APPENDIX 7.1

Transport Assessment

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Ref: 180724/H Jenkins

Date: 2nd August 2019

Version: 1.3

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1.0 INTRODUCTION

1.1.1 This Transport Assessment has been produced by Conisbee for This Land Ltd in support of an outline planning application (all matters reserved except for means of access in respect of junction arrangements onto Worts' Causeway and Babraham Road) for erection of up to 230 residential dwellings (including affordable housing), community facilities within Use Classes A1/A2/A3/A4/B1/D1/D2, new landscaping and public realm, car and cycle parking, infrastructure, other associated works following the demolition of all existing buildings on the site. The site is located to the north of Babraham Road, approximately 4km to the south-east of Cambridge city centre. The proposed development comprises a mix of affordable and private houses, landscaping and public open space.

1.1.2 The location of the site is shown in Figure 1.1 below.

Figure 1.1 Site location

1.2 Scope of the report

1.2.1 The scope of this report was subject to pre-application advice with the Highway Authority on the 18th March, 2019. A scoping note was submitted, and scoping advice received. A post meeting note was prepared and circulated to attendees (refer to Appendix A for these documents). In summary, the following was agreed:

- Trip generation rates;
- Trip distribution and assignment;
- Access strategy;
- Assessment years and growth rates;
- Committed developments to be included in the assessment; and,
- Junctions to be included in detailed capacity analysis.

1.3 Structure of the report

1.3.1 Following this introductory section, the report is structured as follows:

- Section 2 reviews the national, regional and local planning policy relevant to the development proposals;
- Section 3 describes the existing transport conditions surrounding the site including accessibility by all modes of transport together with a review of personal injury accident data within the study area;
- Section 4 outlines the development proposals;
- Section 5 predicts the likely travel demand generated by the proposed development;
- Section 6 sets out the sustainable transport strategy;
- Section 7 considers the impact of the development on the highway network and any mitigation measures required; and,
- Section 8 sets out conclusions of the report.

2.0 POLICY REVIEW

2.1 Introduction

2.1.1 This section of the Transport Assessment out the current national, regional and local transport planning policy relevant to the proposed development.

2.1.2 Current transport policies at the national, regional and local level are built around the central themes of long-term sustainable development, sustained investment in transport and improved accessibility at all levels. These policies promote continued economic growth through the provision of an efficient and reliable transport system, a reduction in traffic congestion, improvements in highway safety, and enhancements to the accessibility of sustainable modes of travel.

2.1.3 The key objective of the transport strategy for the development proposal is to deliver sustainable, safe transport to support the development.

2.2 National policy

National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2019)

2.2.1 The new NPPF revision was published in February 2019, which is the second revision (following the July 2018 revision), since 2012. At the heart of the NPPF is a presumption in favour of sustainable development. This document *'provides a framework which locally-prepared plans for housing and other development can be produced'.*

2.2.2 To achieve sustainable development there are three overarching independent objectives, which need to be pursued in mutually supportive ways. The NPPF defines the delivery of sustainable development through three objectives:

- An economic objective – to help build a strong, responsive and competitive economy;
- A social objective – to support strong, vibrant and healthy communities; and,
- An environmental objective – to contribute to protecting and enhancing the natural, built and historic environment.

2.2.3 The NPPF recognises that transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

- Potential impacts of the proposed development on the transport network can be addressed;
- Opportunities from transport infrastructure and changing transport technology and usage are realised, in relation to the scale, location or density of the development that can be accommodated;
- Walking, cycling and public transport opportunities are identified and pursued;
- Environmental impacts of transport and traffic can be identified, assessed and taken into account, including opportunities for avoiding and mitigating any adverse effects; and,
- Provision of high-quality places, where patterns of movements, streets, parking and transport considerations are integral to the design (Paragraph 102).

7.24 It is recognised that the planning system should manage growth in support of these objectives. It is also considered that major developments should be located in sustainable locations, where the need to travel is limited and a choice of alternative modes of travel are offered. This can improve air quality, health and well-being, as well as reduce congestion and emissions. It is recognised that opportunities to maximise sustainable transport will differ between urban and rural areas and this should be taken into account.

7.25 The NPPF states that new developments should '*exploit any opportunities to make a location more sustainable*' (Paragraph 84).

7.26 Therefore, development should be located and designed where practical to, amongst other things:

- Support an appropriate mix of uses, and minimise the number and length of journeys needed for employment, education, leisure, shopping and other activities;
- Actively engage with local highway authorities, transport infrastructure providers, operators and neighbouring councils so that investments and strategies for sustainable transport and development patterns are aligned;
- Identify and protect sites and routes which could be critical in developing infrastructure to widen transport choice, and realise opportunities for large developments; and,
- Provide high quality walking and cycling networks and support facilities such as cycle parking (Paragraph 104).

7.27 For large scale national developments, planning policies should provide appropriate transport infrastructure and facilities in the area.

2.2.9 The NPPF sets out the following specific advice with regards to parking: '*If setting local parking standards for residential and non-residential development, local planning authorities should take into account:*

- *The accessibility of the development;*
- *The type, mix and use of development;*
- *The availability of and opportunities for public transport;*
- *Local car ownership levels; and*
- *The need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles'* (Paragraph 105).

2.2.10 Maximum parking standards for residential and non-residential development should only be applied where there is clear justification that it is necessary for managing the local road network, or for optimising the density of development that is already well served by public transport.

2.2.11 Planning policies should provide an effective use of land in meeting the needs for houses and other uses, whilst safeguarding the environment and ensuring safe and healthy living conditions.

2.2.12 When assessing new developments, consideration of the following should be taken into account:

- Appropriate opportunities to promote sustainable transport modes, based on the type and location of development;
- Safe and suitable access to the site can be achieved for all users; and,
- Any impacts of development on the transport network, including highway safety, can be effectively mitigated (Paragraph 108).

2.2.13 Development should only be refused on highway grounds if there would be an *'unacceptable impact on highway safety, or the residual cumulative impacts on the road would be severe'* (Paragraph 109). Therefore, new applications should:

- Prioritise pedestrian and cycle movements (within the scheme and with neighbouring areas), and encourage the use of public transport, by maximising the catchment area for public transport services and provision of appropriate facilities;
- Address the needs of people with disabilities and reduced mobility;
- Create safe, secure and attractive places that minimise the conflict between vehicles and vulnerable road users, and respond to local character and design standards;

- Allow for the efficient delivery of goods, and access by service and emergency vehicles; and,
- Enable charging of plug-in and ultra-low emission vehicles in safe, accessible and convenient locations.

2.2.13 Paragraph 111 of the NPPF states that all developments that generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a Transport Statement or Transport Assessment so that the impacts of the proposals can be assessed.

Travel plans, transport assessments and statements in decision-taking (2014)

2.2.14 The National Planning Practice Guidance (NPPG) issued by the Department for Communities and Local Government (now the Ministry of Housing, Communities and Local Government), considers when transport assessments and transport statements are required, and what they should contain. Transport assessments and statements are ways of assessing the potential transport impacts of developments and may propose mitigation measures where these are necessary to avoid unacceptable or 'severe' impacts. This advice states that an assessment can positively contribute to the following:

- Encouraging sustainable travel;
- Lessening traffic generation and its detrimental impacts;
- Reducing carbon emissions and climate impacts;
- Creating accessible, connected, inclusive communities;
- Improving health outcomes and quality of life;
- Improving road safety; and,
- Reducing the need for new development to increase existing road capacity or provide new roads. (Paragraph 006).

2.2.15 A transport assessment should include the following:

- Details about the development and its travel characteristics;
- Information about neighbouring uses, road network and existing public transport provision;
- Data about current traffic flows and an assessment of the impact of trips from committed development;
- Analysis of injury accident records;
- Assessment of the likely impacts of transport related to the development;
- Description of parking facilities; and,

- Measures to improve the accessibility, reduce the need to travel and mitigate the residual impacts (Paragraph 015).

Manual for Streets (March 2007)

2.2.16 Manual for Streets (MfS) was published in 2007 by the Department of Communities and Local Government and Department of Transport, superseding advice in Design Bulletin 32 and People, Places, Streets and Movement. The aim of MfS is to encourage the creation of streets for all highway users, and discourage design aimed solely at meeting the needs of the motorist. The key recommendation is that increased consideration should be given to the 'place' function of streets and this should be balanced with the 'movement' function. MfS provides guidance on how to balance the needs of motorists with those of cyclists, pedestrians and residents.

2.2.17 Good design is fundamental to achieving high-quality, attractive places that are socially, economically and environmentally sustainable. It can strengthen communities and make it easier and more appealing to choose sustainable modes of transport.

2.3 Local policy

Cambridge Local Plan (2018)

2.3.1 The Cambridge Local Plan was published by Cambridge City Council in October 2018 and replaced the Cambridge Local Plan 2006. The Cambridge Local Plan sets out the policy for the city up to 2031.

2.3.2 It is stated that more people in Cambridge than anywhere else in the United Kingdom are likely to use sustainable modes of transport to travel to work. Therefore, the Local Plan will support the use of sustainable modes of transport, especially, walking, cycling and public transport use.

2.3.3 The Local Plan identifies 15 strategic objectives and, in terms of transport, all new developments will be required to:

- *'Contribute to the vision of Cambridge as an environmentally sustainable city, where it is easy for people to make a transition to a low carbon lifestyle...;*
- *Be located to help minimise the distance people need to travel, and be designed to make it easy for everyone to move around the city and access jobs and services by sustainable modes of transport; and,*
- *Promote a safe and healthy environment, minimising the impact of development and ensuring quality of life and place.'*

2.3.4 Policy 5 (Strategic transport infrastructure) states that the Council will work with developers to encourage modal shift and the greater use of sustainable forms of transport and encourage transport schemes that improve linkages across the region. More specifically the following will be supported:

- '*delivery of local and strategic transport schemes, subject to the outcome of up-to-date, detailed assessments and consultation, where appropriate;*
- *promoting greater pedestrian and cycle priority though and to the city centre, district centres and potentially incorporating public realm and cycle parking improvements;*
- *promoting sustainable transport and access for all to and from major employers, education and research clusters, hospitals, schools and colleges;*
- *working with partners in supporting the Transport Strategy for Cambridge and South Cambridgeshire's (TSCSC) aim for a joined-up, city-wide cycle and pedestrian network by addressing 'pinch-points', barriers and missing links;*
- *linking growth to the proposed city-wide 20 mph zone; and*
- *easing pressure on the air quality management area (AQMA) in the city centre.'*

2.3.5 The Local Plan states that '*a policy combination of demand management and accessibility measures, along with changing lifestyle choices made by the city's residents, has significantly increased the use of sustainable travel modes for work in Cambridge'* (Paragraph 2.61).The Local Plan, along with the Transport Strategy for Cambridge and South Cambridgeshire 2013, will seek to continue to improve accessibility to key locations.

2.3.6 The site is identified for residential development in the Cambridge Local Plan (2018). Sites GB1 and GB2 (Land north and south of Worts' Causeway) are released from the Cambridge Green Belt for residential development of up to 430 dwellings, with site GB2 allocated for up to 230 dwellings. The development of these sites will be supported (in transport terms) subject to:

- *'the establishment of appropriate public footpaths linking the development with the surrounding chalk farmland;*
- *the retention of the country lane appearance and character of Worts' Causeway, including its' verges, hedgerows and bridleway;*
- *the retention of Worts' Causeway's use for buses only during peak periods, with limited car access to provide a green link into the Cambridge Green Belt with space for pedestrians, horse riders and cyclists;*
- *the provision of a single point of crossover between GB1 and GB2 and a single access on to Babraham Road;*

- *the adoption of a sensitive approach to internal street layout and design in order to integrate the development into this setting on the edge of the Cambridge Green Belt';*
- *contributions being made towards improved community facilities and services in this part of the city'* (Policy 27).

