Simulation Mode.
- 6.10. The existing junction format could potentially be retained in the early stages of development with the needs of pedestrians to/from St Neots met by a free

bus service until the pedestrian and cycle facilities shown on Drawing 60830/PP/014 are completed. Table 6.2 below therefore shows the summary results from the capacity model for existing junction geometry for the 2040 base flows and also with the Phase 1 development included. The full model output is included in Appendix F. The base year results are generally consistent with those reported for the Highway England A428 scheme, and the junction would be expected to remain within capacity, with acceptable queue lengths with the additional traffic from Phase 1 (201 dwellings and 3.25Ha of employment) included.

Table 6.2 – A428/Barford Road Existing Junction Capacity Summary (with A428 Scheme)

Arm	Lane	2040 Base (with A428 Scheme)				2040 Base plus Proposed Development Phase 1			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Queue (PCUs)	RFC	Queue (PCUs)	RFC	Queue (PCUs)	RFC	Queue (PCUs)	RFC
A428(e)	1	2.9	0.207	3.8	0.206	2.3	0.217	4.3	0.215
	2		0.654		0.777		0.661		0.769
	3		0.145		0.285		0.140		0.308
Barford Road(s)	1	0.2	0.075	0.8	0.212	0.4	0.158	1.2	0.307
	2		0.072		0.375		0.115		0.418
A428(w)	1	3.1	0.418	3.6	0.734	3.6	0.423	4.2	0.727
	2		0.648		0.539		0.659		0.570
Barford Road(n)	1	2.3	0.360	2.5	0.220	2.0	0.408	2.5	0.253
	2		0.590		0.675		0.613		0.657

6.11. By Phase 2 of the development (Phase 1 plus 1,053 dwellings), the pedestrian and cycle facilities at the A428 junction would be expected to have been completed as illustrated Drawing 60830/PP/014. The toucan crossing is not included in the model as its usage frequency is not expected to be significant with respect to the operation of the junction. The revised junction has been modelled including each phase cumulatively with the model results after the completion of phases 2 (1,053 dwellings) and 3 (2,649 dwelling) summarised in Table 6.3. The traffic model output which also includes Phase 1 alone is also included with the model output in Appendix F.

Table 6.3 – A428/Barford Road Proposed Junction Capacity Summary (with A428 Scheme)

Arm	Lane	2040 Base plus Proposed Development Phases 1&2				2040 Base plus All Proposed Development			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Queue (PCUs)	RFC	Queue (PCUs)	RFC	Queue (PCUs)	RFC	Queue (PCUs)	RFC
A428(e)	1	1.5	0.546	3.4	0.720	2.4	0.661	42.6	0.991
	2		0.488		0.699		0.568		0.961
Barford Road(s)	1	1.9	0.561	2.5	0.537	241.6	1.017	19.1	0.929
	2		0.380		0.590		0.784		0.878
A428(w)	1	10.8	0.524	18.4	0.880	95.4	0.509	268.4	0.706
	2		0.899		0.859		0.997		1.004
Barford Road(n)	1	2.8	0.475	3.4	0.350	3.9	0.609	5.6	0.647
	2		0.650		0.718		0.694		0.768

- 6.12.** The results indicate with phases 1 and 2 completed the proposed junction would operate slightly above the preferred maximum RFC of 0.850, however all RFC values are forecast to be below 0.900. With a theoretical capacity limit of an RFC at 1.00, the junction is considered to be operating acceptably given the sustainable travel hierarchy requirements of planning policy. All queue lengths can be accommodated within the junction approaches with only the A428(w) approach exceeding 10PCUs, which would not have an adverse impact on any other junctions or access.
- 6.13.** The model of the Phase 3 traffic assumes as a worst case, that all traffic would access the highway network via Barford Road. The model results in Table 6.3 however show that should this be the case, the A428/Barford Road junction may just be over theoretical capacity with a maximum RFC of 1.017 for Barford Road(s) in the AM peak and the A428(w) in the PM peak with an RFC of 1.004. The corresponding forecast queue lengths for these RFCs would in excess of 1km in length which are not considered to be acceptable.
- 6.14.** Given the results for the A428/Barford Road junction above, it is clear that a further access to the highway network is required to support Phase 3. As set out in Chapter 4, this would be best achieved via an access to the new alignment of the A428 on the sites eastern boundary which is expected to be completed prior to any development commencing on Phase 3. Should this not be permissible then an access via Potton Road would become a less attractive but desirable alternative to provide some relief. A potential additional option of providing an access to both the A428 and to Potton Road would maximise access to/from the development and, allow traffic from the southeast part of St Neots (including Wintringham Park) to travel south and west without going via the existing A428/Barford Road junction (relieving background capacity). The A428/Barford Road junction would therefore be

subject to further testing at the planning application stage, as access options to the east of the site for Phase 3 become clearer.

