

TRANSPORT ASSESSMENT

# Croudace Homes Ltd

Officers' Meadow, Shenfield

Part of Allocated Site R03: Land North of Shenfield

September 2023

---

Transport Assessment

---

Vectos.co.uk

---

vectos.co.uk

## Contents

|   |                                |    |
|---|--------------------------------|----|
| 1 | Introduction .....             | 4  |
| 2 | Existing Conditions.....       | 6  |
| 3 | Planning Policy Context.....   | 22 |
| 4 | Development Proposals .....    | 31 |
| 5 | Trip Generation.....           | 61 |
| 6 | Trip Distribution .....        | 72 |
| 7 | Traffic Impact Assessment..... | 79 |
| 8 | Summary and Conclusion.....    | 91 |

## Figures

|             |   |
|-------------|---|
| Figure 2.1  | - Local Site Location   |
| Figure 2.2  | - Strategic Site Location   |
| Figure 2.3  | - 2km Walking Isochrone   |
| Figure 2.4  | - 5km Cycling Isochrone   |
| Figure 2.5  | - Bus Services  |
| Figure 2.6  | - Local Amenities   |
| Figure 2.7  | - Local Highway Network   |
| Figure 2.8  | - Collision Data  |
| Figure 3.1  | - R03: Land North of Shenfield  |
| Figure 4.1  | - Land North of Shenfield Masterplan                                  |
| Figure 4.2  | - Site Masterplan   |
| Figure 4.3  | - Vehicle Access Strategy   |
| Figure 4.4  | - Chelmsford Road Site Access Roundabout                              |
| Figure 4.5  | - Toucan Crossing Proposal  |
| Figure 4.6  | - Existing and Proposed Speed Limits on Chelmsford Road               |
| Figure 4.7  | - Alexander Road Access   |
| Figure 4.8  | - Alexander Lane Turning Head   |
| Figure 4.9  | - Internal Street Layout – Principles                                 |
| Figure 4.10 | - School Plaza  |
| Figure 4.11 | - Shared Surfaces   |
| Figure 4.12 | - Masterplan Extract – Private Drives                                 |
| Figure 4.13 | - Active Travel Connections   |
| Figure 4.14 | - Boardwalk Connection between Officers’ Meadow and Redrow Homes Site |
| Figure 4.15 | - Existing PRow Footpath and Proposed Diversion                       |
| Figure 4.16 | - Connection to Stonebond Properties                                  |
| Figure 4.17 | - Stonebond Properties Connection via BBC Land                        |
| Figure 4.18 | - Proposed New Bus Stops  |
| Figure 4.19 | - 600m Isochrones from Proposed and Relocated Bus Stops               |
| Figure 5.1  | - School Census Wards   |

Figure 6.1

Figure 6.2

Figure 6.3

- Residential Distribution
- Education External Distribution
- Active Travel Distribution

## Appendices

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

Appendix G

Appendix H

Appendix I

Appendix J

Appendix K

Appendix L

Appendix M

Appendix N

Appendix O

Appendix P

Appendix Q

Appendix R

Appendix S

Appendix T

Appendix U

Appendix V

Appendix W

Appendix X

Appendix Y

- Officers' Meadow Masterplan
- R03 Land North of Shenfield Masterplan
- Scoping Report and Response
- Accident Collision Data and Analysis
- Chelmsford Road Proposed Access
- Proposed Toucan Crossing and Bus Stop
- Alexander Lane Access
- Visibility Splays
- Street Layout and Dimensions
- Swept Path Analysis
- School Plaza
- Boardwalk Connection to Redrow Homes
- Public Right of Way Footpath 86 Diversion
- Connection to Stonebond Properties
- Alternative Connection through BBC Land
- Residential Travel Plan
- School Travel Plan
- TRICS Data
- Croudace Homes Ltd Education Briefing Note
- School Census Data
- RPS Land off Chelmsford Road TA
- Traffic Flow Diagrams
- Traffic Survey Data
- Modelling Results
- RPS A12 Junction 12 Risk Assessment Report

# 1 Introduction

- 1.1 Vectos has been appointed by Croudace Homes Ltd to provide transport and highways advice in relation to the development of Officers' Meadow, Shenfield, referred to as 'the site' for the remainder of this report.
- 1.2 The site is located to the south of A1023 Chelmsford Road, east of Alexander Lane, north of railway lines, and to the west of proposed residential development. The site is located 1.7km north from Shenfield train station and Shenfield town centre. It lies within the administrative boundary of Essex County Council (ECC) and Brentwood Borough Council (BBC).
- 1.3 The development description for the application is as follows:

*"Hybrid planning application for 344 units including 35% affordable housing, safeguarded land for a 2FE primary school and early years facility, public open space and associated landscaping, drainage and highways infrastructure."*

- 1.4 The masterplan for Officers' Meadow is included at **Appendix A** for reference.

## Planning History

- 1.5 The site forms part of the R03 (Land North of Shenfield) allocation within the Brentwood Local Plan (2016-2033) referred to as the wider allocation. The Strategic site "Land North of Shenfield" is being brought forward by a consortium of developers (including Croudace Homes Ltd, Redrow Homes, Countryside Properties and Stonebond Properties). The wider site is being brought forward subject to an adopted Masterplan Development Principles Document which has been created with the support of Brentwood Borough Council (BBC). The wider site masterplan is included at **Appendix B** for reference. The policy requirements for the wider site, as set out in policy R03 of the Brentwood Local Plan, consist of:
  - Circa 825 units;
  - around 2.1 hectares of land for a co-located primary school and early years and childcare nursery;
  - around 60 bed residential care home or an appropriate mix of specialist accommodation to meet identified needs, in accordance with policy HP04;
  - 5% self-build and custom build across the entire allocation area; and
  - Around 2ha of land for employment purposes which may include light industrial, offices, research, and development (within class E) or other sui generis employment uses which are compatible with the residential development.
- 1.6 This Transport Assessment (TA) is prepared in respect of the Croudace Homes element of the wider site and reviews the accessibility, considers the development proposals in line with national and local policy documents, and forecasts the potential trip generation of the proposed development. The TA

also investigates the potential impact of the proposed development on the surrounding transport network and investigates potential measures to mitigate any impact.

- 1.7 This TA report has been prepared with the benefit of knowledge and experience gained through working on similar developments both locally and nationally. In addition, the TA follows the local Planning Practice Guidance, and follows the principles of National Planning Policy Framework (NPPF).

## **Scoping**

- 1.8 Detailed discussions have been undertaken between the Croudace Homes Ltd design team and Essex County Council (ECC) to develop the design of the masterplan. This has included detailed discussions on the design of the transport network including streetscape, cross sections, car parking numbers and the mobility strategy. Vectos have undertaken a separate scoping exercise to ascertain the scope of the TA and the level of assessment have required. The scoping report and response is attached in **Appendix C**.

## **Report Structure**

- 1.9 The remainder of this Transport Assessment (TA) is structured as follows:
- **Section 2:** Existing Conditions;
  - **Section 3:** Planning Policy Context;
  - **Section 4:** Development Proposals;
  - **Section 5:** Multi Modal Trip Generation;
  - **Section 6:** Multi Modal Trip Distribution;
  - **Section 7:** Traffic Impact Assessment; and,
  - **Section 8:** Summary and Conclusion.



## 2 Existing Conditions

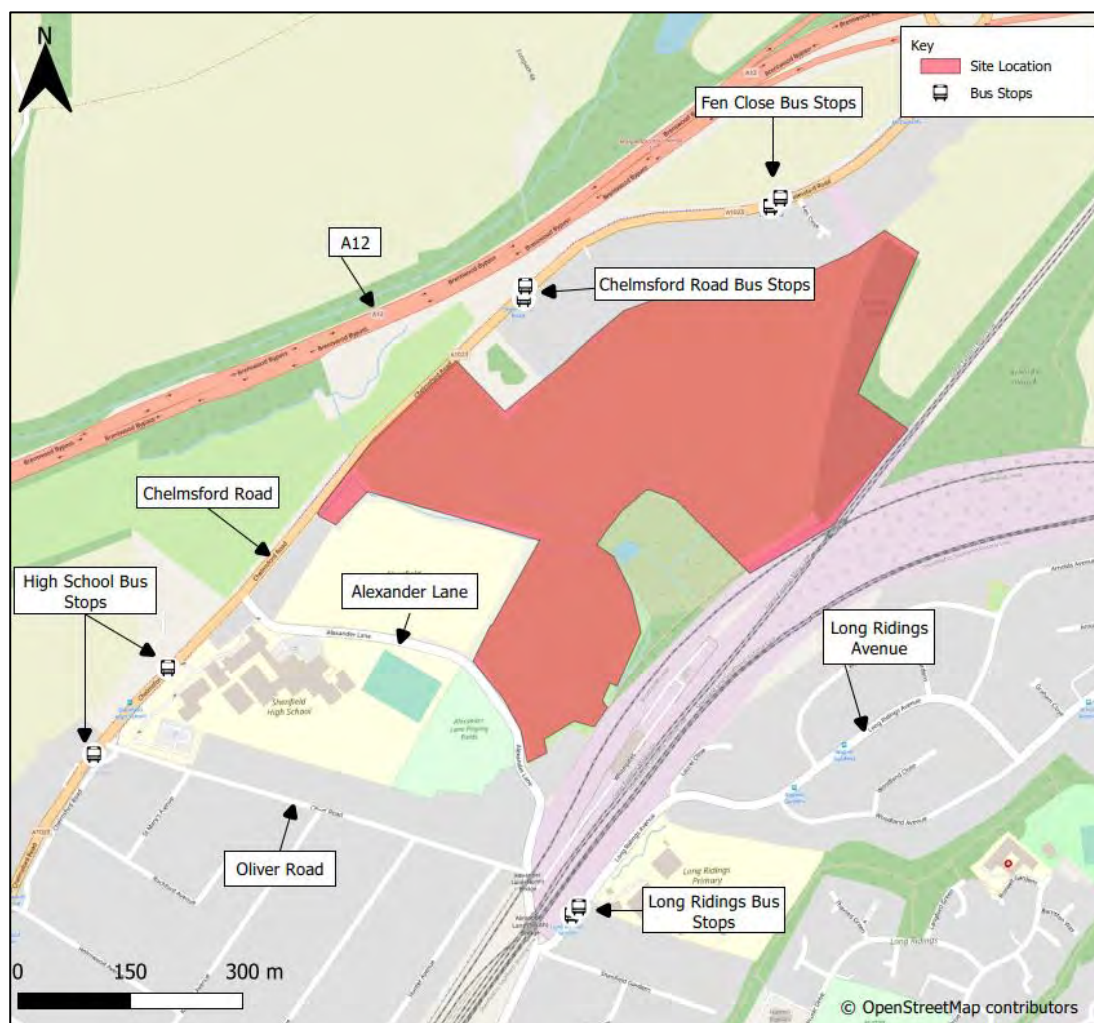
### Overview

- 2.1 The aim of this section is to define the site in the context of its existing accessibility, through a comprehensive description of the local transport infrastructure including active travel facilities, public transport services and the local highway network in the surrounding area.