2.3.7 Figure 2.1 below shows the GB1 and GB2 land allocation within the Cambridge Local Plan (2018).

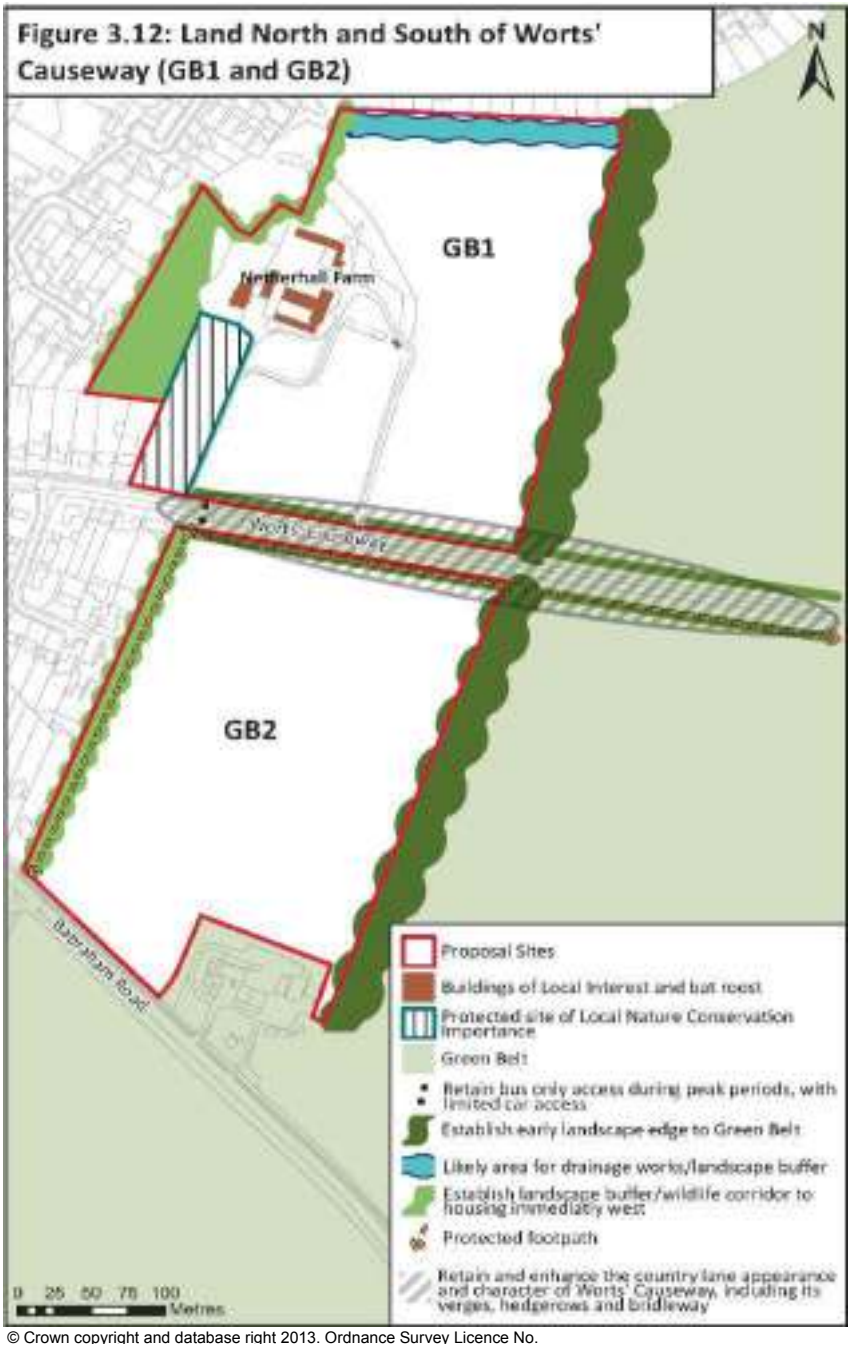

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Figure 2.1 GB1 and GB2 site allocation

2.34 Policy 80 of the Local Plan states that development will be supported where it demonstrates that prioritisation of access is by walking, cycling and public transport, and is accessible for all. This will be achieved by:

- *'ensuring major developments on the edge of the city and in the urban extensions are supported by high quality public transport linking them to Cambridge's city centre and major centres of employment. The public transport links should be within walking and cycling travel distance of the development;*
- *supporting public transport, walking and cycling to, from and within a development by:*
  - *giving priority to these modes where there is conflict with cars;*
  - *conveniently linking the development with the surrounding walking, cycling and public transport networks;*
  - *prioritising networks of public transport, pedestrian and cycle movement so these are the best and safest means of moving around Cambridge;*
  - *ensuring accessibility for those with impaired mobility; and,*
  - *safeguarding existing and proposed routes for walking, cycling, and public transport; and,*
- *ensuring that any development requiring a new road or road access accords with the following:*
  - *it is designed to give high priority to the needs of pedestrians and cyclists, including their safety;*
  - *it restricts through-access for general motor traffic where appropriate;*
  - *it discourages speeding;*
  - *it discourages inappropriate car-based links within the network, but encourages non-car-based links;*
  - *it minimises additional car traffic in the surrounding area; and*
  - *there is safe and appropriate access to the adjoining road, pedestrian and cycle networks.'*

2.35 Policy 81 of the Local Plan states that developments will only be permitted where they do not have an unacceptable transport impact. New developments will be required to supply sufficient information so that the transport impact can be suitably assessed; a travel plan to accompany all major development proposals; and reasonable and appropriate mitigation measures where necessary to make the transport impact of the development acceptable.

2.36 Policy 82 of the Local Plan states that parking should be provided in accordance with parking standards set out in Appendix L of the Local Plan, as summarised below:

- No more than 1.5 spaces per dwelling for up to two-bedroom dwellings; and,
- No fewer than 0.5 spaces per dwelling and up to a maximum of two spaces per dwelling for units with three bedrooms or more.

2.3.11 Policy 82 also states that the accessibility of the site to public transport and the nature of the use will be taken into consideration.

The Transport Strategy for Cambridge and South Cambridgeshire (2014)

2.3.12 The Transport Strategy for Cambridgeshire and South Cambridgeshire (TSCSC) focuses on the sustainable transport capacity and what needs to be provided in the sub-region between the key economic hubs in and around the city and where people live. The Strategy plans to further improve the sustainable transport network around the economic hubs and the hi-tech clusters in and around the city by making movement between them straightforward and convenient.

2.3.13 Policy TSCSC1 states that sustainable transport capacity will be provided in and around the city between key employment areas and to where people live and access services.

2.3.14 Policy TSCSC2 states that in the future:

- *'More people will walk, cycle and use public transport services for journeys into, out of and within the city;*
- *More people will car share;*
- *Pedestrians, cyclists and buses will be prioritised for trips across the city. General vehicular traffic will not be prohibited, and accessibility will be maintained, but a car journey may be longer and more time consuming than at present for many trips; and,*
- *General traffic levels will remain at current levels.'*

2.3.15 Policy TSCSC6 states that transport assessments will be required to support any planning application that produces a net increase of approximately 500 person trips (by all transport modes) per day. An assessment may also be required if the development falls below this threshold but there are other local issues that may need to be addressed.

2.3.16 Policy TSCSC7 states that all new development will be required to make provision for integrated and improved transport infrastructure to ensure that most people can travel by walking, cycling or by public transport. In addition, access by walking, cycling and public transport will be expected to be maximised in all new developments.

2.3.17 Policy TSCSC12 states that the capacity, quality and safety of the walking and cycling network will be increased to enhance and promote healthy and active travel. New developments will be expected to provide convenient pedestrian and cycle infrastructure.

2.3.18 Policy TSCSC13 states that if there is a requirement for new roads, these should adhere to the highest quality design and where feasible pedestrian and cycle facilities will be provided alongside new road infrastructure.

2.3.19 Policy TSCSC14 states that new roads within development sites will need to:

- Provide a high standard of pedestrian, cycle and public transport infrastructure where feasible and necessary;
- Discourage speeding;
- Restrict through access for general motor vehicle (unless specifically required as part of the development); and,
- Ensure that there are safe and appropriate access arrangements to the adjoining public highway network and minimise the possibility of additional car traffic.

Cambridge Local Transport Plan 2011-2031(July 2015)

2.3.20 The Cambridge Local Transport Plan (LTP) covers the period between 2011-2031. The following challenges highlighted in the LTP are:

1. Improving the reliability of journey times;
2. Reducing the length of the commute and the need to travel by private car;
3. Making sustainable modes of transport a viable and attractive alternative to the private car;
4. Future-proofing the maintenance strategy and new transport infrastructure to cope with the effects of climate change;
5. Ensuring that all people can access the services they need;
6. Addressing the main causes of road accidents in Cambridgeshire;
7. Protecting and enhancing the natural environment by minimising the environmental impact of transport; and,
8. Influencing national and local decisions on land-use and transport planning that impact on routes through Cambridgeshire.

2.3.21 The LTP sets out the following objectives:

- '*Enabling people to thrive, achieve their potential and improve their quality of life*
- *Supporting and protecting vulnerable people.*
- *Managing and delivering the growth and development of sustainable communities.*

- *Promoting improved skill levels and economic prosperity across the county, helping people into jobs and encouraging enterprise.*
- *Meeting the challenges of climate change and enhancing the natural environment.'*

2.3.23 LTP targets 01-04 focus on road safety, LTP targets 05-10 focus on changing travel trends, LTP targets 11-13 focus on the environment and reducing greenhouse gas emissions from road transport, LTP tagets14-15 focus on road and footway conditions. To encourage changes in travel trends LTP targets 05 and 06 focus on bus priority measures; LTP target 07 focuses on investment in new cycleways and strategies to promote cycling; LTP targets 09 and 10 focus on encouraging the use of sustainable modes and reducing the reliance on a private car by using Intelligent Transport Systems and the Integrated Highway Management Centre.

2.3.24 In order to address Challenge 1 of the LTP, it is proposed to introduce further measures to manage demand including use of an Intelligent Transport System; developing and keeping under review the long-term transport strategy; encouraging more freight onto rail and the use of appropriate routes for road freight and keeping the network safe by maintaining the transport network.

2.3.25 To address Challenge 2 of the LTP, it is proposed to work with local planning authorities, encourage and adopt travel plans, support developments that promote travel planning; encourage developers to introduce Travel for Work Partnerships in offices and promote journey planning tools.

2.3.26 To address Challenges 3, 5 and 7 of the LTP it is proposed to work with local planning authorities and developers to provide and encourage the use of sustainable infrastructure to cater for walking and cycling; improve integration, availability and information of sustainable travel modes; ensure that new developments provide appropriate and innovative infrastructure; manage demand for cars and encourage the use of car sharing, community transport and car clubs; promote health and lifestyle benefits of sustainable modes of travel and support and expand travel planning programmes.

2.3.27 To address Challenges 4 and 7, it is proposed to further invest in strategies to better manage effects of climate change, ensure that new infrastructure is able to withstand the projected impacts of climate change and explore the use of new technologies and designs to limit the impacts of climate change.

2.3.28 To address Challenge 6, it is proposed to improve road user behaviour through education and training; working with businesses, schools and employers to implement strategies for managing safety of employees and developing programmes to reduce the number of young road users killed or injured in Cambridgeshire.

2.3.28 To address Challenge 8, it is considered that transport challenges facing Cambridgeshire should be considered in national and local decision making.

Cambridgeshire's Long-Term Transport Strategy (July 2015)

2.3.29 The Cambridgeshire's Long-Term Transport Strategy identifies major infrastructure requirements that are needed to address the existing problems and capacity constraints on Cambridgeshire's transport network.

2.3.30 The main objectives of the long-term transport strategy are:

- *'to ensure that the transport network supports sustainable growth and continued economic prosperity;*
- *to improve accessibility to employment and key services;*
- *to encourage sustainable alternatives to the private car, including rail, bus, guided bus, walking and cycling, car sharing and low emission vehicles;*
- *to encourage healthy and active travel, supporting improved well-being;*
- *to make the most efficient use of the transport network;*
- *to reduce the need to travel;*
- *to minimise the impact of transport on the environment; and*
- *to prioritise investment where it can have the greatest impact.'*

2.3.31 Some of the schemes identified in the vicinity of the site include:

- *'Bus priority measures past congestion on the A1307 corridor between Haverhill and Cambridge (by March 2020);*
- *One or more Park and Ride/rural interchange sites accessed from the A1307 to take advantage of the bus priority measures on A1307 corridor (by March 2020);*
- *Cambridge to Haverhill High Quality Passenger Transport (to be determined);*
- *Highway capacity improvements between Addenbrooke's Road and Babaraham Road;*
- *A new station at Addenbrooke's to serve the Cambridge Biomedical campus;*
- *Highway capacity improvements between Addenbrooke's Road and Babraham Road, and Babraham Road and Cherry Hinton Road (Yarrow Road) including tunnel under the Gogs (to be determined).'*

2.4 Summary

2.4.1 On this basis, the site's location is considered sustainable, with its proximity to public transport services, opportunities for the use of active travel modes and access to a range of local facilities, particularly employment.