- 6.15. Whilst not included in the analysis above, there may also be some benefit as a result of the East-West rail link which would result in a mode shift away from private car to rail for trips to Bedford or Cambridge. Whilst this would be of significant benefit to the development, there would also be transfer of trips from the background traffic which are not readily definable at this stage.

E: Barford Road / Little Barford Power Station

- 6.16. No relevant traffic data is available for this 4 arm roundabout junction, and the flows to/from the power station are not considered to be significant. To allow for the provision of foot/cycle facilities, the junction would likely become a signalised in the future. This junction would be assessed at the planning application stage should conditions allow traffic data to be collected at the time.

F: Site Accesses

- 6.17. At this stage the final number and format of accesses to Barford Road have yet to be determined. The site accesses would be designed with appropriate capacity provision and assessed at the planning application stage.

G: B1043 Barford Road / Chapman Way

- 6.18. Development traffic heading for St Neots would pass through this 4 arm roundabout junction, which also provides access to a food superstore. Traffic data for the junction was not included in the data available for the A428 scheme. The most recent traffic observations of the undertaken were in 2009. New traffic observations could not be made due to the COVID-19 travel restrictions of 2020/21. Given the changes in traffic routing as a result of new development and changes for the A428 scheme, it is considered that a reliable assessment of the junction cannot be undertaken at this stage.

- 6.19. The junction would be included in the scope of any future TA supporting a planning application assuming that new data could be collected or reliable modelled data obtained.

H: B1043 Barford Road / B1046 Cromwell Road

- 6.20. Should the development ultimately consider an access to Potton Road to the east of the site, traffic for all routes via this access would presently use the B1046/B1043 to reach the existing A428. The master plan for committed development at Wintringham Park ([17/02308/OUT](#)) however indicates that a shorter route would be available between the B1046 and A428 through that site. This route would be preferable to that of the B1043/B1046 and therefore no assessment of this junction is considered to be necessary. The potential need for an assessment of this junction would however be considered further at the planning application stage as the development proposals progress.

I: B1046 Cromwell Road / Potton Road

- 6.21. As with the B1043/B1046 junction above committed development at Wintringham Park ([17/02308/OUT](#)) provides a more direct route between the site and the wider highway network. Therefore, no assessment of this 3 arm traffic signal controlled junction is considered to be necessary.

Compliance with Planning Policy

- 6.22. The preliminary review of highway network indicates that mitigation required to provide foot/cycle facilities between the site and St Neots as indicated on Drawing 60830/PP/014 and supported by planning policy. The impact of the development itself is unlikely have a severe impact on the highway network as required by policy, with the appropriate mitigation and access arrangements as outlined in this report.