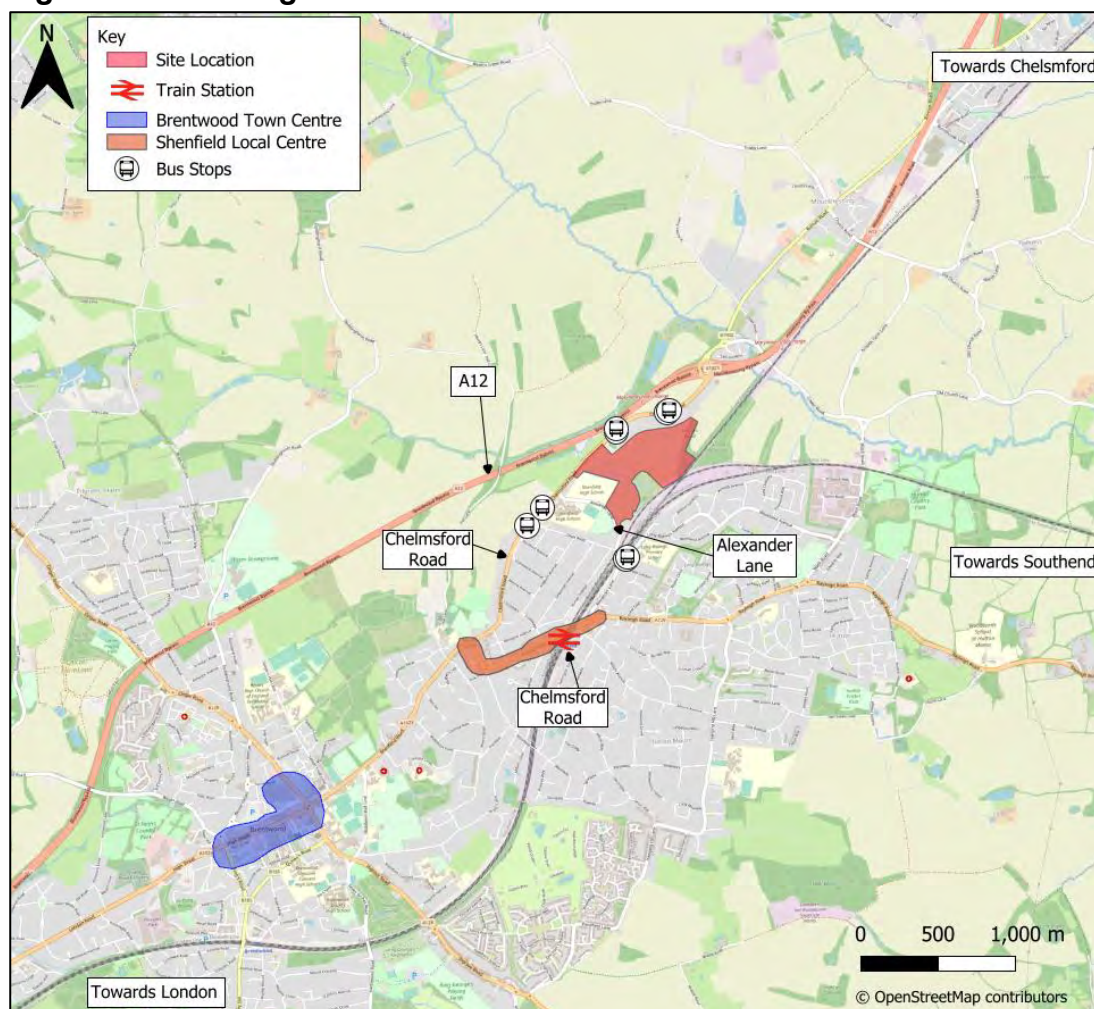
### Site Location

- 2.2 The site is located to the south of A1023 Chelmsford Road, east of Alexander Lane, north of railway lines, and to the west of proposed residential development. The site is located 1.7km north from Shenfield train station and Shenfield town centre. It lies within the administrative boundary of Essex County Council (ECC) and Brentwood Borough Council (BBC).
- 2.3 The site in its local and strategic context is illustrated in **Figures 2.1** and **2.2** respectively.

**Figure 2.1 - Local Site Location**



**Figure 2.2 - Strategic Site Location**



## Description of Site

- 2.4 The site is located to the north of Shenfield, a 20-minute walk and a 10-minute cycle to Shenfield town centre. The site is bound to the northwest by Chelmsford Road, its associated dwellings, and their rear residential curtilages. Beyond Chelmsford Road lies the A12 (dual carriageway) and open farmland. The eastern boundary of the site is delineated by Ancient Woodland, an area of undesignated woodland and a railway line, beyond which lies additional areas of woodland, residential development, and further farmland.



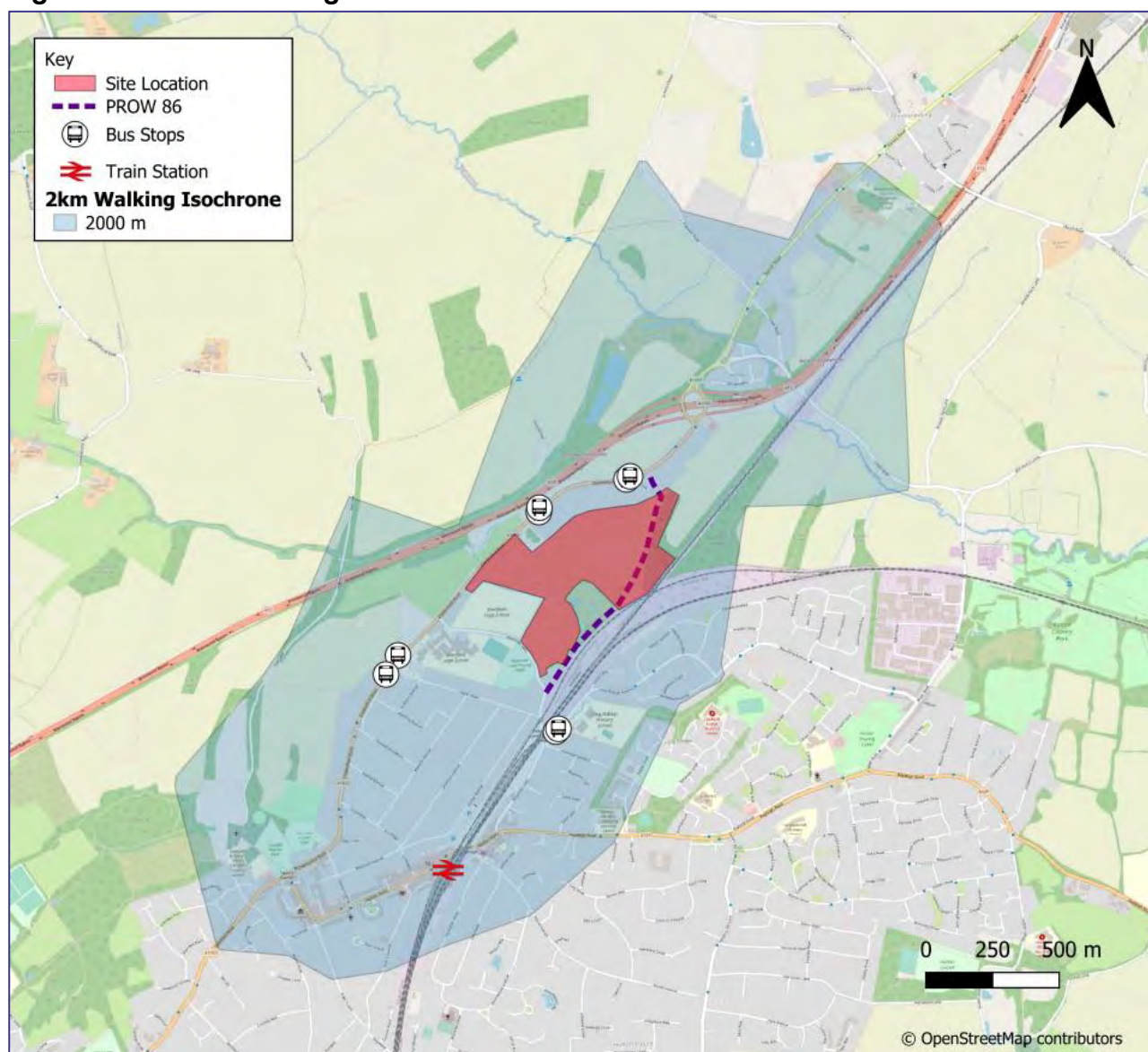
## Accessibility

- 2.5 This section outlines the existing transport conditions in the vicinity of the site in detail, including details of walking and cycling routes, local train and bus services, and the local highway network.
- 2.6 This section will demonstrate the site is well served by nearby bus stops and walking/cycling infrastructure.

### Walking Provision

- 2.7 **Figure 2.3** shows a walking isochrone of up to 2km distance, which is equivalent to 20-minutes walking time, and whilst this should not be considered the upper limit for walking trips, it is indicative of an easy walking distance for residents to undertake their day-to-day activities.

**Figure 2.3 - 2km Walking Isochrone**





- 2.8 **Figure 2.3** indicates that a vast area of Shenfield town is within a short walking distance of the site. By cross referring to **Figure 2.6** it can be seen that this area includes Shenfield town centre and the nearby facilities within the town centre are located in an acceptable walking distance from the site. This includes Shenfield train station which can be reached within circa 20 minutes walking time from the site, and benefits from frequent services being the terminus of the Elizabeth Line. The walking isochrone also demonstrates good access to the bus connections available from the site, the details of which follow within this section.
- 2.9 Shenfield town centre, train station and bus services are accessed via Chelmsford Road or Alexander Lane. Chelmsford Road has a shared footway/cycleway on either side of the carriageway running from the intersection with the A12 to Oliver Lane. The highway is subject to a 30mph speed limit to the south of the site and 40mph to the north of the site. Several pedestrian refuge islands are located along the highway.
- 2.10 Alexander Lane is predominately a residential street and is subject to a 30mph speed limit. It connects Chelmsford Road through to Shenfield town centre via an underpass under the train track. In the proximity of the site, no footway is provided due to the land uses predominantly being playing or green fields. To the southeastern extent of Alexander Lane, and where residential properties begin to appear along the road, a footway is provided on the southern side of the carriageway. However, the road becomes more rural as it continues through Alexander Lane Recreation Ground, located to the southwest of the site.
- 2.11 Footpath 86, a Public Right of Way (PRoW) runs through the eastern boundary of the site. It is an unpaved footpath, that varies in its condition and width throughout. The footpath is 2m at its widest, but this reduces to as little as 0.3m as the narrowest sections, as shown in **Photograph 2.1**.