2.4.2 It is considered that the proposed development of 230 dwellings complies with relevant national, regional and local land use and transport policies, as:

- It provides good accessibility by walking, cycling and public transport and is located to minimise journey length, particularly to local employment areas;
- It ensures that transport is accessible to all, taking into account the needs of disabled and other less mobile people;
- The onsite layout is designed to prioritise walking and cycling and provides convenient connections to the surrounding area. It discourages both through access for general traffic and speeding;
- The vehicle connections are designed in accordance with the standards and provide high quality facilities for pedestrians and cyclists; and,
- It is in accordance with the parking standards.

2.4.3 It is also in accordance with the site allocation, with access onto Babraham Road and a connection across Worts' Causeway to site GB1 (north of Worts' Causeway) with no vehicle access west along Worts' Causeway during restricted times.

2.4.4 It is considered that in accordance with local and national policy, the development will not have an unacceptable impact in transport terms.

3.0 EXISTING SITUATION AND ACCESSIBILITY

3.1 Introduction

3.1.1 This section of the Transport Assessment considers the travel characteristics of the existing residents surrounding the site and describes the existing transport network within the vicinity of the site. It provides a brief description of the local highway network and sets out the findings of the traffic surveys commissioned to establish the base traffic flows on the highway network.

3.2 Site location

3.2.1 The proposed development is located on the outskirts of Cambridge, approximately 4km south-east of Cambridge city centre. The site is bounded by:

- Worts' Causeway to the north;
- Open Green Belt land to the east;
- Babraham Road to the south; and,
- Residential dwellings fronting Babraham Road, Worts' Causeway and Alwyne Road to the west.

3.2.2 The location of the development site, together with the local highway network, is shown in Figure 3.1 below.

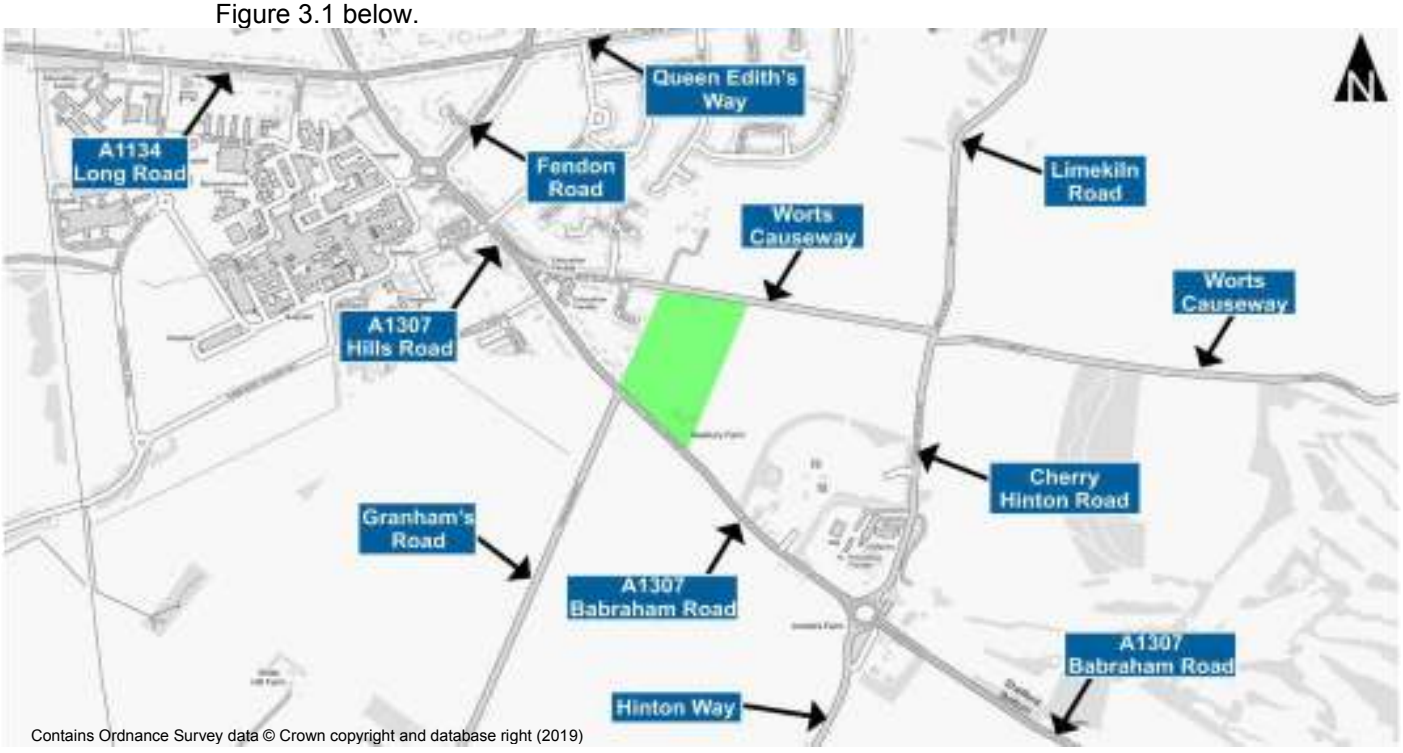

Figure 3.1 Site location and local highway network

3.3 Travel characteristics

3.3.1 The site is located within Cambridge City Council. Census 2011 Travel to Work data has been reviewed to establish the travel characteristics of the existing population surrounding the site, including travel to work and car ownership statistics.

Travel to work mode

3.3.2 Travel to Work data from the 2011 Census has been used to establish the mode of travel to work for existing residents in the area.

3.3.3 Super output areas are geographical areas built from contiguous output areas, which are consistent in population size. Between 4 to 6 output areas make up Lower Super Output Areas (LSOA), and between 4 to 6 LSOA areas make up Middle Super Output Areas (MSOA).

3.3.4 Table 3.1 below provides a summary of the travel to work mode split for Cambridge Lower Super Output Area (LSOA), Cambridge Middle Super Output Area (MSOA) and Cambridge City. This excludes those not in employment.

Table 3.1 Mode split based on 2011 Census data

Mode	Mode split (%)		
	Cambridge LSOA (013D)	Cambridge MSOA (013)	Cambridge City
Train	6	7	5
Bus	5	5	6
Motorcycle	1	1	1
Cycle	25	24	30
Walk	15	21	16
Car passenger	2	3	3
Car driver	36	31	32
Work from home	10	8	7

3.3.5 It should be noted that Census Travel to Work data differs from the trip generation survey data as the survey data records vehicle journeys for all purposes, not just work related.

3.3.6 It can be seen from the table that the majority of people living in the LSOA travel by sustainable modes (walking, cycling and public transport) at 51%, which is slightly lower than for Cambridge as a whole at 57%. It can also be seen that 36% of people in the LSOA area drive to work, which is slightly higher than for the MSOA area at 31% and Cambridge as a whole at 32%.

3.3.7 It should be noted that surveys carried out as part of Cambridge Southern Fringe (May 2019) Residents Surveys show a similar mode share split. The surveys, which included sites at Clay Farm, Glebe Farm, Nine Wells and Trumpington Meadows, show that:

- car use (alone) is approximately 35%;
- car use (shared) is approximately 5%;
- cycling is 35%;
- walking is 5%;
- public transport use (Park and Ride, bus and train) is approximately 18%; and,
- other methods are 2%.

3.3.8 National Travel Survey data (NTS0502 2017) shows that in the morning peak, approximately 25% of trips are for employment purposes, 50% for education purposes and 25% are for shopping and leisure purposes. In the evening peak, approximately 40% of trips are for employment purposes, 5% are for education purposes and 55% are for leisure and shopping purposes. The survey is a better representation of the likely trip generation of the development.

3.4 Car ownership

3.4.1 Based on the 2011 Census data, the car ownership rate per household is as follows:

- 1.4 for the LSOA area;
- 1.1 for the MSOA area; and,
- 0.9 for Cambridge as a whole.

3.4.2 Given that the properties within the LSOA area are predominantly privately owned (95%), large houses of 4+ bedrooms (65%), it is considered that the development is likely to have a car ownership rate lower than 1.4 cars per household. Predicted car ownership rates are likely to be similar to the MSOA, which has 76% privately-owned houses and 73% of the properties with the 3+ bedrooms.

3.5 Accessibility by walking and cycling

3.5.1 The site is located on a high-quality public transport corridor with excellent access to bus services and cycle routes, and within walking distance of a wide range of employment opportunities. The journey to work mode share by car is substantially lower than other edge of town sites in the UK. There are extensive employment opportunities in the area and a very high proportion of residents walk to work within the middle super output area, including Addenbrooke's Hospital. Travel to work by mode for the existing residents in the middle super output area is shown in Figure 3.2 (walking, cycling, bus) and Figure 3.3 (car driver) below.

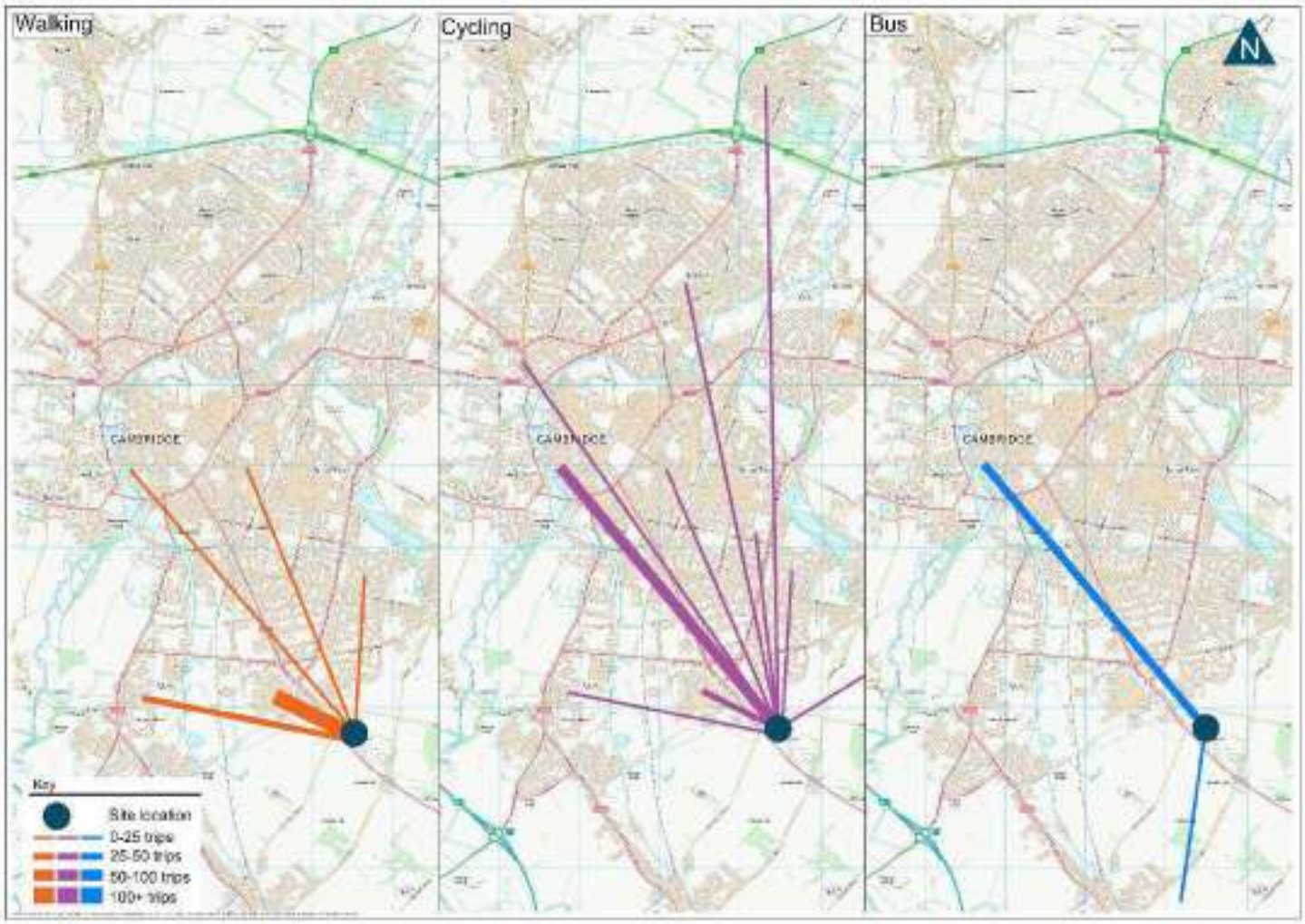

Figure 3.2 Distribution of sustainable journeys (walking, cycling and bus)