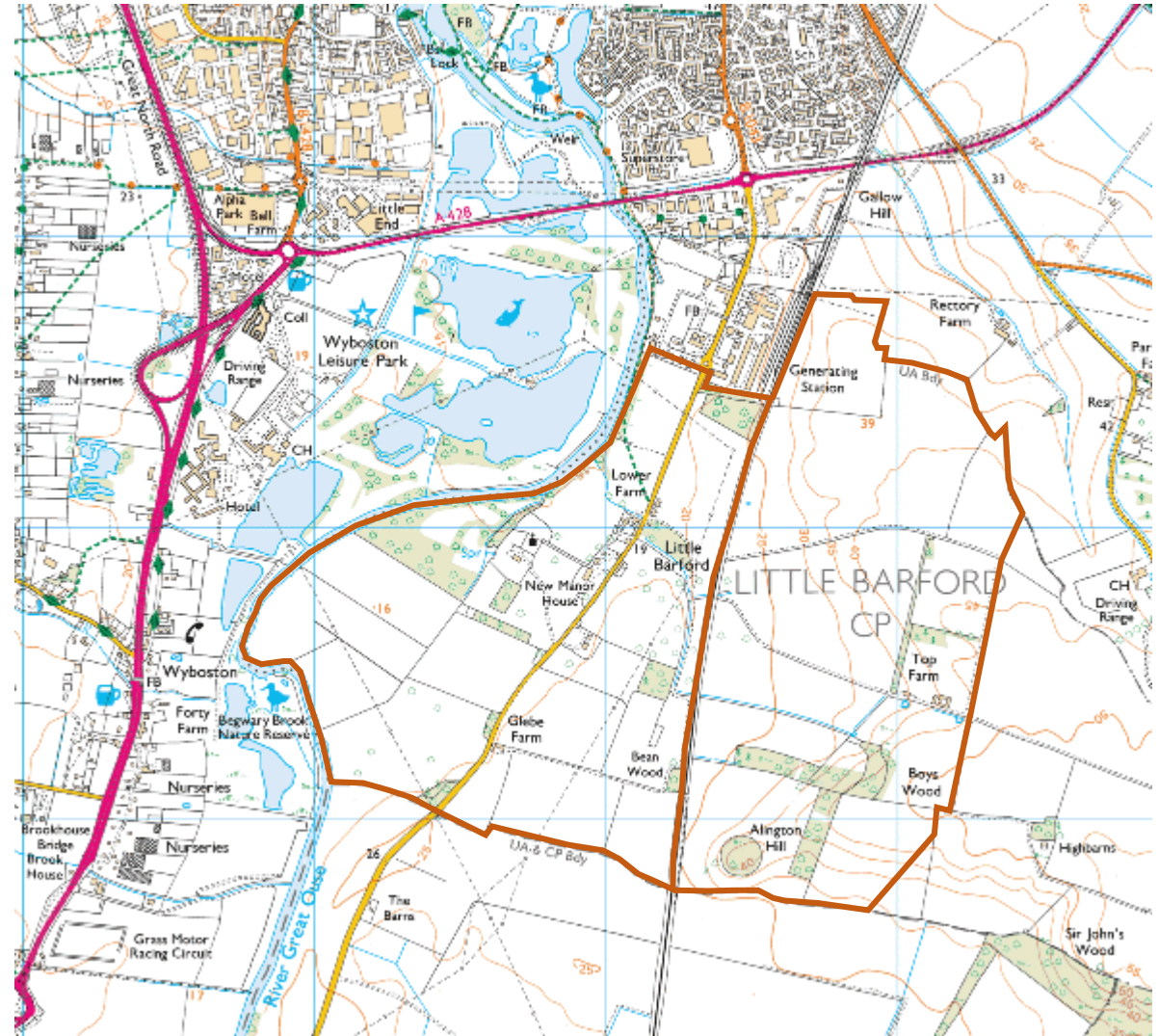
7. SUMMARY AND CONCLUSION

- 7.1. Richard Jackson Ltd have reviewed the transport implications of developing the proposed site of some 3903 dwellings, 3.25Ha of employment uses for its inclusion as an allocated site in the Bedford Local Plan 2040. Other uses including a 2.0ha of reserved land for retail use along with ancillary uses such as local shops and education facilities would be included as part of a future planning application for the site. This TA has also reviewed the relevant planning policy for the site with respect to transport whilst the site proposals are still in the early stages of development, the site is expected to comply with relevant policy as it progresses.
- 7.2. Access to the development will be from Barford Road for the first two phases of the development which are all west of the East Coast Main Line railway. For the later stages of the development to the east of the railway, a further vehicular access to the new alignment of the A428 (which would be complete ahead of occupation of Phase 3) has been identified, with alternatives considered.
- 7.3. Existing local amenities are present in near-by St Neots. New facilities will provide a link between existing amenities and the development for pedestrians and cyclists. In addition, 2.0ha of land will be reserved for retail use within the site and other complementary amenities are expected to be provided as the sites proposals are progressed.
- 7.4. There are presently limited public transport opportunities for travel to/from Little Barford, however a new bus service has been identified to ensure that sustainable travel would be available to the future occupiers.
- 7.5. For travel by private car, Barford Road provides access to the A428 lies to the north of the site for access towards Cambridge to the east and the A1 to the west. The A1 can also be reached to the south at Tempsford. For travel to Bedford the A421 can be reach via the A428/A1 route to the north of the site, with the return trip likely to be via the A1/Tempsford to the south.
- 7.6. The review of local highway safety records found a potential issue on the route to Tempsford near to the northern end of PRoW Tempsford FP1, which might require further investigation at the planning application stage. To the north flows at the A428/Barford Road junction are expected to change significantly as a result of the A428 scheme. Measures to provide for pedestrian/cycle trips to/from St Neots across the A428 have however been considered. Any future development, would be expected to provide any necessary mitigation such that it would unlikely have a disproportionate impact on local highway safety.
- 7.7. The development is of sufficient size to require a Travel Plan for both residential and employment elements. An Interim Residential Travel Plan and An Interim Framework Commercial Travel Plan would likely support any future planning application. Their implementation would be expected to be a condition of any planning permission granted.
- 7.8. Key junctions on the highway network have been reviewed with the slip roads at of the A1/Tempsford Junction and the A428/Barford Road roundabout specifically assessed for the proposed development traffic. Further junctions may require formal capacity assessments at the planning