**Photograph 2.1 – Footpath 86**

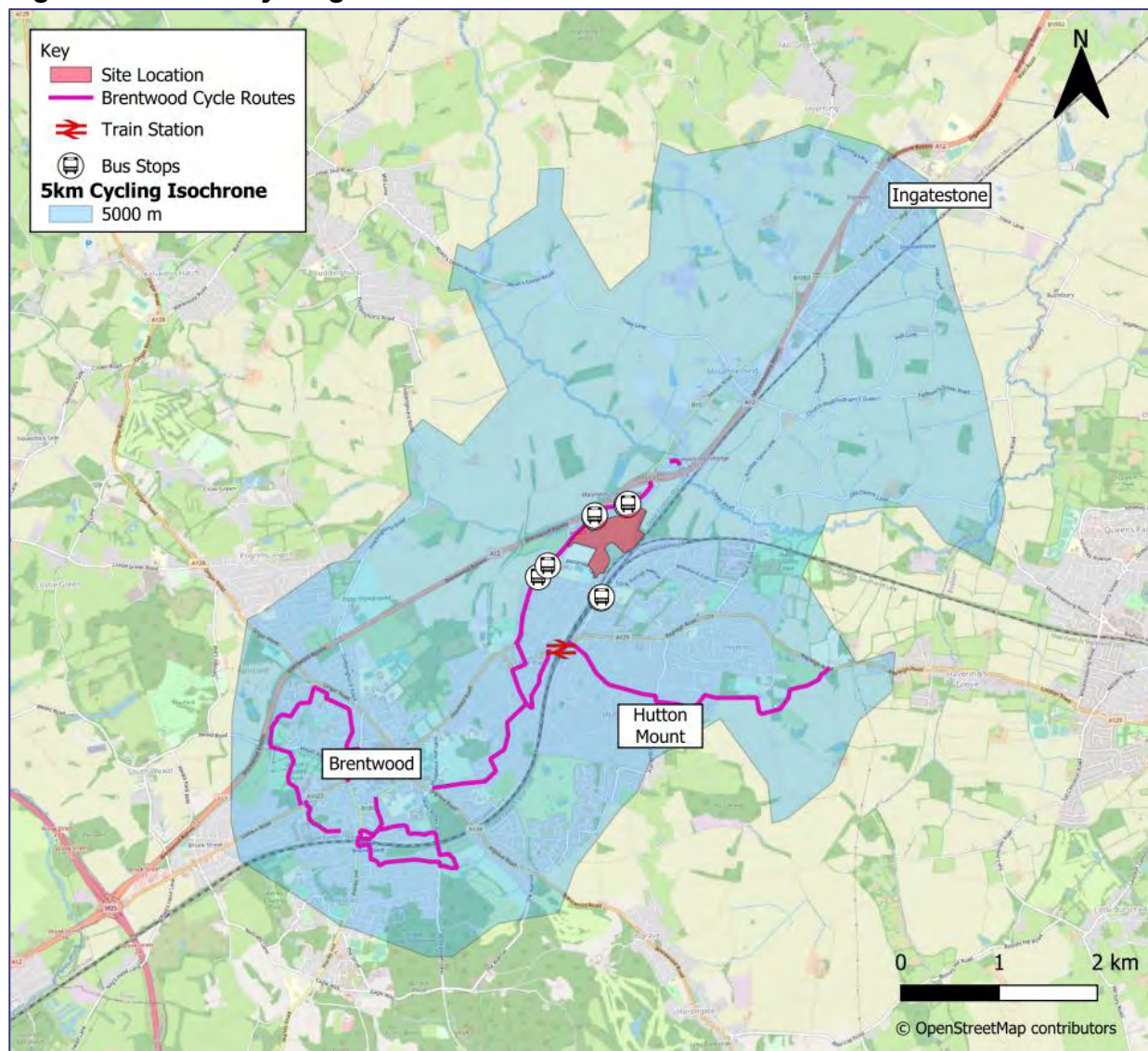




## Cycling Provision

- 2.12 **Figure 2.4** illustrates the area which can be reached within a 5km cycling distance. It shows that cyclists are able to access Ingatestone to the northwest and Shenfield to the south, including the train station. A large proportion of Brentwood is also accessible within this distance, providing further access to a range of facilities located within Brentwood town centre.

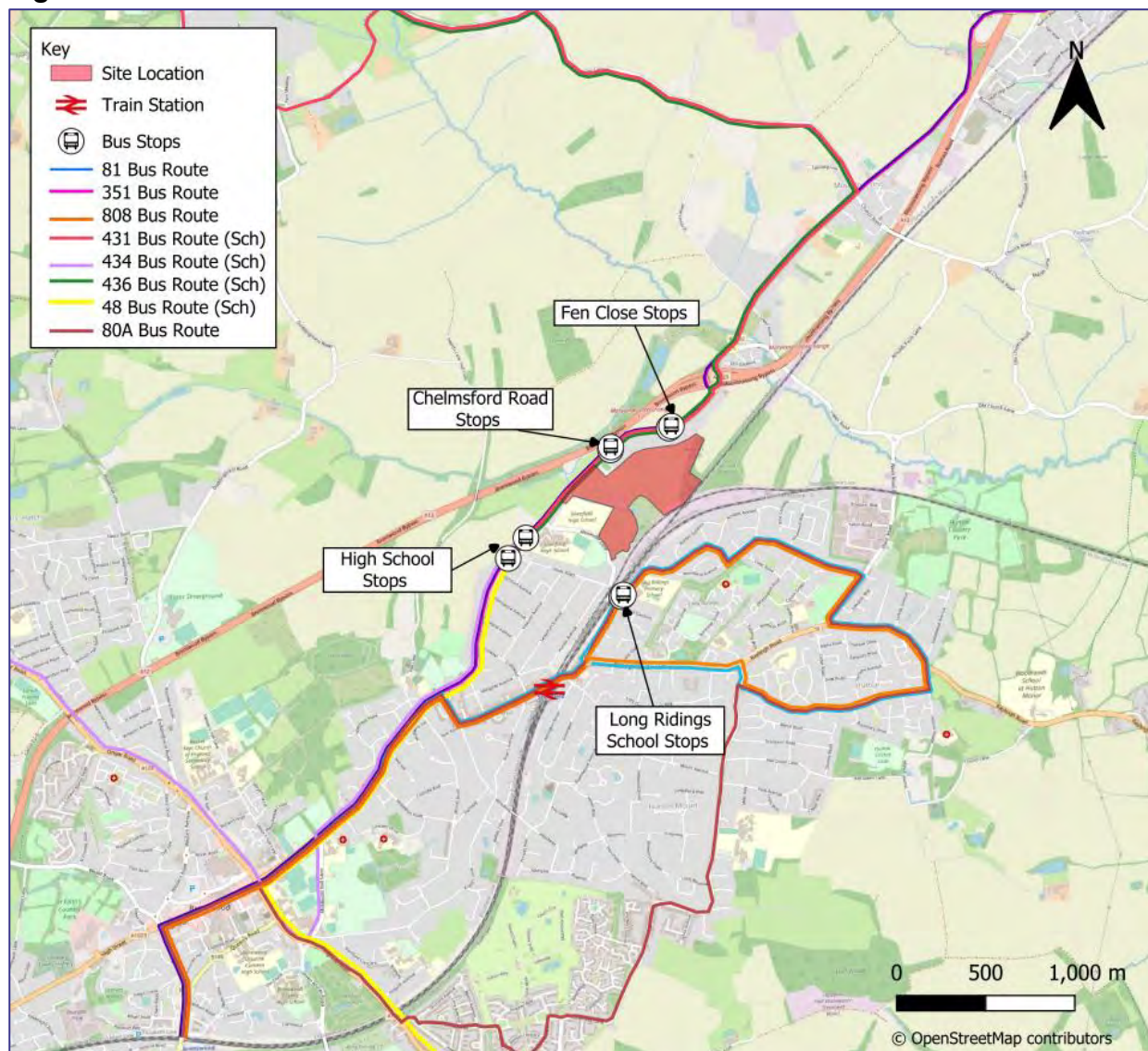
**Figure 2.4 - 5km Cycling Isochrone**



## Bus Services

- 2.13 The closest bus stops to the site are located on Chelmsford Road and Long Ridings Avenue, approximately 400m and 500m walking distance from the site, respectively. **Figure 2.5** shows the bus routes that are accessible from the site and these stops, with **Table 2.1** providing details on the frequency of the bus service.

Figure 2.5 – Bus Services





**Table 2.1 - Bus Services Frequency**

| No.        | Route  | Nearest Bus Stop    | Distance From   |             |                | Average Frequency (mins) |           |     |
|------------|--|---------------------|-----------------|-------------|----------------|--------------------------|-----------|-----|
|            |  |                     | Chelmsford Road | Site Centre | Alexander Lane | M-F                      | S         | S   |
| <b>351</b> | Chelmsford to Warely via Brentwood                               | Chelmsford Road     | 220             | 470         | 750            | 60                       | 60        | 120 |
| <b>81</b>  | Brentwood to Hutton  | Long Ridings School | 1100            | 1350        | 400            | 30                       | 60        | n/a |
| <b>80A</b> | Colchester to Bosted   | Long Ridings School | 1100            | 1350        | 400            | 2 per day                | 2 per day | n/a |
| <b>808</b> | Brentwood to Shenfield   | Long Ridings School | 1100            | 1350        | 400            | 60                       | n/a       | n/a |
| <b>431</b> | (School Service)<br>Blackmore to Wyatts Green via Stondon Massey | Chelmsford Road     | 220             | 470         | 750            | 2 per day                | n/a       | n/a |
| <b>436</b> | (School Service)<br>Shelley to Shenfield High School             | High School         | 500             | 750         | 550            | 2 per day                | n/a       | n/a |
| <b>434</b> | (School Service)<br>High Ongar to Shenfield High School          | High School         | 500             | 750         | 550            | 2 per day                | n/a       | n/a |
| <b>48</b>  | (School Service)<br>Laindon to Shenfield High School             | High School         | 500             | 750         | 550            | 2 per day                | n/a       | n/a |

2.14 The bus stops from Chelmsford Road provide access to the 351 service, an hourly service that provides access to Warley via Shenfield and Brentwood to the southwest, and Chelmsford City Centre via Ingatestone to the northeast.

- 2.15 Additional bus connections are available from the site via Long Ridings School bus stops. These are located to the south of the site and can be accessed via Alexander Lane in approximately 10 minutes from the southern site access.
- 2.16 The Long Ridings Avenue stops are served by the 81 and 808 services, with the 808 providing an additional service to Warley via Shenfield train station and Brentwood. The 81 acts as the return service from Warley, terminating a short distance north at Hutton before returning to Warley via the residential area located around Hutton.
- 2.17 As illustrated above, the site is well served by buses. There are several bus routes and bus stops within an acceptable walking distance from both site accesses and the centre of the site.

### Rail Services

- 2.18 The nearest train station to the site is Shenfield train station which is located approximately 1.1km to the south of the site, which is shown in **Figure 2.5** above. The train station benefits from a frequent service both towards London and towards Essex. The key direct train services that operate through Shenfield train station are summarised in **Table 2.2**.