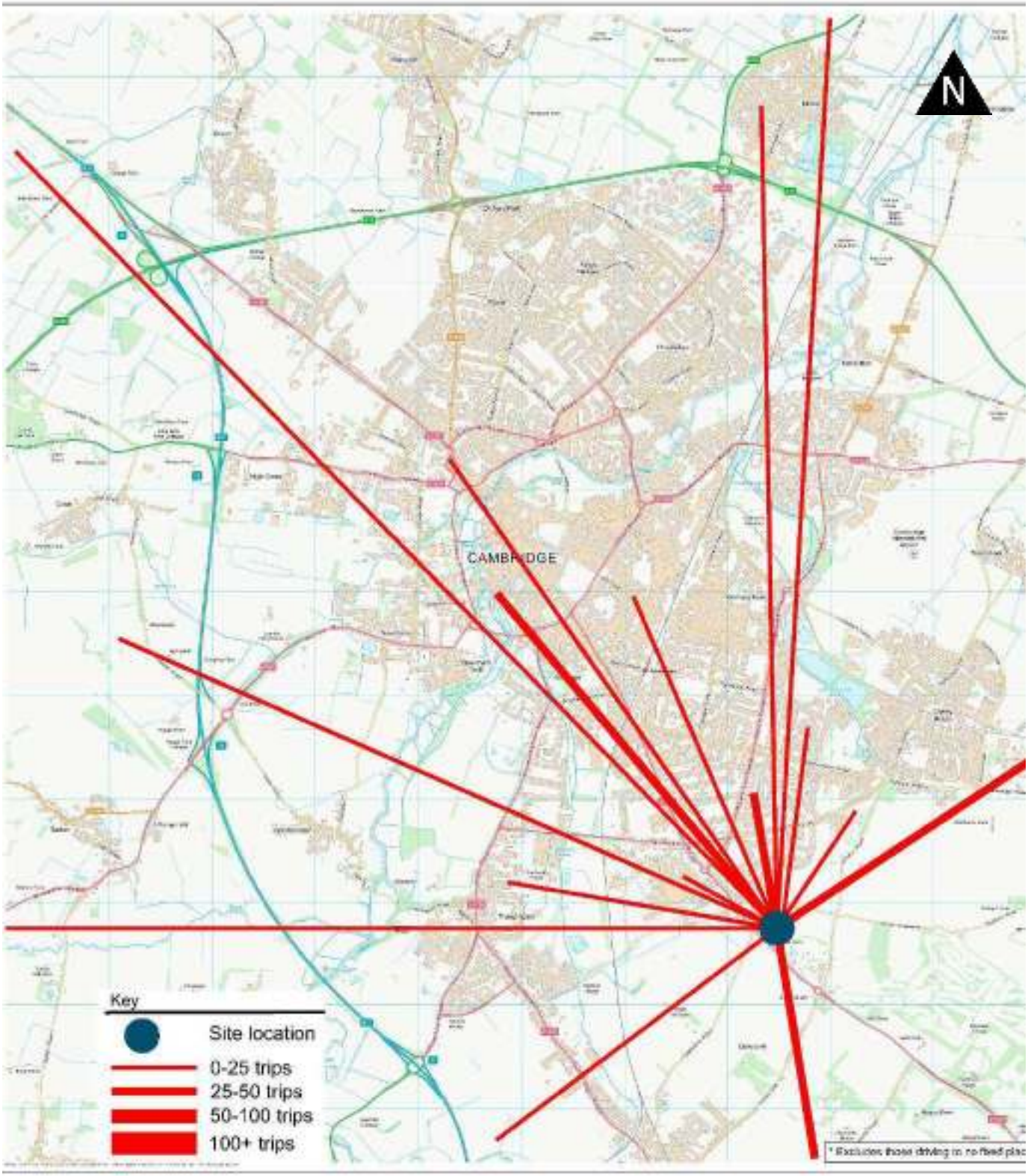

Figure 3.3 Distribution of car driver trips

3.5.5 It should be noted that the figures above show the most popular destinations (per mode) and exclude those with no fixed destination.

3.5.3 The figures above show the following key points about travel to work:

- A large proportion of those who walk to work stay within the same output area;
- Cycle to work destinations are largely within the same output area or to the centre of Cambridge;
- The majority of bus travel to work trips are to the centre of Cambridge; and,
- Destinations for journey to work by car are dispersed.

Walking

3.5.4 Walking can provide health, economic and environmental benefits. Pedestrians are well provided for within the vicinity of the site, with Babraham Road and the roads leading from it as it heads north to the city centre, having footways on one or both sides of the carriageway. These footways provide a continuous link between the site and local facilities and amenities, particularly the key walking destination to Addenbrooke's Hospital. There is a footway provided along the northern edge of Worts' Causeway outside residential properties.

3.5.5 There is a shared cycleway/footway provided along the eastern side of Babraham Road, which provides a continuous link from the site to the junction with Worts' Causeway, further to the north. There is a signalised crossing facility at Worts' Causeway to assist pedestrians heading north along the eastern side of the carriageway. There is also a signalised pedestrian crossing across Hills Road, near the access to Red Cross Lane.

3.5.6 On the approach to the Babraham Road/Worts' Causeway junction, a footway is also provided on the western edge of Babraham Road, which provides safe and convenient access to other roads in the vicinity.

3.5.7 The Chartered Institution of Highway and Transportation (CIHT) guidelines 'Providing for Journeys on Foot' indicates that the desirable walking distance for commuting and school journeys is 500m, the acceptable walking distance is 1km and 2km is the preferred maximum. The CIHT guidelines also indicate that the desirable walking distance for 'Elsewhere', including local amenities, is 400m, the acceptable walking distance is 800m and 1.2km is the preferred maximum.

3.5.8 As requested by the Highway Authority, Figure 3.4 shows all facilities located within 2km walking distance from the centre of the proposed site. These local amenities within walking distance of the site include playing areas and public open spaces; public transport services; employment; and places of education. Further afield there are extensive facilities located within Cambridge city centre.

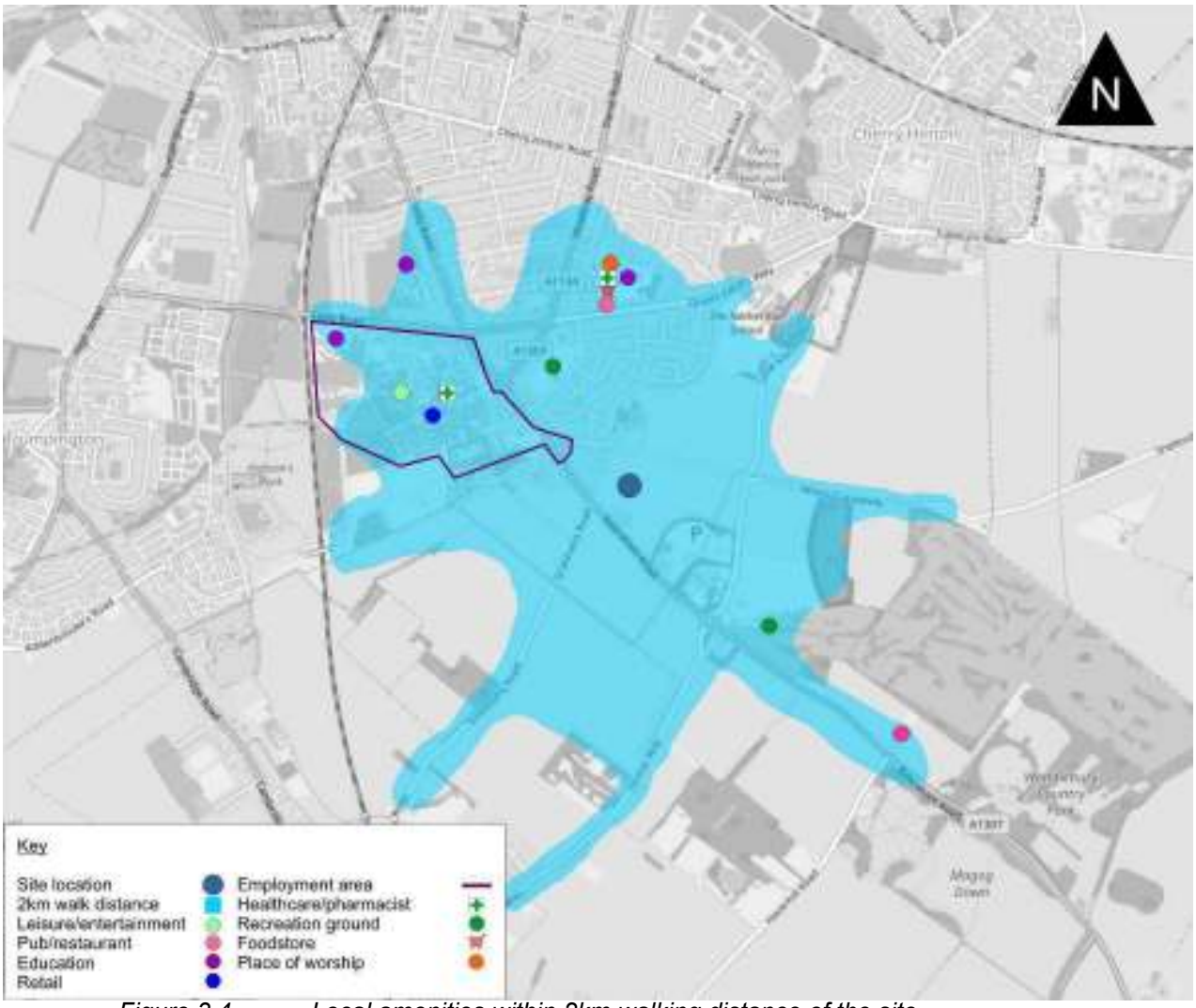

Figure 3.4 Local amenities within 2km walking distance of the site

PRoWs, National Trail and former Permissive footpath

3.5.9 There is a former permissive footpath along the western edge of the site, which connected Babraham Road to the south and Worts' Causeway to the north.

3.5.10 Worts' Causeway is a recreational route, also known as European Walking Route (E2), which is a long-distance route from Ireland to France. This path is unpaved and runs along the southern edge of Worts' Causeway and along the northern site boundary, between two hedges.

3.5.11 All routes described above are illustrated in Figure 3.5 below.

Figure 3.5 Pedestrian route network

Cycling

3.5.12 Cambridge has an extensive network of cycle routes across the city centre, as described below.

3.5.13 There is a shared cycleway/footway (approximately 2m wide) provided along the eastern edge of Babraham Road up to the junction with Red Cross Lane. North of this junction, the shared cycleway/footway crosses at a signalised crossing and continues along the western edge of the carriageway up to the roundabout junction with Fendon Road.

3.5.14 The site is also located in close proximity to National Route 11 of the National Cycle Network (NCN), which can be accessed approximately 500m west of the proposed development.

3.5.15 NCN 11 provides a combination of on-road and traffic-free routes into and around Cambridge city centre, as well as access to Route 24 and Route 51 further to the north, which provide access to the surrounding area within Cambridgeshire.

3.5.16 The majority of the cycle routes in the vicinity of the site are provided to the north and west of the site and provide convenient routes to Cambridge city centre. The on and off-road cycle network within Cambridge is shown in Figure 3.6 below.

Figure 3.6 Cycle routes

3.5.17 As requested by the Highway Authority, Figure 3.7 shows the areas that can be reached within a 5km cycle journey. This includes the centre of Cambridge and Great Shelford.