application stage. The junctions assessed considered 2040 with the A428 scheme completed using traffic data from the A428 scheme DCO which included an allowance for committed development. The conclusions from the modelling are the impact of the development and the associated foot/cycle link to St Neots would not result in a severe impact as required by policy for the first two phases of the proposed development, with all traffic accessing the highway network via Barford Road. Alternative vehicular access to Barford Road would however be required for Phase 3 as identified herein.

- 7.9. The expected construction traffic has also been considered with construction vehicles likely to use either the A1/Tempsford or A428 routes to/from Barford Road and the development for the early phases of the development. A Construction Management Plan has however been identified to help manage traffic movements during the construction period.
- 7.10. In conclusion, the proposed development would untimely be provided in accordance with the aims and objectives of Local and National Transport Planning Policy and, subject to any mitigation, would not be expected to have a severe impact on the local transport network. The development can therefore be considered as suitable on transport grounds for inclusion in the Bedford Local Plan 2040 site allocations.

FIGURES



Site location grid reference 518356,256536
and postcode PE19 6YD

REPRODUCED FROM ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE
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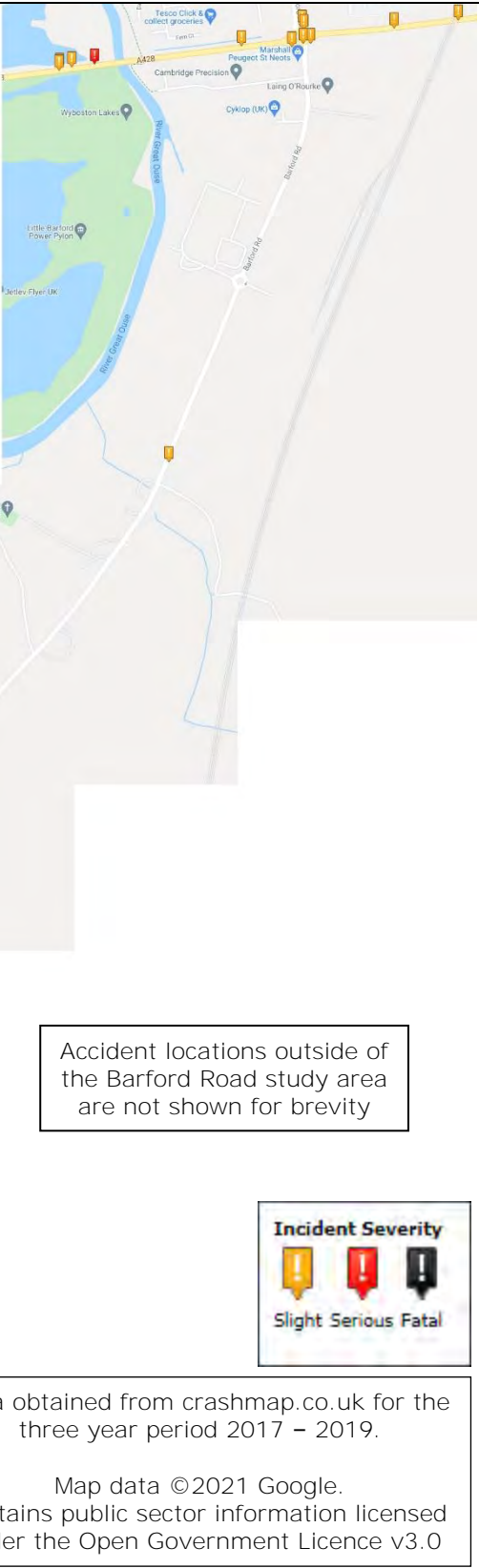
Client: Executors of the Late Nigel Alington		Drawing Title: Site Location Plan	
Job Title: Little Barford, Bedfordshire	Date: 30.7.21	Job No: 60830	Dwg No: Fig. 1 (NTS)