**Table 2.2 – Rail Services from Shenfield Railway Station**

| Destination             | Average Train Frequency (mins) | Average Journey Time (mins) |
|-------------------------|--------------------------------|-----------------------------|
| London Liverpool Street | 4                              | 30                          |
| Paddington              | 3                              | 50                          |
| Tottenham Court Road    | 3                              | 50                          |
| Romford                 | 7                              | 13                          |
| Clacton-On-Sea          | 30-60                          | 70                          |
| Chelmsford              | 15                             | 11                          |
| Colchester              | 20                             | 37                          |
| Reading                 | 4                              | 90                          |
| Braintree               | 60                             | 39                          |
| Southminster            | 30                             | 49                          |
| Heathrow                | 6                              | 85                          |
| Southend Victoria       | 20                             | 35                          |

- 2.19 Shenfield train station is located on the Great Eastern Main Line serving Greater Anglia trains and one of the two eastern termini of the Elizabeth Line. As a result of the Elizabeth Line, it benefits from direct train services to London Liverpool Street, Tottenham Court Road, London Paddington, Heathrow Airport and Reading. Greater Anglia provide express services to London Liverpool Street, and to destinations northeast bound to Chelmsford, Southend and Clacton-on-Sea.

### Local Facilities

- 2.20 Due to the site's proximity to the centre of Shenfield and surrounding residential areas, the site benefits from a wide range of existing local facilities to be utilised by future residents.
- 2.21 **Table 2.3** provides a list of facilities located in proximity to the site. These are also shown in **Figure 2.6**. An approximate distance from the centre of the site has been provided, but this will vary depending on location within the site, with some being located nearer and others further.

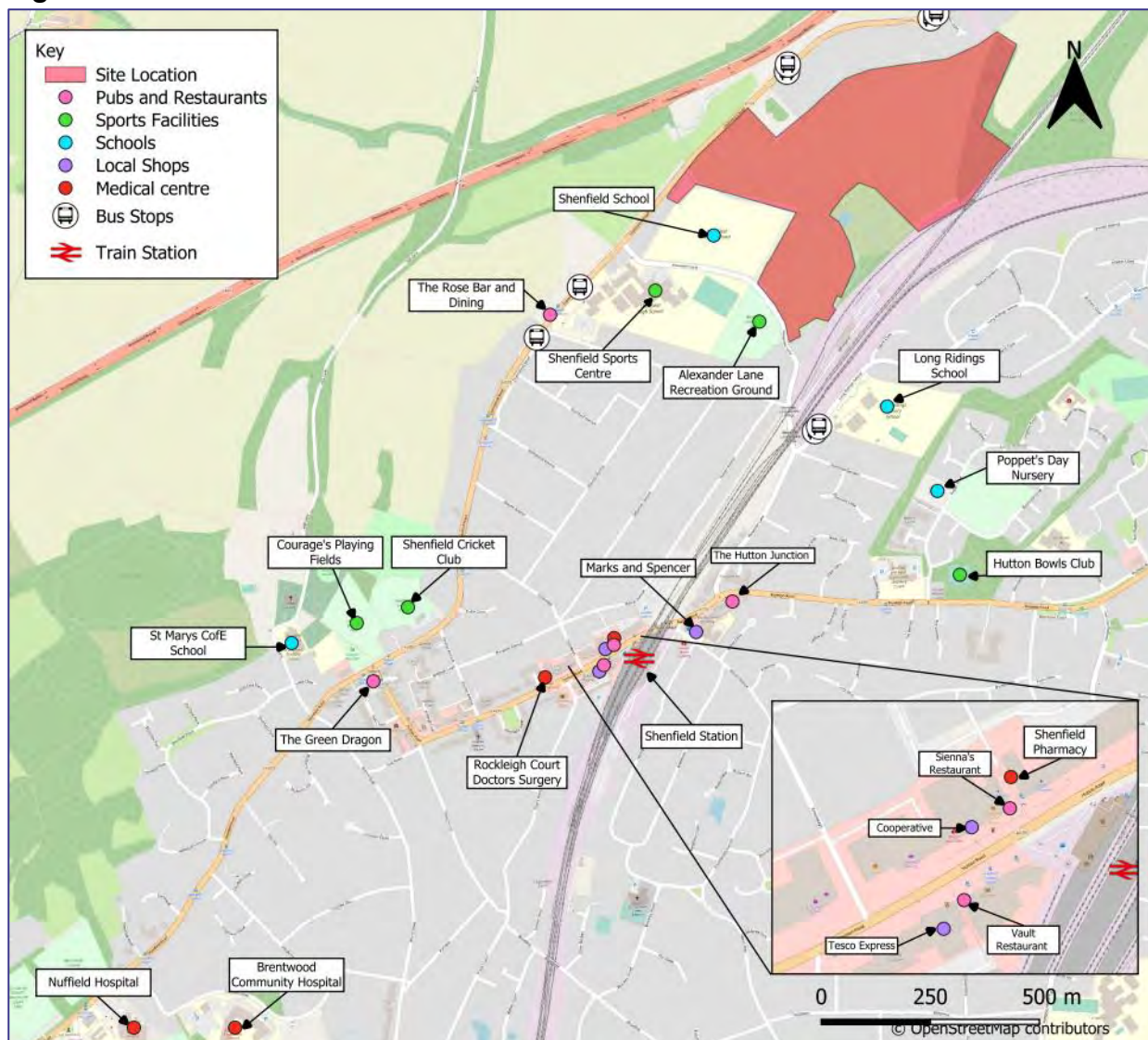
**Table 2.3 – Local Facilities**

| Local Facility                     | Distance from the centre of the site (m) | Walking Time (mins*) | Cycling Time (mins*) |
|------------------------------------|--|----------------------|----------------------|
| <b>Public Transport</b>            |  |                      |                      |
| Chelmsford Road Bus Stop           | 400                                      | 5                    | 1                    |
| Long Ridings School Bus Stop       | 950m                                     | 12                   | 5                    |
| Shenfield Station                  | 1500                                     | 19                   | 5                    |
| <b>Schools / Education</b>         |  |                      |                      |
| Shenfield High School              | 260                                      | 3                    | 1                    |
| Long Ridings School                | 1000                                     | 13                   | 3                    |
| Poppets Day Nursery                | 1000                                     | 13                   | 3                    |
| St Marys CofE Primary School       | 1700                                     | 22                   | 8                    |
| Sunflower Montessori Kindergarten  | 2000                                     | 25                   | 7                    |
| <b>Leisure / Sports Facilities</b> |  |                      |                      |
| Shenfield Sports Centre            | 260                                      | 3                    | 1                    |
| Alexander Lane Recreation Ground   | 500                                      | 6                    | 2                    |
| Shenfield Cricket Club             | 1200                                     | 16                   | 5                    |
| Courage's Playing Fields           | 1400                                     | 18                   | 6                    |
| Hutton Bowls Club                  | 1800                                     | 23                   | 6                    |
| <b>Pub / Restaurants / Food</b>    |  |                      |                      |
| The Rose Shenfield Bar and Dining  | 400                                      | 5                    | 1                    |
| The Hutton Junction                | 1200                                     | 15                   | 4                    |
| The Green Dragon                   | 1200                                     | 16                   | 5                    |
| Vault Restaurant                   | 1300                                     | 17                   | 5                    |
| Sienna's                           | 1400                                     | 18                   | 6                    |
| <b>Local Shops</b>                 |  |                      |                      |
| Tesco Express                      | 1300                                     | 17                   | 5                    |
| Marks and Spencer's                | 1400                                     | 18                   | 5                    |
| Cooperative                        | 1400                                     | 18                   | 6                    |
| <b>Medical Centres</b>             |  |                      |                      |
| Shenfield Pharmacy                 | 1400                                     | 18                   | 6                    |
| Rockleigh Court Doctors Surgery    | 1400                                     | 18                   | 6                    |
| Nuffield Health Hospital           | 2400                                     | 31                   | 9                    |
| Brentwood Community Hospital       | 2500                                     | 33                   | 10                   |

\*Calculated using Google Maps walking and cycling journey time calculation.



**Figure 2.6 - Local Amenities**

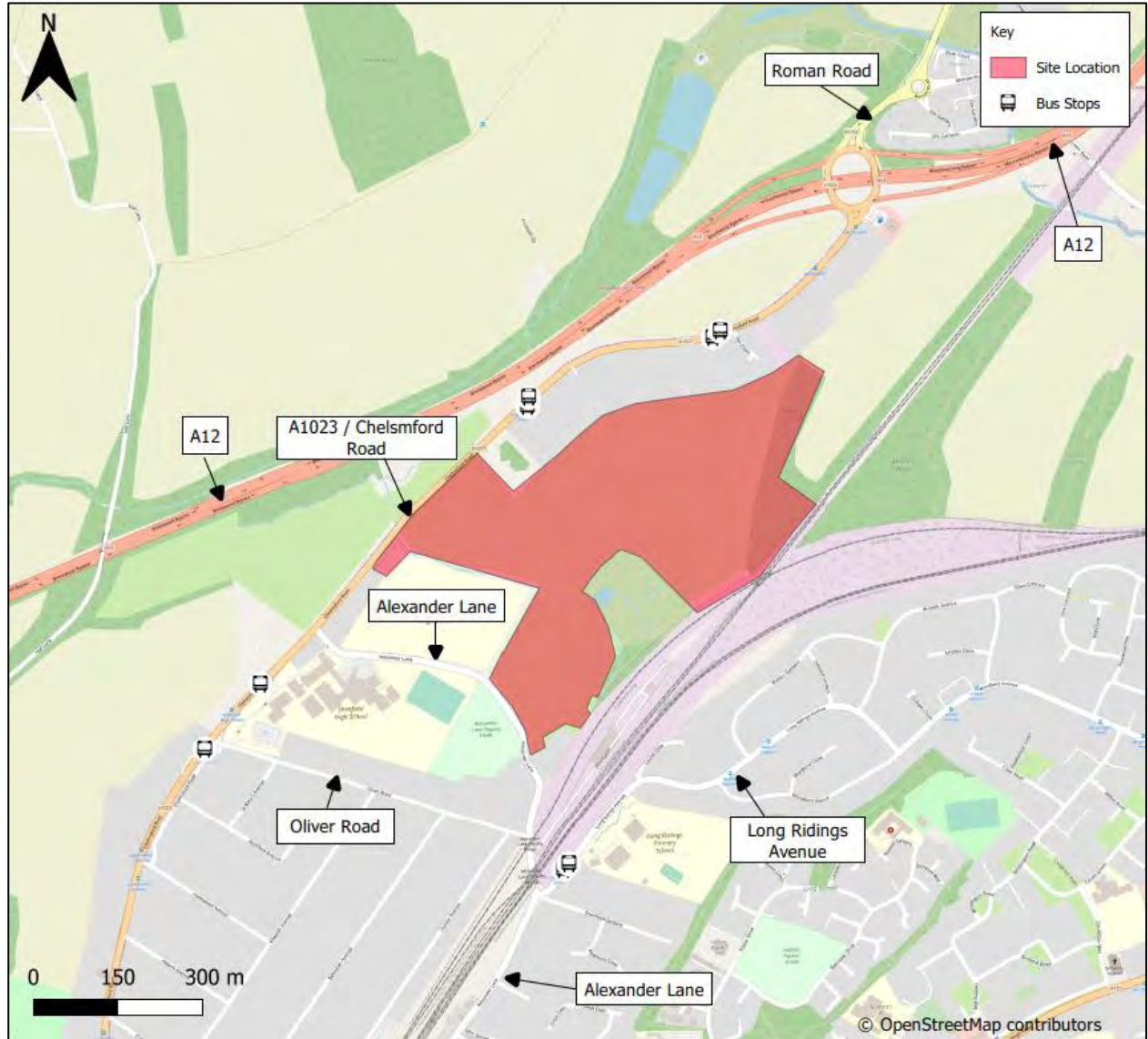


- 2.22 As demonstrated in **Table 2.3** and **Figure 2.6**, to the immediate south of the site are Shenfield High School and Alexander Lane Recreation Ground, both accessible via Alexander Lane. These are both located within a 5-minute walking distance of the western site access.
- 2.23 Long Ridings County Primary School and Poppetts Day Nursery are both located 1km south of the site on Long Ridings Avenue. Both of these educational facilities are within 15 minutes walking distance.
- 2.24 The centre of Shenfield benefits from a range of restaurants and shops that are accessible walking/cycling distance to the site. Additionally, more services are available within Brentwood town centre, which can be accessed within a cycling or via the bus services available from Chelmsford Road or via the train services from Shenfield train station.
- 2.25 **Table 2.3** and **Figure 2.6** demonstrates that the site is located in an accessible location which provides residents to live locally with opportunities to walk and cycle rather than travelling by car when undertaking everyday activities.