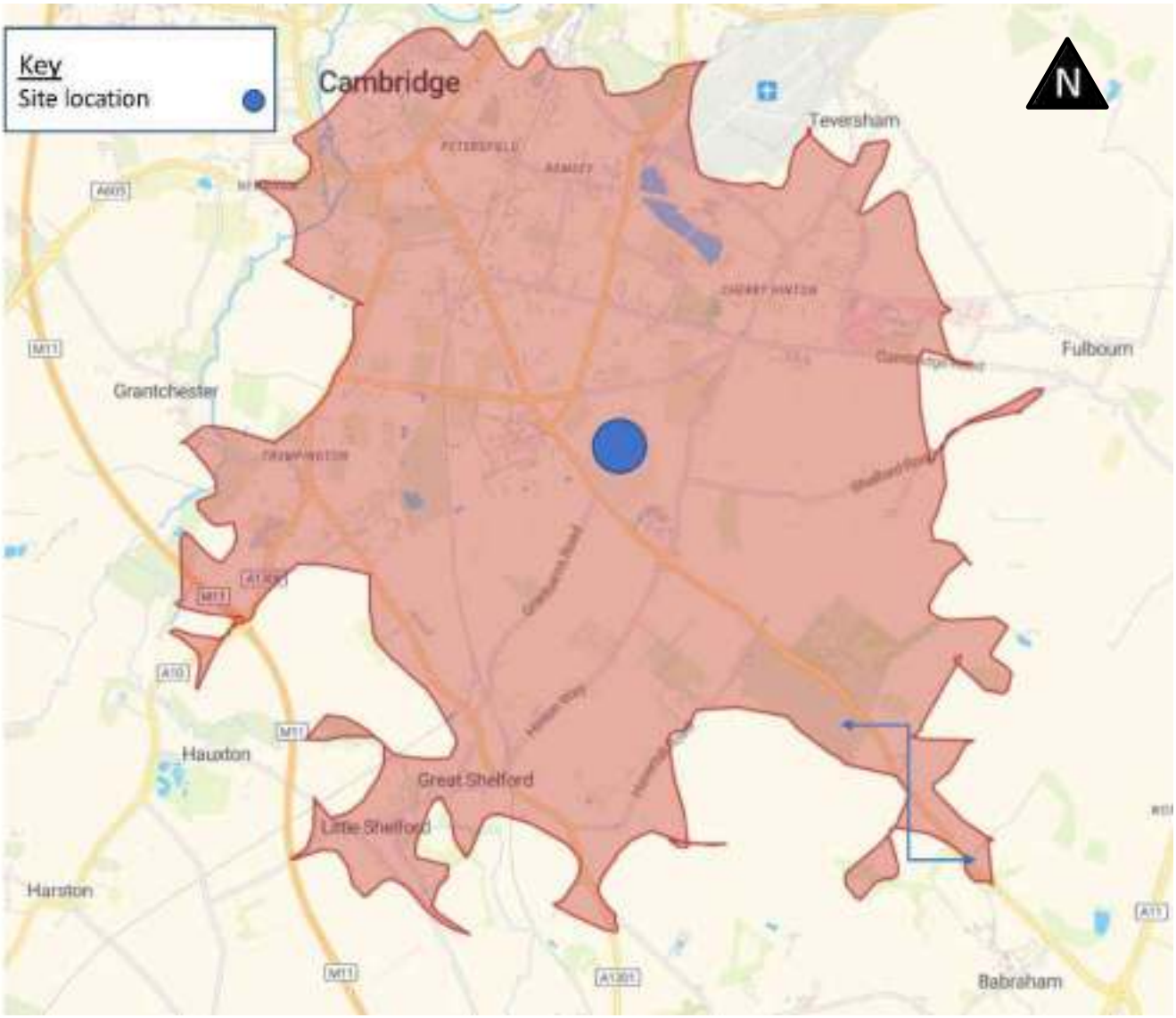

Figure 3.7 5km cycling isochrone from the centre of the site

3.6 Accessibility by public transport

Bus services

3.6.1 There is a comprehensive bus network system in the area providing excellent links into the centre of Cambridge and the surrounding area.

3.163 The nearest bus stop to the site is located on Hills Road, approximately 650m north-west of the centre of the site. The services provide access to the centre of Cambridge and Cambridge Railway Station. The Park and Ride buses either route via Babraham Road or Worts' Causeway heading into the city in the morning, depending on the level of congestion along Babraham Road. The Park and Ride buses can also be accessed at the Park and Ride site, approximately 800m south-east from the centre of the site. Services are provided every 10 minutes with a journey time to Cambridge city centre of 20 minutes. Although 800m (a 10-minute walk) is beyond the usual walk distance to access bus services, the Park and Ride services provide high-quality, reliable, fast services into the city. It is considered that the residents will accept a longer walk distance to access this high-quality public transport corridor.

3.164 The routes serving the bus stops on Hills Road are set out in Table 3.2 below.

Table 3.2 Summary of bus information nearest to the site

Route no.	Nearest bus stop to centre of site (m)	Route	Weekday frequency
13	650	Cambridge - Linton - Haverhill	1 per hour
13A	650	Cambridge - Linton - Haverhill	1 per hour
X13	650	Cambridge – Linton - Haverhill	2 per hour (after 4pm)
31	650	Cambridge - Fowlmere-Barley	1 every two hours
Babraham Road Park and Ride	800	Cambridge – Babraham Rd Park and Ride	6 per hour

3.164 Some of the busway services, which can be accessed at Addenbrooke's Hospital Outpatients bus stop, also provide access to local towns and villages, including St Ives, Needingworth, Bluntisham, Earith, Colne, Somersham and Chatteris.

3.165 Local bus routes, which run past the site, are shown in Figure 3.8 below.

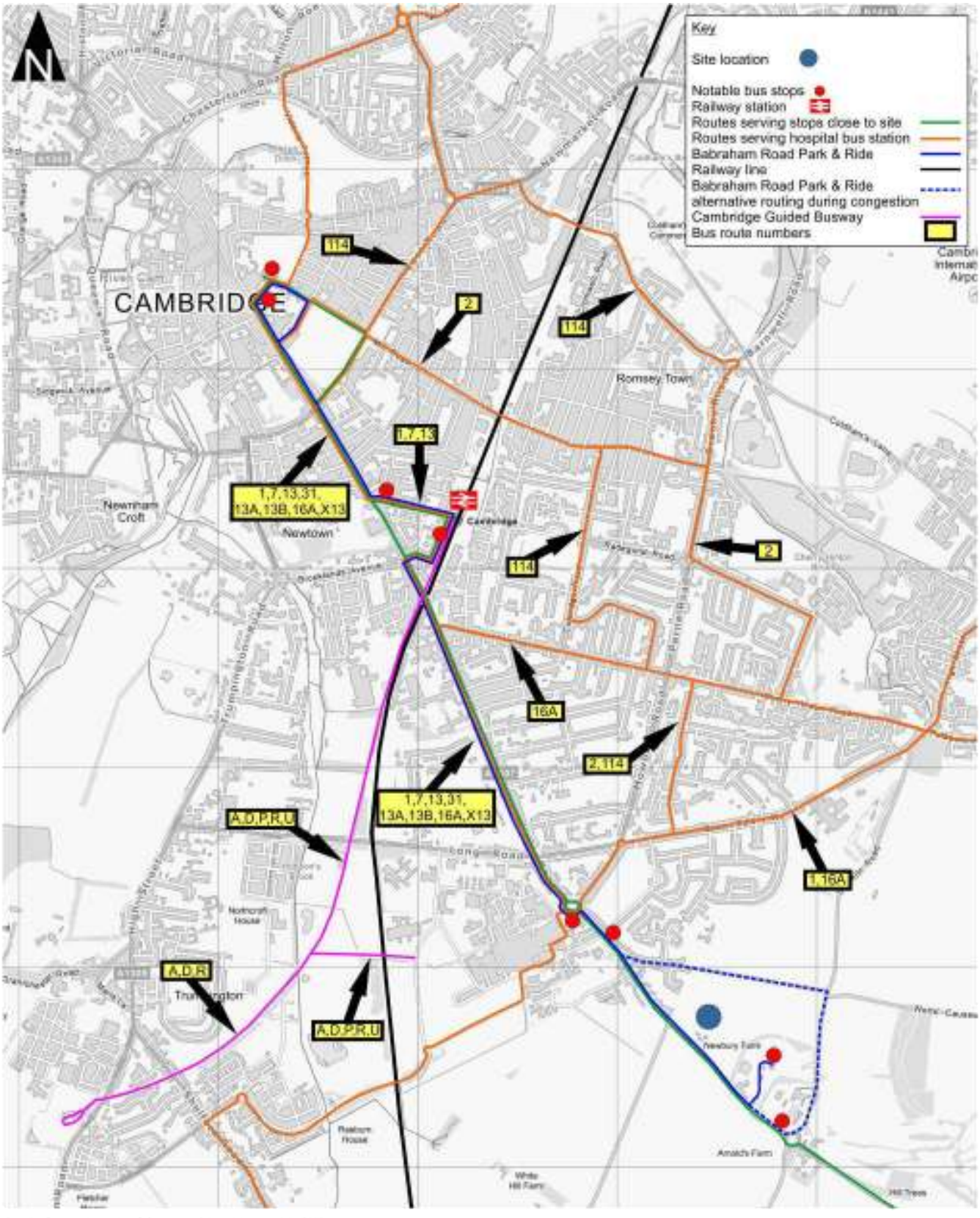

Figure 3.8 Public transport infrastructure

Rail services

3.6.6 Cambridge Railway Station is located approximately 3.5km to the north-west of the site and can be accessed via bus services 13, 13A and Babraham Road Park and Ride. This station is located on the West Anglia Main Line and is managed by Greater Anglia. This is a major station with services provided to Brighton, London Kings Cross, London Liverpool Street, Birmingham New Street, Stanstead Airport, Kings Lynn, Ipswich and Cambridge North.

3.6.7 Up to four services per hour are provided to London King's Cross, with two fast train services per hour with a journey time of approximately 50 minutes, and two slower train services per hour with journey times of approximately 80minutes. These services are operated between 4.53am and 11.54pm.

3.6.8 There is cycle parking provided at the station, with 2,850 storage spaces, as well as cycle hire facilities. In addition, there is a chargeable car park providing 374 spaces (including seven wheelchair accessible spaces). Car hire services are also provided at the station.

3.6.9 Shelford Railway Station is located approximately 3.5km to the south of the site. This station is also situated on the West Anglia Main Line and provides services to Cambridge North and London Liverpool Street. There are six cycle storage spaces provided by the entrance to the station.

3.7 Local highway network

3.7.1 The local highway network in the vicinity of the site is shown in Figure 3.1 and described in Table 3.3 below.

Table 3.3 Description of local highway network

	Description
Worts' Causeway	
Description	A single carriageway, rural lane which runs along the northern edge of the site. This road provides access to the A1307 to the east via a signalised junction and Cherry Hinton Road to the west via a staggered crossroads junction. This road has restricted access for all vehicles apart from buses and cyclists between 7.30 – 9.30am Monday to Friday.
Width	4.3m along the section fronting the site
Speed limit	Varies from 20 mph to 40 mph and 60mph to the east.
Street lighting	Provided only at the western end of the road.
Pedestrian facilities	At the western end, there is a pedestrian footway provided along the northern edge of Worts' Causeway and a signalised crossing at the junction with A1307 Babraham Road. In addition, there are informal dropped kerb crossings across all minor junctions along the western end of Worts' Causeway. In addition, there in an unpaved path which runs along the southern edge of Worts' Causeway between two hedges.
Bus route	Yes

Character	Rural country lane providing access to residential dwellings at the western end and is used for recreational purposes by pedestrians and cyclists. The lane is mainly fronted by agricultural land and hedgerows at the eastern end and residential properties at the western end.
On-street parking	Double yellow lines provided along the majority of the carriageway. At the western end, sections of single yellow lines and no parking restrictions are provided outside residential properties.
A1307 Babraham Road	
Description	A single carriageway district distributor road, which provides access to Cambridge city centre to the north. To the north of the site, the road joins Worts' Causeway, although no right-turns are permitted. To the south of the site the road joins Cherry Hinton Road and Hinton Way at a roundabout junction, which heads to Great Shelford and the Cherry Hinton suburban area. Past the junction with Worts' Causeway the road becomes Hills Road.
Width	7.5m along the section fronting the site
Speed limit	40mph south of the junction with Granham's Road, 30mph north of the junction with Granham's Road
Street lighting	Yes, along both sides of the carriageway.
Pedestrian facilities	There is a shared pedestrian footway/cycleway provided along the eastern side of Babraham Road and along the western edge of the carriageway, approximately 150m north of the junction with Granham's Road. In addition, there is signalised crossing provided at the junction with Worts' Causeway and north of the junction with Red Cross Lane with dropped kerbs and tactile paving. Informal dropped kerb crossings are provided on approach to driveways.
Bus route	Yes
Character	District distributor road mainly fronted by agricultural open land to the south and residential properties to the north.
On-street parking	None

3.8 Personal injury accident analysis

3.8.1 Personal injury accident data has been obtained for the period 2014 to February 2019 from the local Highway Authority for the highway network within the vicinity of the site access.