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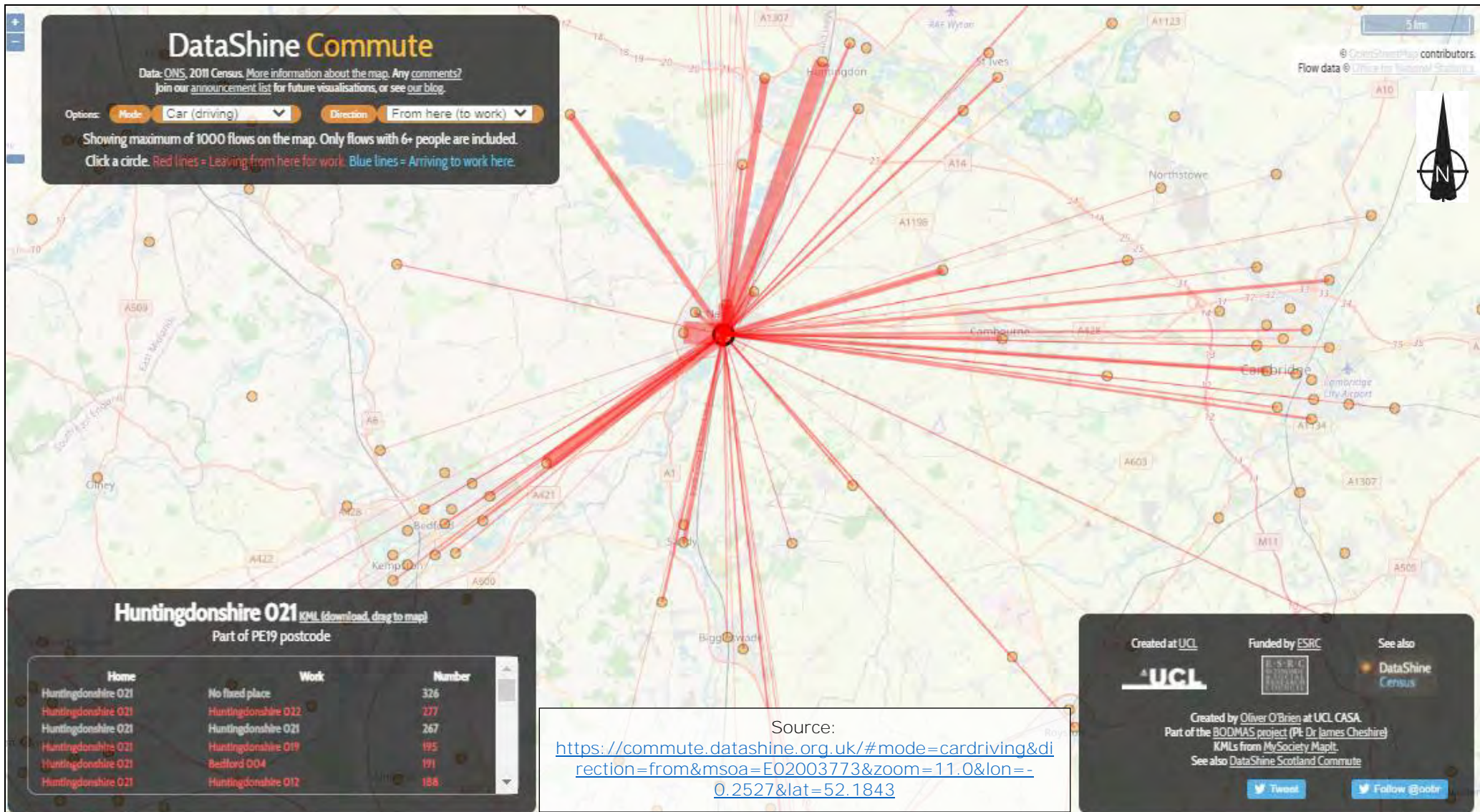
Accident locations outside of the Barford Road study area are not shown for brevity



Accident locations outside of the Barford Road study area are not shown for brevity