## Local Highway Network

2.26 The local highway network is shown in **Figure 2.7** below.

**Figure 2.7 - Local Highway Network**



### A1023/Chelmsford Road

- 2.27 The A1023/Chelmsford Road is the primary road linking the site to the centre of Shenfield and further south towards Brentwood town centre.
- 2.28 Approximately, 1km to the north of the site access point, Chelmsford Road intersects with the A12. The A12 provides a link to the Strategic Road Network (SRN), continuing southwest towards London and the M25 and towards Chelmsford in the northeast.
- 2.29 The speed limit within proximity of the site is 30mph towards the southwest, increasing to 40mph heading northeast towards the A12. There highway benefits from streetlighting in proximity to the site.

- 2.30 There are a number of pedestrian refuge islands along the course of the A1023, providing safe crossings for pedestrians.

### **Alexander Lane**

- 2.31 Alexander Lane runs parallel to the site's southern border. It is a single carriageway road that connects Chelmsford Road to the residential area immediately south of the site. It connects to Rayleigh Road towards the southeast of the site. This provides a link to the residential areas northeast of Shenfield and connecting to the centre of Shenfield to the southwest.
- 2.32 Alexander Lane has a 30mph speed limit and does not feature a footway along the entirety of the length of the site boundary. To the southeastern extent of Alexander Lane, and where residential properties begin to appear along the road, a footway is provided on the southern side of the carriageway.

### **A12**

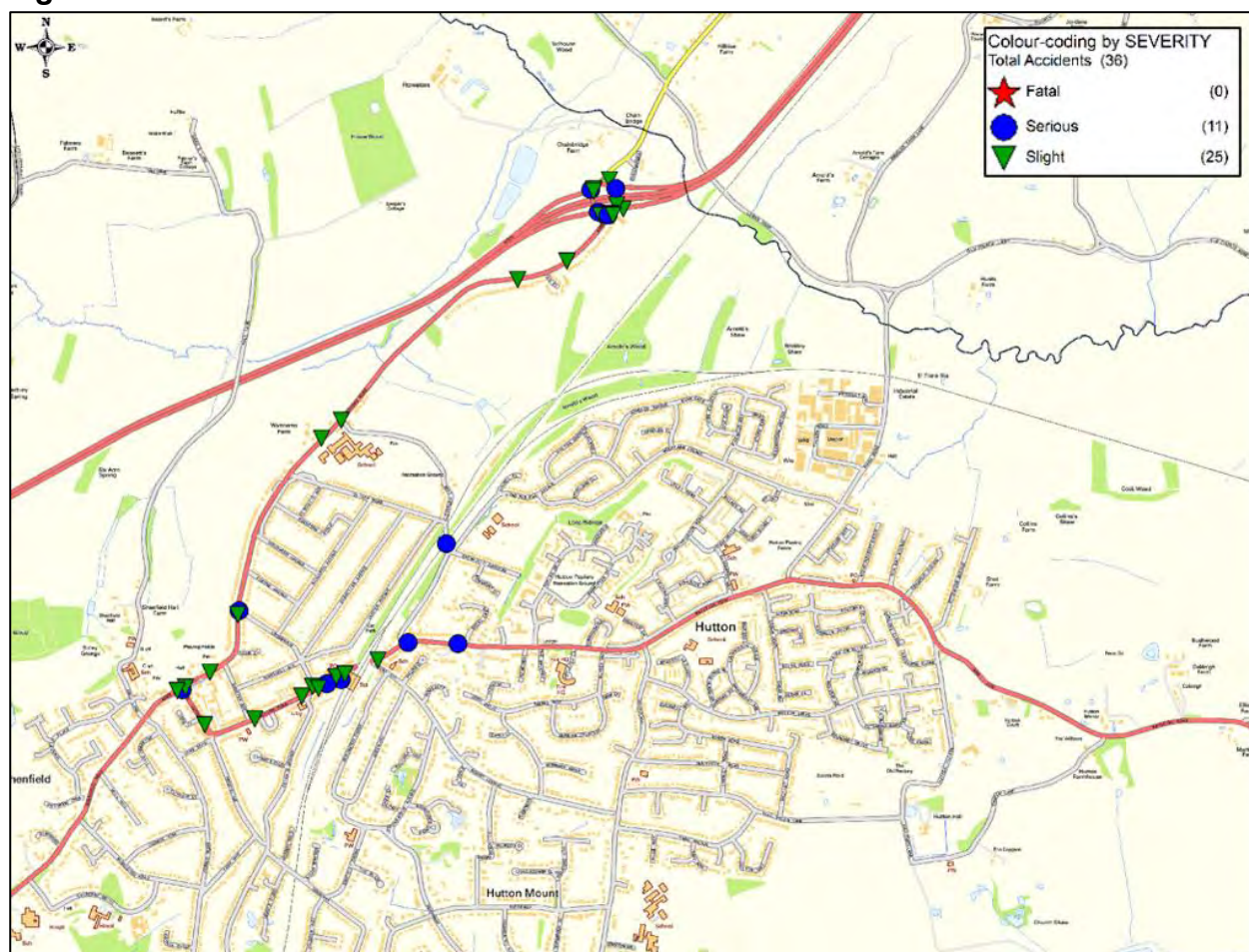
- 2.33 The A12 is located to the north of the site and is accessed via Chelmsford Road. It forms the key strategic route within the area. The A12 links the site to London and the M25 via Brentwood to the southwest, it also provides a link to Chelmsford and Essex to the northeast.

### **Road Safety Review**

- 2.34 Collision data has been obtained from ECC, for the most recent 5-years available from 2018 to 2023, to analyse the surrounding road network and the collisions that have taken place. Collision data refers to accidents on the public highway resulting in personal injury only. Collisions involving only vehicular damage, but not resulting in casualties are not included. The full collision data is included at **Appendix D**.
- 2.35 Collisions are graded in order of their severity, with the levels being, 'slight', 'serious' and 'fatal'. The recorded collisions in the local are shown in **Figure 2.8**.



Figure 2.8 - Collision Data



2.36 Within the latest five-year period (2018-2023), a total of 36 collisions occurred within the vicinity of the Site, 33 are classed as slight, 12 as serious and 0 as fatal. Of these 45 collisions 5 involved a pedestrian and 8 involved a pedal cycle. A detailed analysis is included at **Appendix D**.

Table 2.4 – Accident Data Summary

| Mode               | Fatal    | Serious   | Slight    | Total     |
|--------------------|----------|-----------|-----------|-----------|
| Vehicle driver     | 0        | 4         | 15        | 19        |
| Passenger          | 0        | 2         | 7         | 9         |
| Motorcyclist rider | 0        | 1         | 3         | 4         |
| Cyclist            | 0        | 2         | 6         | 8         |
| Pedestrian         | 0        | 3         | 2         | 5         |
| Other              | 0        | 0         | 0         | 0         |
| <b>Total</b>       | <b>0</b> | <b>12</b> | <b>33</b> | <b>45</b> |



- 2.37 In summary, the collisions reviewed as part of this analysis are not considered to be attributable to the road layout.

### **Accessibility Summary**

- 2.38 The site is readily accessible by all modes of transport due to its proximity to the existing town of Shenfield.
- 2.39 There already exists a good active travel network in the vicinity of the site, with a cycleway located on Chelmsford Road providing a traffic-free link towards Shenfield and Brentwood, and a number of pedestrian routes that can be utilised to access the numerous local facilities within the centre of Shenfield.
- 2.40 The site benefits from an excellent public transport network, with frequent buses to Brentwood via Shenfield and towards Chelmsford City Centre within walking distance of the site. The site is located within an acceptable walking and cycling distance of Shenfield train station. The station provides access to the Elizabeth Line and Greater Anglia services. These combine to provide very frequent services towards London, with Greater Anglia services providing links to Chelmsford and other destinations in Essex.
- 2.41 The site, therefore, is in an excellent location for a residential led development designed on the basis of a movement hierarchy with pedestrians prioritised and access to everyday facilities within a short walk of the site.

### 3 Planning Policy Context

- 3.1 This section of the TA sets out the relative national, regional and local transport planning policy that will be assessed in line with the successful delivery of the proposed development.

#### National Policy

#### National Policy National Planning Policy Framework (September 2023)

- 3.2 The NPPF sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced.
- 3.3 The revised National Policy Planning Framework (NPPF) (September 2023) refers to the promotion of sustainable transport, with section 9 stating that the transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel.