3.8.2 Figure 3.9 below shows the location of the accidents that occurred during this period, and the severity of accidents and number of casualties per year is summarised in Table 3.4 below.

Figure 3.9 Location and severity of personal injury accidents

Table 3.4 Summary of personal injury accident data

	Personal injury			No. of casualties	Vulnerable users				
	Fatal	Serious	Slight		Children	Old age persons	Pedestrians	Motorcycles	Pedal cycles
2014	0	0	3	4	0	0	0	0	2
2015	0	0	7	7	0	0	0	0	5
2016	0	1	5	6	0	1	0	1	2
2017	0	0	4	6	0	1	0	1	2
2018	0	0	3	3	0	0	0	0	1
2019	0	0	0	0	0	0	0	0	0
Total	0	1	22	26	0	2	0	2	12

3.8.7 It can be seen from the table above that a total of 23 accidents occurred within the study area from 2014 to 2019, resulting in 26 causalities. Of the 23 accidents that occurred, 22 resulted in slight injury and one resulted in serious injury being sustained. It can also be seen that:

- Two accidents involved motorcyclists;
- 12 accidents involved pedal cyclists; and,
- Two accidents involved elderly persons, with one accident resulting in serious injury being sustained.

3.8.4 Figure 3.9 shows that the majority of these accidents occurred at the Addenbrooke's Hospital roundabout (eight accidents), with seven resulting in cyclist casualties. However, it should be noted that this junction has been upgraded recently and the number of accidents has reduced since 2014.

3.8.5 Given that the traffic associated with the proposed development is a small proportion the existing traffic flows, it is considered that development related traffic will have a minimal impact on road safety.

3.9 Traffic survey data

3.9.1 To assess the potential impact of the development on the local highway network, vehicle turning count surveys were carried out in the AM peak period (7am and 10am) and PM peak period (3pm and 7pm) on 28th November, 2018 (neutral month and day), in order to establish the traffic flow the peak hour, at the following junctions, as agreed with the Highway Authority:

1. Granham's Road/Babraham Road priority junction;
2. Worts' Causeway/Babraham Road signalised junction;
3. Addenbrooke's Hospital (Fendon Road/Main Drive/A1307 Hills Road) partially signalised roundabout;
4. A1307 Hills Road/Long Road/Queen Edith's Way signalised junction;
5. Queen Edith's Way roundabout; and,
6. Chery Hinton Road/Babraham Road roundabout.

3.9.2 The location of the junctions surveyed is shown in Figure 3.10 below.

Figure 3.10 Location of surveyed junctions

3.9.1 The summary of flows is included in Table 3.5 and the full base traffic flows (2019, 2024 and 2029) are included in Appendix B.

Table 3.5 Summary of surveyed base flows

Junction No.	Junction	Time period	2018 surveyed flows
1	Granham's Road/ Babraham Road	AM	1621
		PM	1741
2	Worts' Causeway/Babraham Road Signalised junction	AM	1621
		PM	1760
3	Addenbooke's Hospital roundabout	AM	2259
		PM	2322
4	A1307 Hills Road/Lond Road/Queen Edith's Way signalised junction	AM	2058
		PM	1757
5	Queen Edith's Way roundabout	AM	1792
		PM	1849
6	Cherry Hinton Road/Babraham Road roundabout	AM	2466
		PM	2345

4.0 DEVELOPMENT PROPOSALS

4.1 Introduction

4.1.1 This section of the report sets out the proposed access arrangement for 230 units, and the principles of the internal layout.

4.1.2 The proposed development comprises 230 residential dwellings and 8.7ha of land, including affordable housing, commercial/community facilities (within Use Classes A1/A2/A3/A4/B1/D1/D2) new landscaping and public realm, car parking, cycle parking and associated infrastructure. As part of the development it is proposed to demolish all existing buildings on the site.

4.2 Access to the site

4.2.1 As part of the development of the site, and in accordance with the site allocation, it is proposed to provide the vehicle access to the site from Babraham Road. This access is in the form of a priority junction with a ghost island right-turn lane, and will provide access to the highway network for both GB1 and Land at Newbury Farm (GB2) sites.

4.2.2 Vehicles flows along Babraham Road are approximately 1,500 (two-way) during the peak hours, and traffic in to and out of the site will be approximately 190 in the AM peak and 39 in the PM peak. This includes traffic associated with both GB1 and Land at Newbury Farm.

4.2.3 It is considered beneficial to provide a ghost island right turn lane to ensure that northbound flows along Babraham Road are not impeded by vehicles waiting to turn right into the site. This arrangement will also ensure the access has minimal impact on the high-quality public transport corridor travelling into Cambridge.

4.2.4 To encourage the use of sustainable modes of travel, on the western edge of the site it is proposed to provide an informal, 3m shared cycle/footpath along with a grass ride with the potential to be used for horse riders on a permissive basis by the landowner. This shared footway/cycleway will be a replacement of the former permissive footpath and will connect to the proposed cycleway along Babraham Road, in line with Greater Cambridge Partnership's proposals.

4.2.5 This access has been assessed to ensure it has sufficient capacity (refer to Section 7 for details). The junction works well within capacity with acceptable delay for vehicles waiting to turn right out of the site and minimal delay for vehicles waiting to turn left out. The maximum queue for vehicles leaving the site is likely to be up to two vehicles.

4.2.6 The capacity testing demonstrates that the maximum queue of vehicles waiting to turn right into the site is likely to be one vehicle, which can be comfortably achieved within the ghost island right-turn lane.

Visibility

4.2.7 South of the junction with Granham's Road, Babraham Road is subject to a 40mph speed limit. It is considered that as part of the proposals, the 30mph speed limit further to the north will be extended past the site access junction. Nevertheless, the required visibility splay of 2.4m x 120m for a 40mph speed limit road can be achieved in both directions.

4.2.8 The layout and location of the Babraham Road access is shown in Figure 4.1.

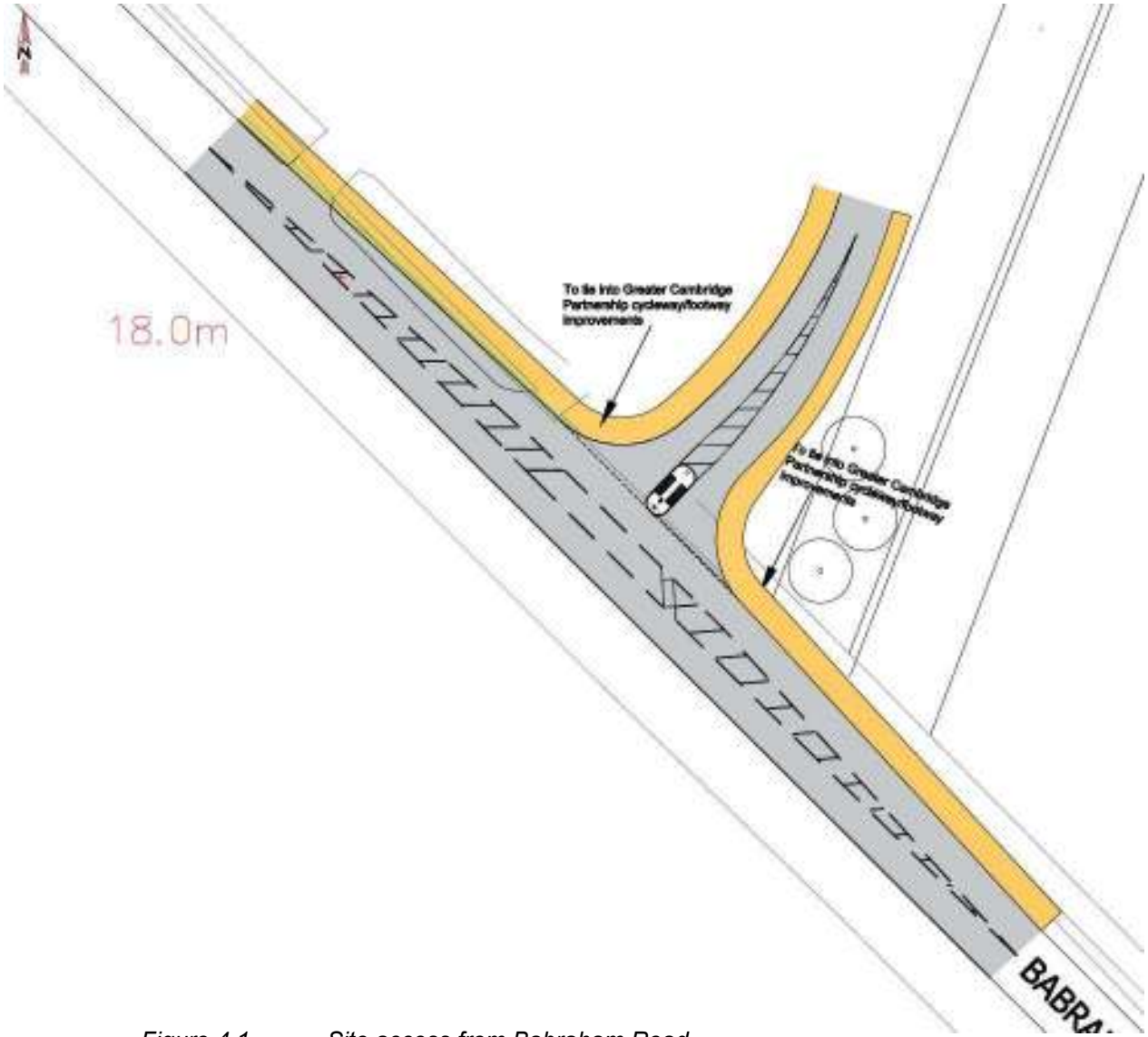

Figure 4.1 Site access from Babraham Road

4.3 Access to Worts' Causeway

4.3.1 At present vehicles use Worts' Causeway, both east and westbound, throughout the day with restrictions in place between 7.30am and 9.30am on Monday to Friday. These restrictions allow public bus access only and are enforced by a number plate recognition camera. Access to Worts' Causeway from the development will be restricted to vehicles heading west past the residential properties on Worts' Causeway during the restricted times. Access for pedestrians and cyclists will be provided throughout the day.

4.3.2 In accordance with the site allocation, as stated in Policy 27 of the Cambridge Local Plan (2018), the sole access to GB2 will be from Babraham Road and vehicular access shall be constructed up to the boundary of Worts' Causeway that may facilitate access to GB1 in due course.

4.3.3 Following discussions with the Highway Authority, the location of the vehicle access on to Worts' Causeway has been assessed. In highway terms, the location of this access to the eastern side of the site is equally acceptable as the location shown in Figure 4.2. The proposed location of the access is influenced by non-highways related issues.

4.3.4 It is proposed to provide a simple priority junction onto Worts' Causeway for vehicle access to GB1. It is recommended that the 20mph speed limit be extended east of the proposed access. For a 20mph speed road, the required visibility splay is 2.4m x 25m in each direction. It is recommended that speed reducing measures, such as a gateway feature and signage, are incorporated into this access arrangement to ensure appropriate vehicle speeds and awareness of the access.

4.3.5 No additional vehicle traffic associated with the development will travel westbound along Worts' Causeway in the morning peak period, and it is likely to be used by a small number of vehicles from the development during the rest of the day, therefore, the impact on the lane will be minimal.