Data obtained from crashmap.co.uk for the three year period 2017 – 2019.
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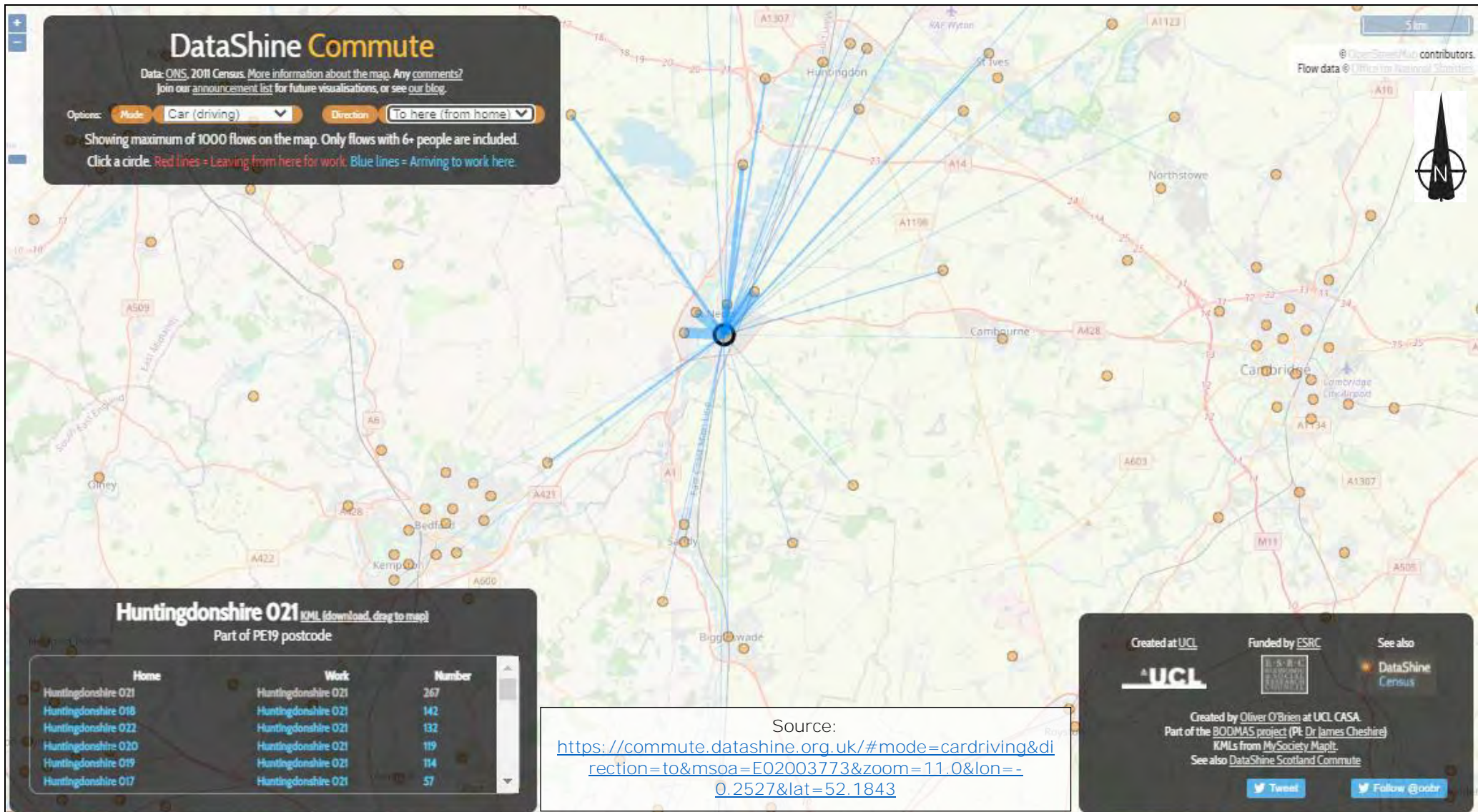
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Job Title: Alington Estate, Little Barford	Date: 13.07.21	Job No: 60830	Dwg No: Fig. 2 (NTS)



Client: Executors of the Late Nigel Alington	Drawing Title: 2011 Census Distribution for Residential Trips		
Job Title: Little Barford, Bedfordshire	Date: 14.07.21	Job No: 60830	Dwg No: Fig. 3 (NTS)

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Client:
 Executors of the Late
 Nigel Alington

Drawing Title:
 2011 Census Distribution for
 Employment Trips

Job Title:
 Little Barford,
 Bedfordshire

Date:
 14.07.21

Job No:
 60830

Dwg No:
 Fig. 4
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