- 3.4 Paragraph 105 states that:

*“Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making”.*

- 3.5 Considering the development proposals, NPPF states that in assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that (Paragraph 110):

*“a) appropriate opportunities to promote sustainable transport modes can be or have been taken up, given the type of development and its location;*

*b) safe and suitable access to the site can be achieved for all users;*

*c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*

*d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.”*

- 3.6 Furthermore, Paragraph 111 of the NPPF 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.”*

- 3.7 Paragraph 112 states that:

*“Within this context, applications for development should:*

- Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- Allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.”*

## **Regional Policy**

### **Essex Transport Strategy: Local Transport Plan for Essex**

- 3.8 The Essex Transport Strategy (ETS) presents the aspirations for improving transport and travel within the county and outlining how the county will work to achieving these aspirations. The ETS looks to outline the key policies that will guide development for the 15-year period between 2011 and 2036. The key transport policies relevant to this development are outlined below:
- 3.9 Policy 4 ‘Public Transport’ states that the County Council will develop the public transport network to assist economic growth and improve access to essential services by:
- “focusing development and improvement on a network of core bus routes linking locations that attract significant numbers of people;*
  - working with commercial bus service operators to improve service reliability, punctuality and accessibility;*
  - continuing to work in partnership with train operating companies and Network Rail to improve rail services;*
  - working with bus and train operators to improve integration between bus and rail services;*
  - working towards the introduction of multi-operator ticketing;*
  - managing the English National Concessionary Travel Scheme for Essex;*

- *ensuring that accurate and up-to-date service information is made available through a range of media; working with the police and public transport operators to reduce crime and fear of crime when travelling on the transport network; and*
- *lobbying Government for increased local involvement in the planning and provision of local rail and more effective partnership working with operators over the provision of bus services.”*

3.10 Policy 5 ‘Connectivity’ presents the goal of improving the transport network in Essex to support a more sustainable future. In order to improve connectivity ECC are looking at:

- *“improving travel links within and between our main towns;*
- *focusing investment on routes where improvements will give the greatest benefit to the economy of Essex;*
- *improving journey times and journey-time reliability by targeting congestion improvement measures (see Policy 10);*
- *providing for the use of more sustainable forms of travel (see Policy 5);*
- *ensuring international gateways have effective surface access strategies that promote appropriate and sustainable transport;*
- *developing appropriate provision of park and ride facilities serving our main towns; working with partner agencies to identify and deliver essential improvements to nationally important road and rail connections.”*

3.11 Policy 15 ‘Walking and Public Rights of Way’ highlights strategy that ECC aim to adopt to promote walking, specifically EEC will work towards:

- *“promoting the benefits of walking;*
- *facilitating a safe and pleasant walking environment that is accessible to all;*
- *improving the signage of walking routes;*
- *ensuring that the public rights of way network is well maintained and easy to use by walkers, cyclists and equestrians.”*

### **Essex Design Guide (2018)**

3.12 This is the overarching guidance manual that has pioneered local design, helped create space for innovation and encouraged high-quality development. The EDG is about creating distinctive places that people want to live; building communities and making sure that the infrastructure and facilities are in place at the right time.



- 3.13 In the Highways Technical Manual, the overarching aim is to ensure that in new residential and mixed-use environments, the circulation and movement of people is pleasant, convenient, safe, responds to local context and combines with good placemaking.
- 3.14 Motorised vehicle movement must efficiently service development without predominating, while walking, cycling and the use of public transport must be facilitated and encouraged, taking precedence over private modes of motorised transport. Three fundamental objectives stem from this:
- *To discourage inappropriate traffic from travelling through residential areas.*
  - *To promote very low driver speeds within residential environments.*
  - *To discourage the use of the private car, particularly for short or local trips*
- 3.15 Within the ‘pedestrian and cycle movement’ subheading it is suggested that:
- ‘Within new residential areas, pedestrian and cycle movement should be coherent, direct, safe, comfortable and attractive. The walking and cycling network should connect well with the existing network outside of the development and be supported by high-quality signage with distances and times indicated’*

#### **Essex Parking Standards (2009)**

- 3.16 In this document, Parking Standards and Good Practice disciplines area provided to:
- ‘serve the community and enhance the living environment, deliver sustainable economic growth and employment’*
- 3.17 The parking standards for Use Class C3 or for dwelling houses is published in the Essex Parking Standards, approved by the Essex County Council.
- 3.18 Dwellings are more commonly travel origins as opposed to destinations. It is now recognised that providing a reduced number of parking spaces at a travel origin does not discourage people from owning a car. Therefore, a minimum standard is set.
- 3.19 The parking standards are as illustrated in **Table 3.1**.

**Table 3.1. Essex County Council Parking Standards (2009)**

| Use                   | Vehicle Minimum          | Cycle Minimum   | Disabled Minimum  |
|-----------------------|--------------------------|---|---|
| 1 bed                 | 1 space per dwelling     | 1 covered space per dwelling  | N/A if parking is in curtilage of dwelling  |
| 2+ bed                | 2 spaces per dwelling    |   |   |
| Visitor / unallocated | 0.25 spaces per dwelling | <p>If no garage is provided, then 1 covered space per dwelling in a communal area for residents</p> <p>1 space per 8 dwellings for visitors</p> | <p>200 vehicle bays or less = 3 bays or 6% total capacity</p> <p>Over 200 vehicle bays 4 bays + 4% total capacity</p> |

## Local Policy

### The Brentwood Local Plan (2016-2033)

- 3.20 The Brentwood Local Plan 2016-2033 now forms part of the statutory development plan, which means it has full weight in determining planning applications and supersedes the Brentwood Replacement Local Plan, August 2005 (Saved Policies, August 2008).
- 3.21 In order to support and address the cumulative impacts of planned and other incremental growth, allocated development within the Local Plan and any other development proposals shall (where appropriate) provide reasonable and proportionate contributions to required mitigation measures to strategic transport infrastructure, including:
- *circulation arrangements, public realm and multimodal integration around Brentwood, Shenfield and Ingatestone stations;*
  - *circulation arrangement and public realm around West Horndon station, and the creation of associated multimodal interchange through phases to support new residents and employees;*
  - *improvements to the highway network as deemed necessary by transport evidence or as agreed by National Highways and Essex County Council as appropriate, other statutory bodies, stakeholders and passenger transport providers; and d. additional and/or improved pedestrian, cycling infrastructure and bus services connecting development to key destinations such as railway stations, education facilities, employment, retail and leisure.*
- 3.22 This policy seeks to align strategic transport infrastructure improvements with Brentwood's proposed allocations and economic growth and to contribute to health and well-being whilst preserving the environment. This would be achieved by maximising the value of Elizabeth Line, improving the

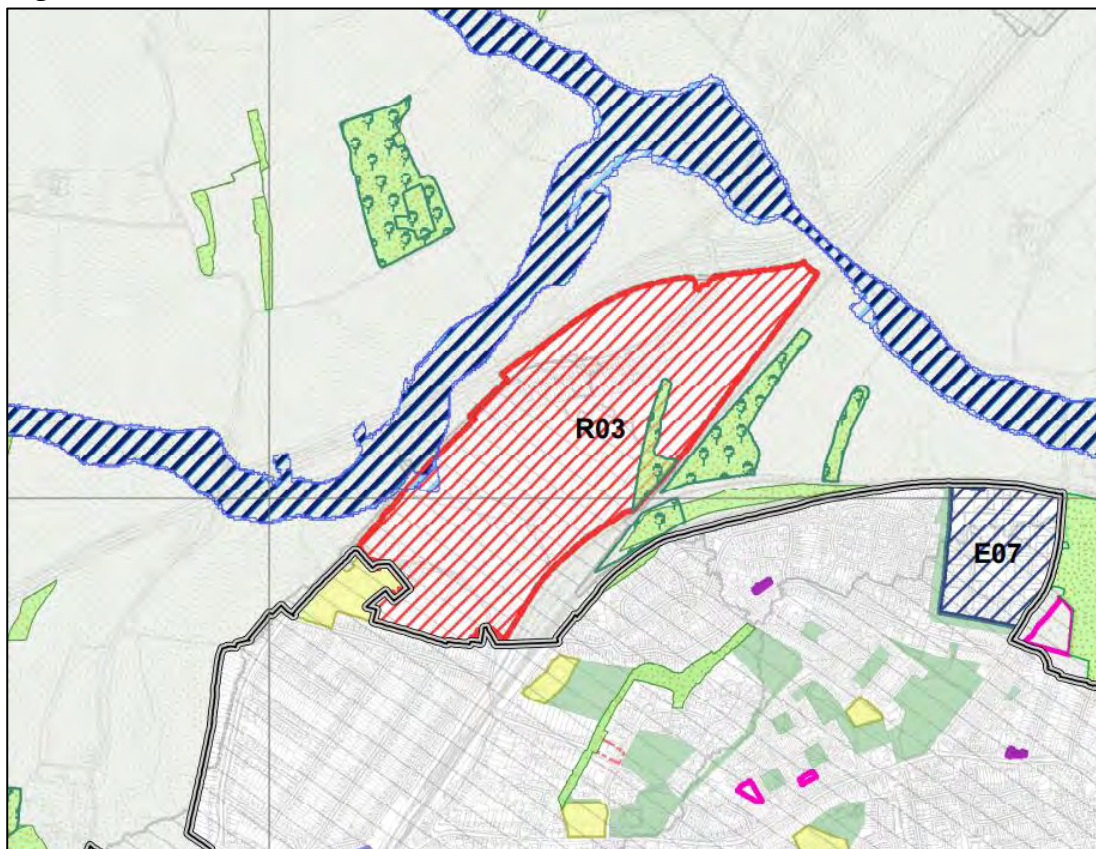
capacity of the stations and road network, ensuring the main settlements and new development have convenient access to high quality and frequent public transport services which connect to the town centre, main employment centres, train stations, ports and airports in the wider region.

- 3.23 Development proposed within this Plan will only be deliverable and supported if suitable transport measures and investment are led, coordinated and, where appropriate, delivered by Brentwood Borough Council and strategic partners.
- 3.24 Development should seek to enhance transport, particularly public transport, and wider connectivity between new and existing employment areas. The Council's positive approach to planning may require it to use its compulsory purchase powers under section 226 of the Town and Country Planning Act 1990. That power gives the Council a positive tool to help bring forward necessary works to support planned growth in the borough, where strong planning justifications for the use of the power exist and statutory requirements are satisfied.
- 3.25 A secondary policy of the Brentwood Plan revolves around 'Sustainable Travel and Walkable Streets'. This Comprises:
- Sustainable modes of transport should be prioritised in new developments to promote accessibility and integration with the wider community and existing networks. Priority should be given to cycle and pedestrian movements and access to public transport.
  - *Development proposals should provide the following sustainable measures as appropriate:*
    - *the provision of pedestrian, cycle, public transport and where appropriate, bridleway connections within development sites and to the wider area, including key destinations;*
    - *the creation of safe, secure, well connected and attractive layouts which minimise the conflicts between traffic, cyclists and pedestrians, and allow good accessibility for passenger transport within sites and between sites and adjacent areas, and where appropriate improve 25*  
*<https://highwaysengland.citizenspace.com/ltc/consultation/> 83 areas where passenger transport, pedestrian or cycle movement is difficult or dangerous;*
    - *the provision of community transport measures promoting car pools, car sharing, voluntary community buses, cycle schemes;*
    - *safeguarding existing and proposed routes for walking, cycling, and public transport, from development that would prejudice their continued use and/or development; and e. any development requiring a new road or road access, walking and cycling facilities and public transport, will be required to have regard to the adopted Essex County Council's Development Management Policies or successor documents, in order to assess the impact of development in terms of highway safety and capacity for both access to the proposed development and the wider highway network.*

## Strategic Site R03: Land North of Shenfield

- 3.26 The site is part of the R03: Land North of Shenfield allocation. The land is allocated for residential-led mixed-use development.
- 3.27 The Development should provide:
- around 825 new homes;
  - around 2.1 hectares of land for a co-located primary school and early years and childcare nursery;
  - around 60 bed residential care home or an appropriate mix of specialist accommodation to meet identified needs, in accordance with policy HP04;
  - 5% self-build and custom build across the entire allocation area; and
  - around 2ha of land for employment purposes which may include light industrial, offices, research and development (within class E) or other sui generis employment uses which are compatible with the residential development.
- 3.28 Strategic site R03 is show at **Figure 3.1** below.