4.3.6 The proposed access onto Worts' Causeway is illustrated in Figure 4.2 below.

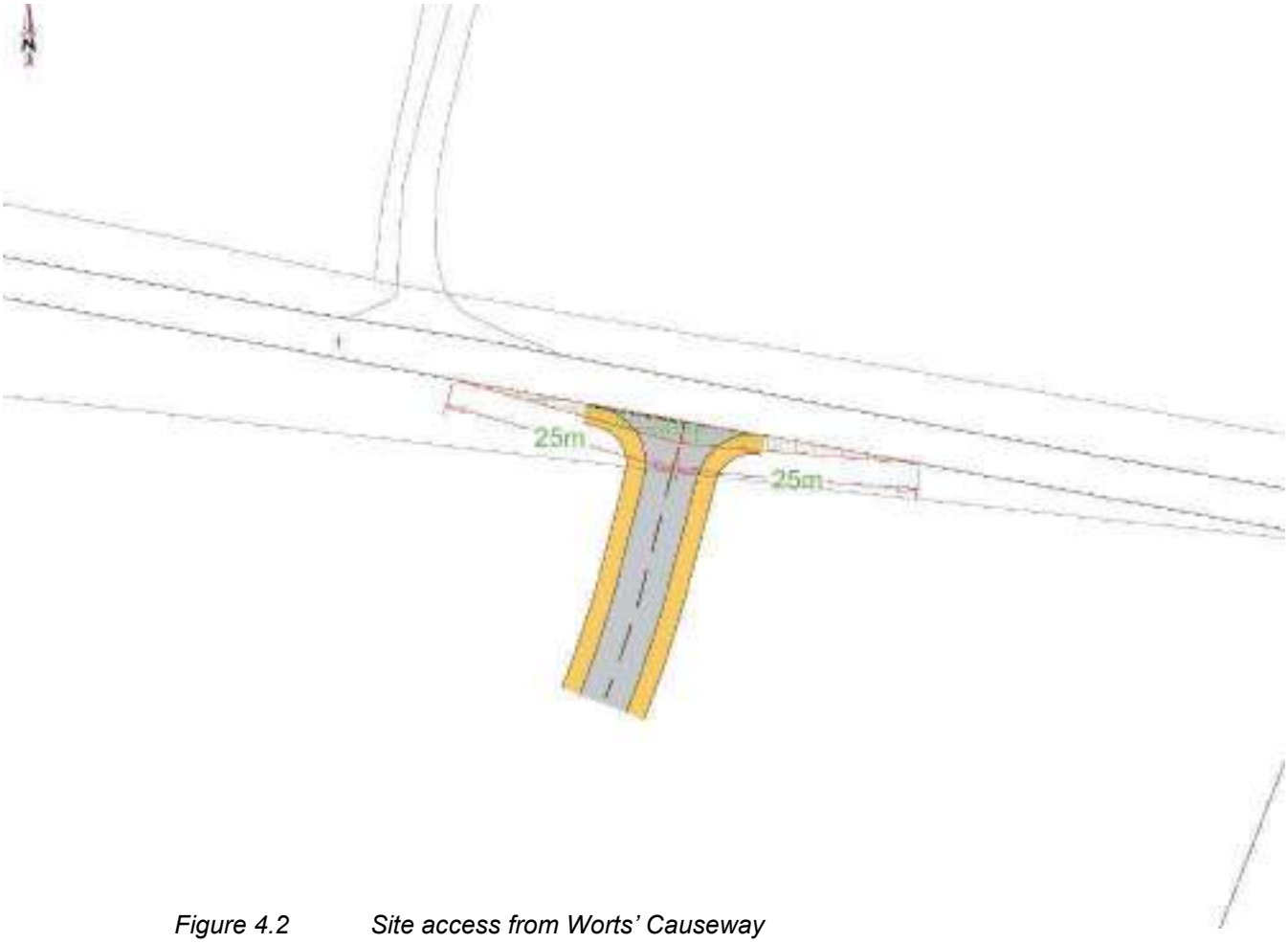

Figure 4.2 Site access from Worts' Causeway

4.4 Pedestrian, cyclist and equestrian access

4.4.1 In addition, to the two access points onto Babraham Road and Worts' Causeway, two further pedestrian, cyclist and equestrian accesses will be provided, as shown on Figures 4.3 and 4.4:

- Babraham Road (south-west corner of the site) – access to the shared cycleway/footway will be provided.
- Worts' Causeway (north-west corner of the site) - A one-way working narrowing with informal crossing will be provided, with priority for eastbound vehicles to encourage appropriate speeds and provide a pedestrian crossing to reach the north side of Worts' Causeway. In addition, it is recommended that a 2m wide footway be provided along the northern edge of Worts' Causeway, which will connect to the existing footway further to the west.

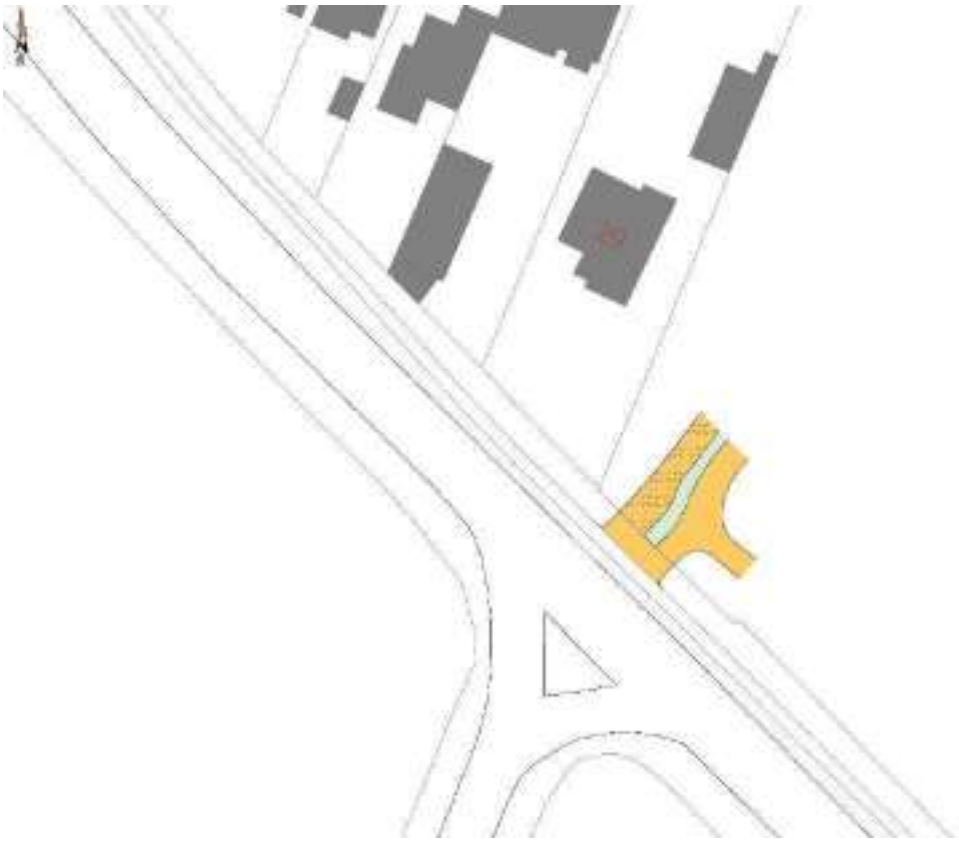

Figure 4.3 Pedestrian, cyclist and bridleway access to Babraham Road

Figure 4.4 Pedestrian, cyclist and bridleway access to Worts' Causeway

4.4.5 The locations of all four accesses is shown in Figure 4.5 below.

Figure 4.5 Location of site accesses

4.5 On-site layout and road hierarchy

4.5.1 Streets fulfil a complex variety of functions to meet living and movement needs, and well-designed streets have a crucial role in the delivery of sustainable communities.

4.5.3 The Land at Newbury Farm development is likely to generate approximately 99 vehicle movements in AM peak and 76 in the PM peak. These vehicle movements, other than along the principal street, will be dispersed across the site. During the day, hourly flows are likely to be half of this, again dispersed across the development. The principle street is provided mainly through the eastern part of the site. This concentrates the vehicle movements from GB1 and Land at Newbury Farm along this route and ensures that the rest of the site, where vehicle flows are light and focusses on priority for pedestrian and cyclist movement.

4.5.3 Policy encourages designers to prioritise walking, cycling, public transport and motor traffic, in that order, in residential developments. The aim is to change the way streets are used and to improve the quality of life in residential areas by making them places for people not just for movement and traffic. This seeks to balance the place and movement functions of a development and change the way streets operate to promote quality of life and neighbourliness. A well-designed layout will encourage people to use the whole street, with motorists feeling like a guest and driving accordingly. Generally, residential developments in this area of Cambridge experience low levels of vehicle movements, with walking and cycling being key modes of travel to work. Therefore, it is appropriate to balance the objectives of place, movement, access and parking, avoiding the dominance of the car.

Pedestrian and cycle access

4.5.4 Convenient pedestrian and cycle routes, embedded in a green setting, will lay at the heart of the proposed development. All streets within the development will have a design speed of 20mph and a sense of pedestrian priority is created where traffic flows and speeds are likely to be particularly low.

4.5.5 A route crossing the site laterally from the south-east corner to the north-west will link Babraham Road and Worts' Causeway. This will benefit the existing users along Babraham Road, as well as providing the most direct route north into Cambridge, for trips originating within the site.

4.6 Car parking provision

4.8.1 It is anticipated that parking will be provided at a level designed to accommodate the likely needs of the residents reflecting the likely car ownership and the pedestrian and cycle focussed layout.

4.8.3 It is proposed to provide a maximum of one space per unit for 1-and 2-bed units and a maximum of two spaces per unit for 3+bed units. This provision is considered ample to meet the needs of future residents, bearing in mind local car ownership rates, and in accordance with the Council's requirements.

4.6.3 The proposed on-site parking provision will comprise a mix of on-plot parking spaces (including garages), parking courts, and on-street parking spaces for both residents and visitors.

4.7 Cycle parking

4.7.1 In order to encourage residents to cycle, parking provision at least in accordance with the standards will be provided in convenient locations with easy access from the front of houses.

4.8 Delivery and servicing

4.8.1 It is typical for a development of this size to generate approximately 20 service (delivery and service) vehicle trips per day (6-days/week). It is not proposed to provide any dedicated off-street facilities. Instead, all deliveries will be undertaken from the internal road network.

4.8.2 It is anticipated that the maximum size of vehicles that would be reasonably expected to deliver to any residential dwelling will be a 10m rigid vehicle. In practice, it is more likely that the maximum size of vehicle will be an 8m rigid vehicle, with transit sized vehicles being much more commonly used.

4.9 Refuse collection

4.9.1 Refuse vehicles will access the site via Babraham Road with refuse collected from the internal road network. The layout will be designed to accommodate a refuse vehicle.

5.0 TRAVEL CHARACTERISTICS

5.1 This section of the report considers the travel characteristics of the development including the trip generation by mode and the distribution and assignment of these trips.

5.2 Trip generation

5.2 It is typical for the TRICS trip generation database to be used to predict likely trip generation for a development. The TRICS database provides data on sites across the UK. However, as set out in Section 3 of the report, Census data shows that the area around the site has a high proportion of travel to work by sustainable modes including 25% cycling, 15% walking and 12% by public transport. This is a considerably higher proportion of travel by sustainable modes than is typical for the outskirts of most cities and towns in the UK. Following discussions with the Highway Authority, it was agreed that a bespoke trip generation rate, based on traffic surveys of similar developments on the outskirts of Cambridge, would better reflect the travel characteristics specific to Cambridge.

5.2.2 Three new developments, listed below, with similar location (edge of town), travel to work mode share, housing tenure and size (mixed private and affordable) characteristics were selected, and agreed as a suitable comparison for the proposed development with the Highway Authority:

- Site 1: Lawrence Weaver Road (North of Huntington Road) development of 208 dwellings, comprising mixed tenure houses and flats (fully occupied);
- Site 2: Clay Farm (east of Lime Avenue) development of 168 dwellings comprising mixed tenure houses and flats (fully occupied); and,
- Site 3: Clay Farm (west of Lime Avenue) development of 62 dwellings comprising mixed tenure houses and flats (fully occupied).

5.2.3 Based on the survey data, the vehicle trip rates for each site are set out in Table 5.1 below and included in Appendix C.

Table 5.1 Vehicle trip generation

Time period	No. of arrivals	Arrival trip rate	No. of departs	Depart trip rate	Total no. of trips	Total trip rate
Site 1 – Lawrence Weaver Road (208 units)						
8am-9am	5	0.024	20	0.096	25	0.130
5pm-6pm	14	0.067	8	0.038	22	0.106
Site 2 – East of Lime Avenue (168 units)						
8am-9am	25	0.15	46	0.27	71	0.420
5pm-6pm	32	0.19	24	0.14	56	0.330
Site 3 – West of Lime Avenue (62 units)						
8am-9am	14	0.23	13	0.21	27	0.440
5pm-6pm	6	0.10	14	0.23	20	0.320

5.2.4 It should be noted that on the day the survey data was collected (Wednesday 28th November 2018) it was raining heavily, which may have resulted in higher vehicular trip rates than typical for these sites.