**Figure 3.1 – R03: Land North of Shenfield**



### **The Development should:**

- be accompanied by a comprehensive masterplan and phasing strategy to inform detailed proposals as they come forward;
- be of a design quality and layout that reflects its key gateway location, particularly on land near to Junction 12, A12;
- provide vehicular access via Chelmsford Road (A1023) and Alexander Lane;
- allow if possible for the diversion of Alexander Lane to create a quiet lane for pedestrians and cyclists, with the provision for new and improved route through the development site linking to Chelmsford Road;
- enhance walking, cycling and public transport services with Shenfield station and local services and facilities in the wider area, including Brentwood town centre;
- provide well-connected internal road layouts which allow for good accessibility;
- provide new multi-functional green infrastructure including public open space in accordance with Policies NE02 and NE05;
- maintain and enhance Public Rights of Way within the site and to the wider area;
- protect and where appropriate enhance the Local Wildlife Site (Arnold's Wood).
- provide for appropriate landscaping and buffers along sensitive boundaries adjoining the A12 and railway line.
- maintain the same amount of existing playing field provision on site or, where this cannot be achieved, provide replacement playing fields (including supporting ancillary facilities) of equivalent or better provision in terms of quantity and quality in a suitable location prior to commencement of development on the playing field. Any replacement playing field provision should not prejudice Shenfield High School or the community from meeting their playing pitch needs; and
- be designed to ensure a coherent functional relationship with the existing development, which should be well integrated into the layout of the overall masterplan.

### **3.29 Proposals should:**

- provide pedestrian and cycle crossing points across Chelmsford Road (A1023) where appropriate;
- provide an improved bus service;
- as the site is located within a Critical Drainage Area, development should minimise and mitigate surface water runoff in line with Policy BE05 Sustainable Drainage.



3.30 Infrastructure Contributions: Applicants will also be required to make necessary financial contributions via planning obligations towards:

- off-site highway infrastructure improvements as may be reasonably required by National Highways and Essex County Council in accordance with policies MG05 and BE08 (the planning obligation will determine the level and timing of payments for these purposes);
- quiet way' cycle routes connecting transfer hubs to schools in Brentwood town centre.

### **Policy Summary**

3.31 The development proposals support both national and local policy, being part of the Land North of Shenfield allocated site. The development proposals will seek to meet all of the requirements requirement of the allocation, in order to ensure the creation of a sustainable site that will form an extension to Shenfield.

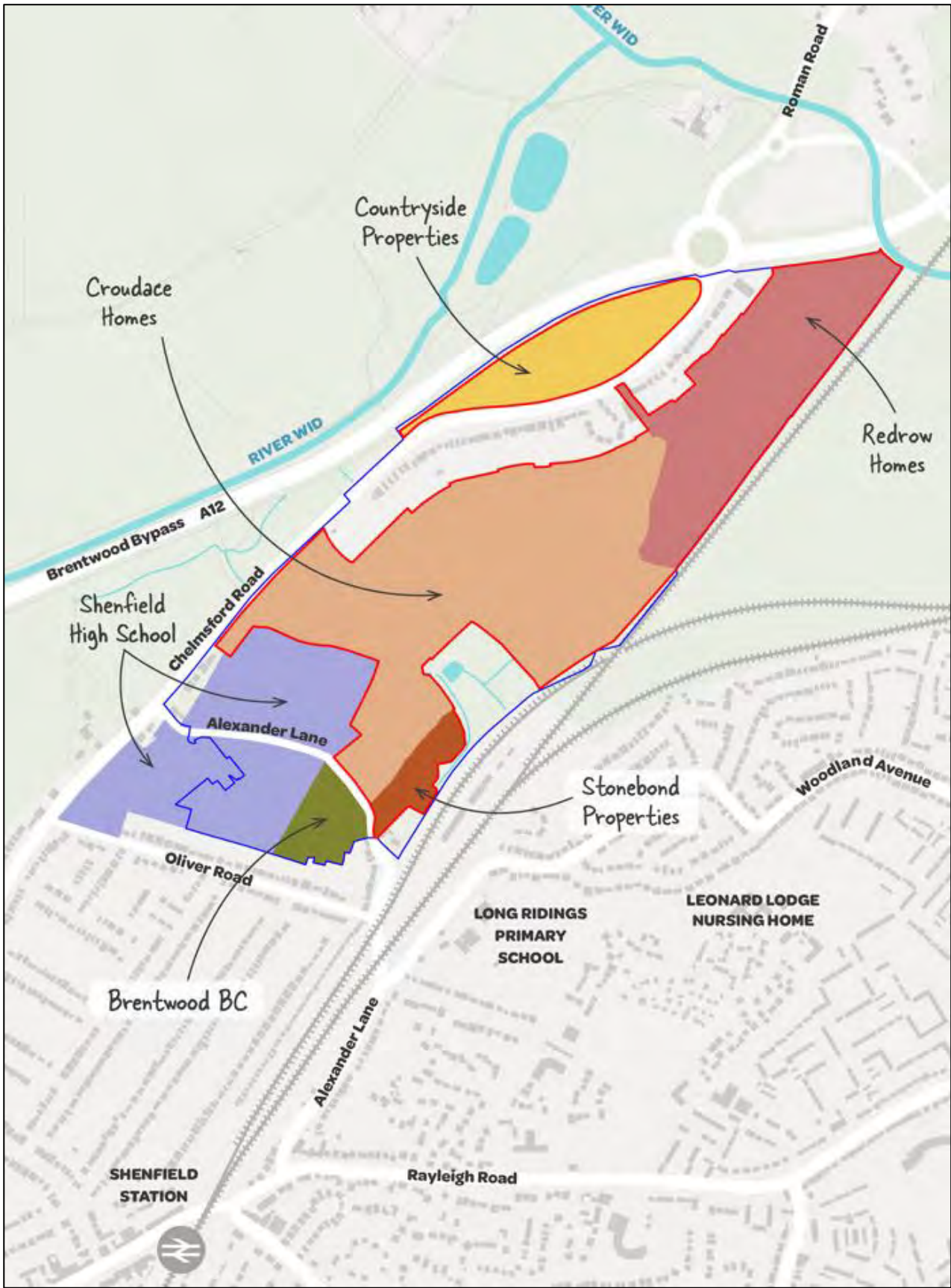
## 4 Development Proposals

- 4.1 This section details the development proposals of the site in the context of the development framework that has been prepared to support the allocation.

### Planning History and Site Allocation

- 4.2 The site is currently a green field site that was removed from the Green Belt as part of the Brentwood Local Plan (2022) to provide a residential lead mixed use development.
- 4.3 The site is allocated as part of the R03 (Land North of Shenfield) allocation. Policy R03 sets out that the residential lead mixed use development should provide:
- Circa 825 units;
  - around 2.1 hectares of land for a co-located primary school and early years and childcare nursery;
  - around 60 bed residential care home or an appropriate mix of specialist accommodation to meet identified needs, in accordance with policy HP04;
  - 5% self-build and custom build across the entire allocation area; and
  - Around 2ha of land for employment purposes which may include light industrial, offices, research, and development (within class E) or other sui generis employment uses which are compatible with the residential development.
- 4.4 The Strategic site “Land North of Shenfield” is being brought forward by a consortium of developers (including Croudace Homes Ltd, Redrow Homes, Countryside Properties and Stonebond Properties). The wider site is being brought forward subject to an adopted Masterplan Development Principles Document which has been created with the support of Brentwood Borough Council (BBC).
- 4.5 The overall Land North of Shenfield masterplan can be seen in **Figure 4.1** and **Appendix B**.

Figure 4.1 – Land North of Shenfield Masterplan



- 4.6 The Officers' Meadow site (the site is the largest parcel of land within the wider allocation, at 21.32 hectares (ha).
- 4.7 The joint promoters of the site and their design teams have worked closely on the masterplan and transport strategy for the wider allocation to ensure the developments brought forward are part of a comprehensive masterplan and transport strategy to ensure a coherent and high-quality network is developed.
- 4.8 The Masterplan Development Principles Document has been developed on behalf of the consortium of developers to provide a comprehensive masterplan and phasing strategy for the allocated site, to ensure compliance with Policy R03 and the Brentwood Local Plan.
- 4.9 The site's key location at the centre of the Strategic Site R03: Land North of Shenfield necessitates a high-quality development, to be supported by a comprehensive package of transport measures. This will ensure the sustainability of the site and the wider allocation.

### Development Description

- 4.10 The development description for the application at Officers' Meadow is as follows:

*"Hybrid planning application for 344 units including 35% affordable housing, safeguarded land for a 2FE primary school and early years facility, public open space and associated landscaping, drainage and highways infrastructure."*

### Site Masterplan

- 4.11 The proposal is for a new residential-led development for 344 homes that will, together with the remainder of the allocation, form a natural extension to the north of Shenfield. The site masterplan is illustrated below in **Figure 4.2**. The full masterplan is contained at **Appendix A** for reference.



**Figure 4.2 - Site Masterplan**



- 4.12 The development has been designed such that active travel can form the first choice for all residents and users of the site. As such, the site is designed to link with the existing, excellent quality public transport provision located at Shenfield, whilst also providing a range of enhancements and infrastructure improvements to nearby bus stops.
- 4.13 The site masterplan has been designed in accordance with the design principles set out within the Masterplan Development Principles Document.
- 4.14 The site provides a sustainable location to create and expand the community within Shenfield, providing new homes and other facilities to create a new neighbourhood with improved biodiversity, open space and a network of pedestrian and cycle routes.

## Quantum of Development

4.15 The proposed quantum of development by land use is summarised below in **Table 4.1**.

**Table 4.1 – Residential Accommodation Schedule**

| Number of Bedrooms | Market | Affordable | Total |
|--------------------|--------|------------|-------|
| 1 bed              | 6      | 48         | 54    |
| 2 bed              | 56     | 58         | 114   |
| 3 bed              | 78     | 9          | 87    |
| 4 bed              | 83     | 6          | 89    |
| <b>Totals</b>      | 223    | 121        | 344   |
|                    | 65%    | 35%        | 100%  |

4.16 The outline element of the application seeks outline permission for the land safeguarded for a 2FE primary school and early years provision. It is anticipated that the primary school is to be delivered by Essex County Council through funding received through the delivery of Brentwood Local Plan allocations R03-R019.

4.17 The land safeguarded for a 2FE primary school and early years provision will benefit from a school plaza to be located at the access to the school and a number of sporting fields. The illustrative masterplan for the school also demonstrates how the school site could provide an on-site carpark for members of staff. These are all matters for a subsequent Reserved Matters Application on the school.