5.2.5 It can be seen from the table above that Sites 2 and 3 have similar trip rates but Site 1 has a lower trip rate (approximately 0.1 in the AM and PM peak), compared to Sites 2 and 3 (approximately 0.4 in the AM and 0.3 in the PM peak). For robustness, trip rates observed for Sites 2 and 3 have been used to represent the likely trip rate for the proposed development. Bearing in mind the weather conditions on the surveyed day, this trip rate, which also discounts the site with the lowest trip rate, is considered generous and a worst-case scenario.

5.2.6 The proposed development could generate up to 99 vehicle movements in the AM peak and 76 in the PM peak. These trip rates are slightly higher than the trip rates used in the Transport Assessment for the Clay Farm Development (planning ref: 07/0620/OUT) in the morning (0.31 in the AM) and similar in the evening peak period (0.35 in the PM peak). Therefore, it is considered that these trips provide a robust, worst-case scenario.

5.2.7 The total number of predicted AM peak and PM peak trips generated by the proposed development of 230 dwellings is summarised in Table 5.2 below, and is, based on the following:

- Average vehicle trip rate for Sites 2 and 3;
- Census data mode share for the surrounding area to convert vehicle trip rates to total person movements.

Table 5.2 Weekday trips (230 units)

Time period	Arrival trip rate	No. of arrivals	Depart trip rate	No. of departs	Total trip rate	Total no. of trips
Vehicles						
8am-9am	0.19	44	0.24	55	0.43	99
5pm-6pm	0.15	35	0.18	41	0.33	76
Pedestrians						
8am-9am	-	18	-	23	-	41
5pm-6pm	-	15	-	17	-	32
Cyclists						
8am-9am	-	31	-	38	-	69
5pm-6pm	-	24	-	29	-	53
Public transport users						
8am-9am	-	13	-	17	-	30
5pm-6pm	-	11	-	13	-	23
Total people						
8am-9am	-	106	-	133	-	239
5pm-6pm	-	84	-	100	-	184

5.2.4 The proposed development is likely to generate 239 person movements in the morning peak and 184 in the evening peak. It should be noted that, given the weather conditions during the surveys, the vehicle trip generation is considered robust. Therefore, using this data as a base to convert to total person movements has resulted in generous rates being predicted for all modes.

5.2.5 It should also be noted that it is likely that the majority of trips to the community uses will be internal to the site or from the immediate area and, therefore, likely to be made by walking or cycling trips.

5.3 Trip distribution and assignment

Pedestrians

5.3.1 Based on 2011 Census Method of Travel to Work data, it is considered that all pedestrian trips will head north. The majority will walk to the employment centre around Addenbrooke's Hospital to the north-west of the site. Based on 2011 Census data, it is considered that approximately:

- 85% will head north-west to the Addenbrooke's Hospital area;
- 10% will head further north into Cambridge city centre; and,
- 5% will head north-east of the A1307 and the Romsey area.

Cyclists

5.3.3 Similarly, based on 2011 Census Method of Travel to Work data for the same area, it is considered that the majority of cyclists will head north, and that approximately:

- 40% will head north-west to the Addenbrooke's Hospital area and Trumpington;
- 30% of people will head into Cambridge city centre;
- 10% will head further north into Eddington and Chesterton; and,
- 20% will head north-east and east of Cambridge to Romsey, Petersfield, Cherry Hinton and Fulburn.

Vehicles

5.3.4 The distribution of development generated traffic has been based on the Journey to Work Statistics from the 2011 Census for the MSOA Cambridge 013 (shown in colour in Figure 5.1), as agreed with the Highway Authority.

5.3.5 The most popular destinations for travel to work (based on 2011 Census data) are:

- 30% - South Cambridgeshire
- 60% - Cambridge
- 10% Other (Uttlesford, Huntingtonshire, East Cambridgeshire, Forest Heath).

5.3.6 Worts' Causeway is closed for vehicles apart from buses In the AM peak (between 7.30am-9.30am). Therefore, development generated traffic in the AM peak has been assigned routes based on the most direct and appropriate routes available, based on Google Maps routeing at peak times, as follows, and as agreed with the Highway Authority:

- Babraham Road East – 15%:

  – Babraham Road East – 5%
  – Hinton Way – 10%

- Babraham Road West – 75%:

  – Fendon Road/Brooks Road – 25%
  – Hills Road – 25%
  – Long Road – 25%

- Worts' Causeway East – 10%

  – Cherry Hinton Road – 10%

5.3.6 In the PM peak, there are currently no traffic restrictions along Worts' Causeway and it is, therefore, assumed that future residents will use both the Babraham Road and Worts' Causeway accesses. The distribution for the traffic generated by the proposed development in the evening peak is as follows:

- Worts' Causeway West – 37.5%
- Worts' Causeway East – 10%
- Babraham Road West – 37.5%
- Babraham Road East – 15%

5.3.7 Figure 5.1 below shows the assignment of trips on the local highway network in the morning peak period.

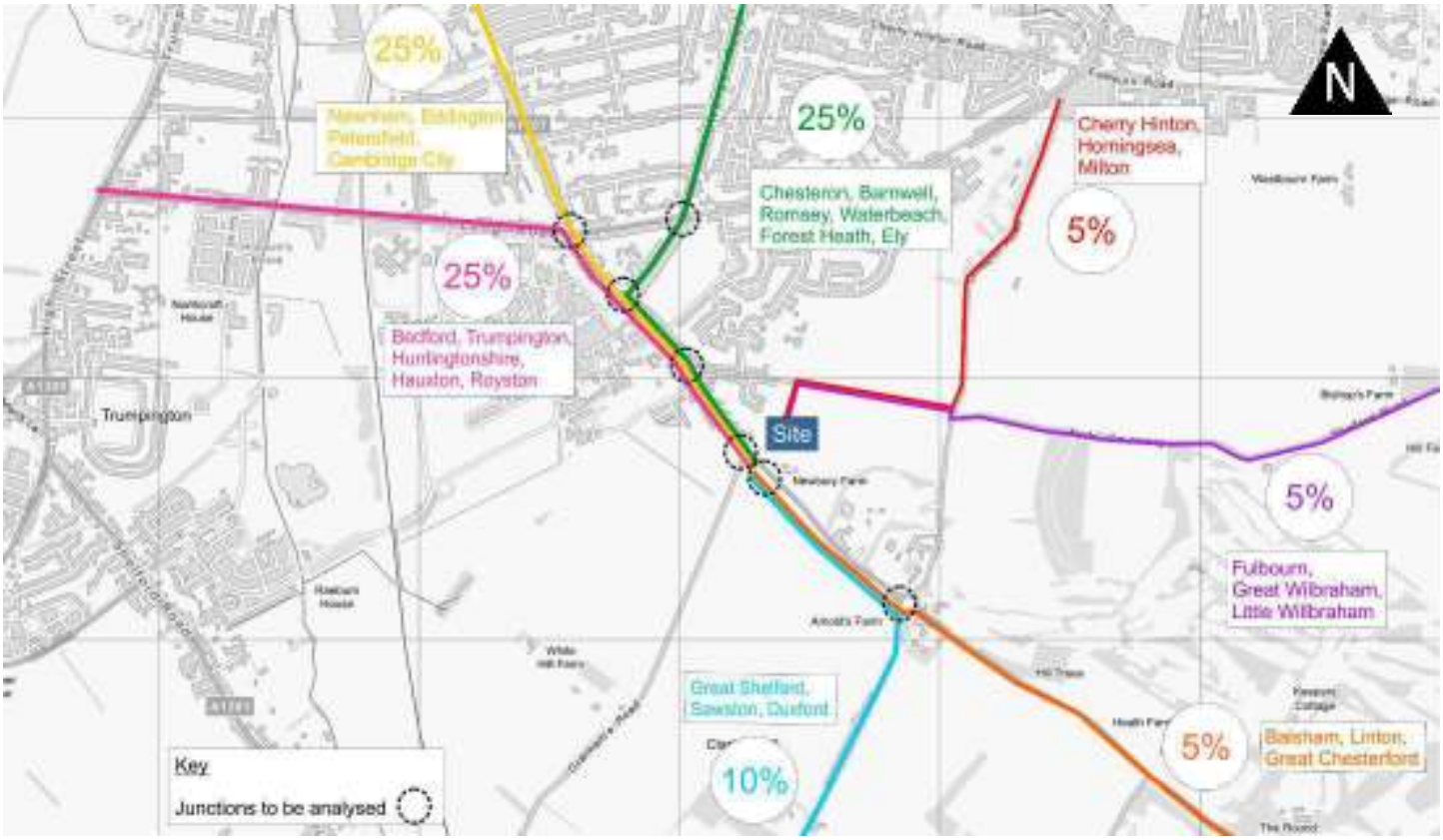

Figure 5.1 Development traffic assignment – morning peak

5.3.8 The development traffic flows are included in Appendix D.

6.0 SUSTAINABLE TRANSPORT IMPROVEMENTS

6.1.1 There is high demand for walking and cycling in this area of Cambridge, with approximately 15% of people walking and 25% cycling to work, according to 2011 Census.

6.1.2 Greater Cambridge Partnership has carried out a pedestrian and cyclist demand survey along Babraham Road. The survey shows that approximately 130 pedestrians (both directions) use Babraham Road during the typical morning peak hour and 90 in the evening peak hour.

6.1.3 The demand for cycling is even greater, with approximately 180 cyclists (both directions) using Babraham Road during the typical morning peak hour; and 130 cyclists in the evening peak hour.

6.2 Sustainable travel modes

6.2.1 As detailed is Section 3 of the report, it is considered that the site is located in a sustainable location with easy access on foot to Addenbrookes Hospital area, a major employer. It is also located on a high-quality public transport corridor, within easy walking distance of the Park and Ride site.

6.2.2 Cambridge city centre is located approximately 4km to the north-west of the site and can be reached within a 15-minute cycle journey or a 20-minute bus journey. There are a wide range of cultural, retail, leisure, employment and health facilities in Cambridge, which are, therefore, within easy reach of the site by sustainable travel modes. The site is also located within 3.3km of Great Shelford (equivalent to an 11-minute cycle journey), with various facilities including leisure, retail and health.

Pedestrians

6.2.3 It is estimated that the proposed development will generate 41 pedestrian movements in the morning peak and 32 in the evening peak. Given the proximity to Addenbrooke's Hospital, it is considered that demand for walking will be high, especially during the good weather season.

6.2.4 As identified earlier in the report, the majority of walk to work trips are to the Addenbrooke's Hospital area. It is likely that residents of the site that walk to work will head north along either Babraham Road or Worts' Causeway. In addition, walking will be used to access public transport, with the majority of public transport trips using the Park and Ride site to the south along Babraham Road.

Cyclists

8.2.5 There is a high demand for cycling in Cambridge based on the collected surveys and Census data. Most cyclists along Babraham Road travel along the eastern edge of the carriageway using the shared cycle/footway heading north either to the city centre or Addenbrooke's Hospital. At the junction with Worts' Causeway, cyclists cross the carriageway and continue their journey along Hills Road to the toucan crossing north of Red Cross Lane and continue on the western side of the carriageway.

8.2.6 It is estimated that the proposed development will generate 69 cyclist movements in the morning peak and 53 in the evening peak and these will head north either along Babraham Road or Worts' Causeway.

8.2.7 In the vicinity of the site, cyclists travel along the eastern edge of Babraham Road up to the junction with Worts' Causeway heading to the city centre. At this junction, cyclists cross the Worts' Causeway carriageway and continue their journey along Hills Road. In the future, residents of the development heading into the city centre are likely to use Worts' Causeway to reach Hills Road. This route is likely to be attractive to cyclists as it is direct, has low traffic volume particularly in the morning and allows for a convenient access to the shared cycleway on the eastern side of Hills Road.

Public transport users

8.2.8 The site is conveniently located within 650m of the closest bus stop on Babraham Road, with up to two services operated every hour to Cambridge, Linton, Haverhill and Barley and within 800m of the Babraham Road Park and Ride, with buses operating every 10 minutes to Cambridge city centre.

8.2.9 In addition, the site is located within approximately 1km of the bus station at Addenbrooke's Hospital and the numerous bus services including the guided busway services (accessed from Addenbrooke's Hospital Outpatients stop), which provide access to St Ives and Huntington as well as local villages including Needingworth, Huntington, Somerhsam, Bluntisham and Earith.

8.2.10 It is estimated that the proposed development will generate 30 public transport movements in the morning peak and 23 in the evening peak and the majority of these will head into the city centre from the Park and Ride site.