## Vehicular Access Strategy

4.18 As part of the proposed site, the primary vehicle access will be taken from Chelmsford Road in the west of the site. An access will also be created onto Alexander Lane in the south of the site along with proposals to close Alexander Lane to through traffic which are set out below in more detail and shown indicatively in **Figure 4.3**.

**Figure 4.3 – Vehicle Access Strategy**

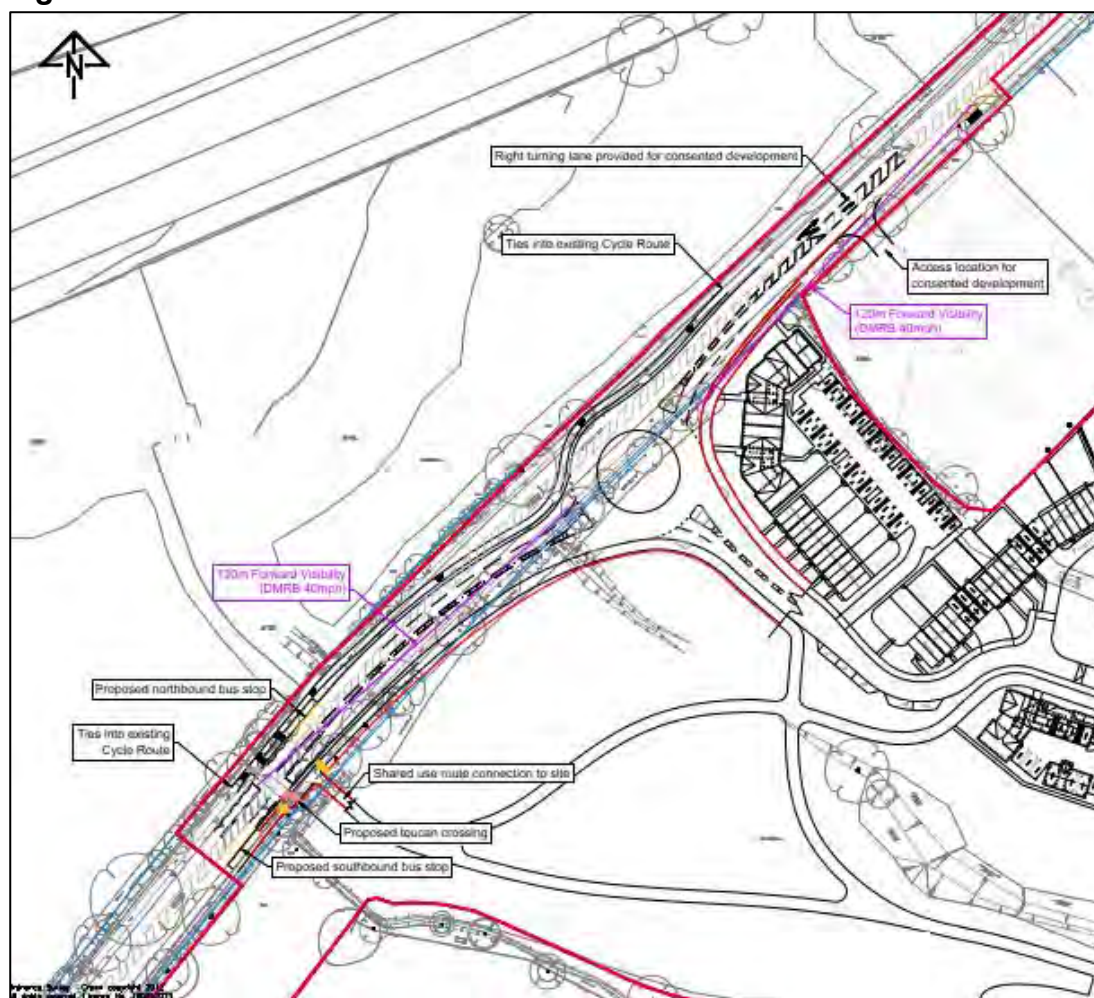


#### **Chelmsford Road Access**

- 4.19 The primary access to the site will be from in the form of a priority-controlled roundabout on Chelmsford Road. This will be a three-arm roundabout that will provide a suitable access to the proposed development, with through movement along Chelmsford Road retained.
- 4.20 The proposed site access roundabout can be seen in **Figure 4.4** and can be found at **Appendix E**.



**Figure 4.4 – Chelmsford Road Site Access Roundabout**



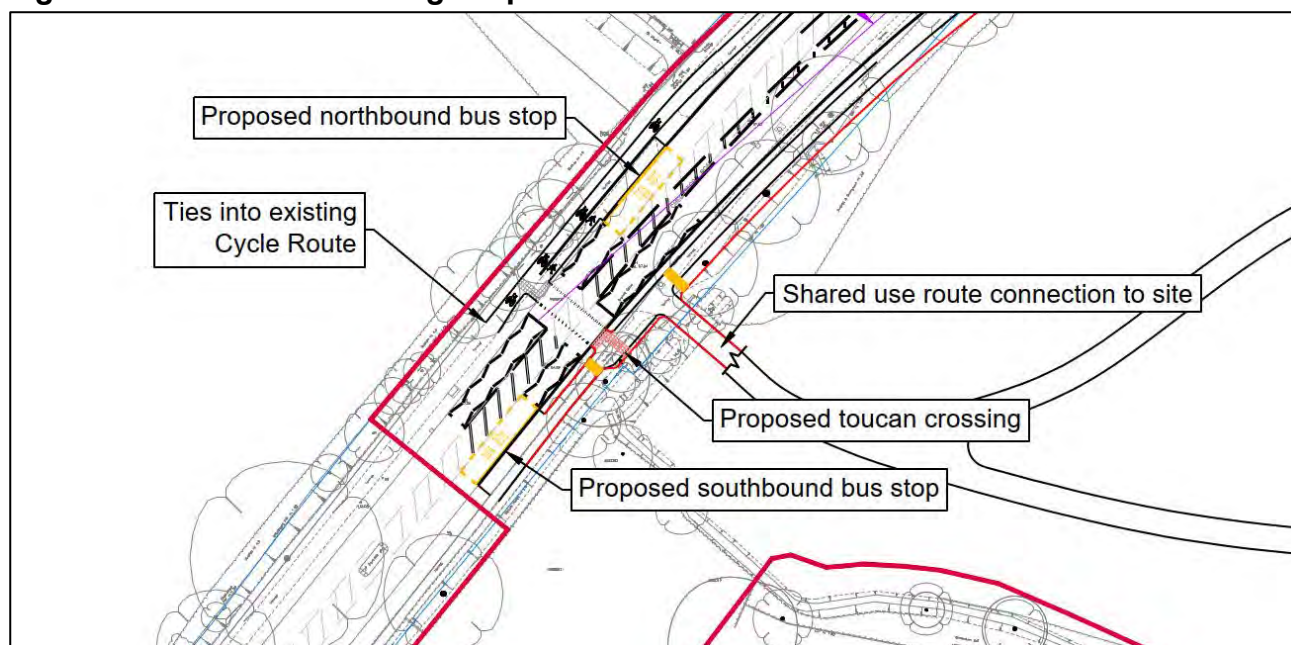
4.21 **Figure 4.4** also demonstrates that forward visibility of 120m can be obtained, in accordance with DMRB standards for a 40mph highway. It also shows that in addition to providing the primary vehicular access to the site, a wide range of active travel and public transport enhancements are planned with the junction enhancements which have been described above.

#### **Toucan Crossing Provision over Chelmsford Road**

4.22 As part of the site access design on Chelmsford Road a toucan crossing is proposed to the south of the access. This will link the shared footway/cycleways throughout the site to the existing route on the western side of Chelmsford Road. The toucan crossing is shown in **Figure 4.5** below and can be found at **Appendix F**.



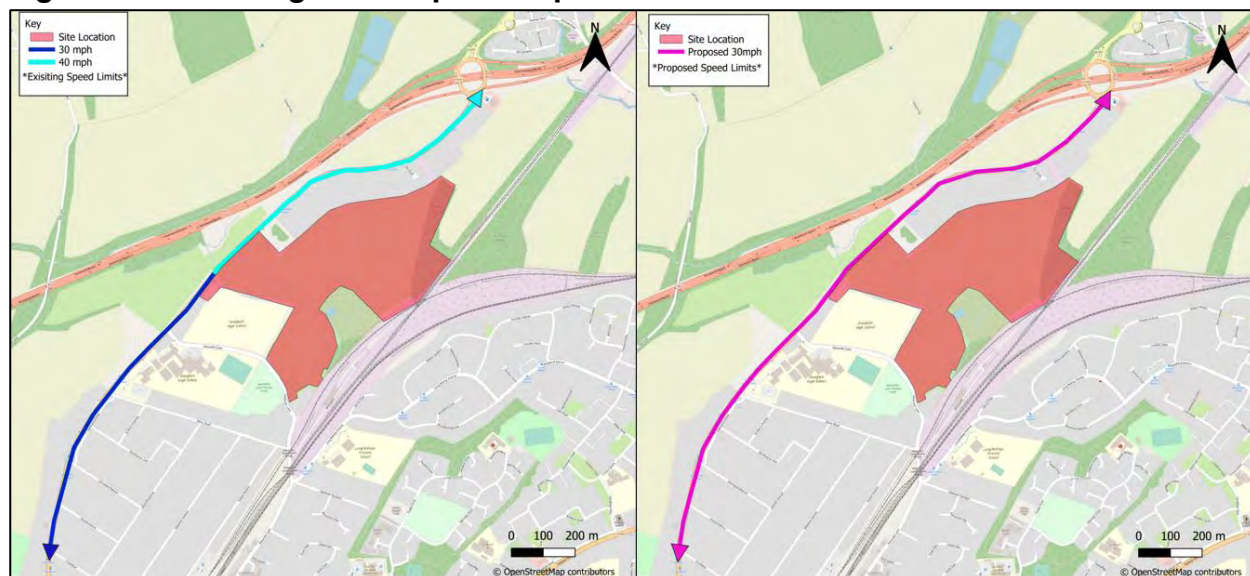
**Figure 4.5 – Toucan Crossing Proposal**



### **Speed Limit on Chelmsford Road**

- 4.23 Whilst the junction has been designed based on the existing speed limit on Chelmsford Road (40mph), as shown above on **Figure 4.4** above. The existing speed limit change location is based on the location where the existing urban area ends.
- 4.24 As such it is proposed, that the speed limit should be reduced along the site frontage for the site allocation area (R03) and as such as part of the development it is proposed to extend the 30mph speed limit up to the junction with the A12. The reduction in the speed limit on Chelmsford Road is to reflect the expansion of the urban area of Shenfield. The reduction would also create a more conducive environment for pedestrians and cyclists travelling on or near the highway.
- 4.25 **Figure 4.6** below shows the extent of the changes, but these are not required for the site access to be delivered but in the interests of creating an improved pedestrian and cycle environment for the wider site allocation and expansion of the built form of Shenfield.

**Figure 4.6 - Existing and Proposed Speed Limits on Chelmsford Road**



### Alexander Lane Access

- 4.26 A secondary access is proposed to the south of the site via Alexander Lane, an existing road that currently links Chelmsford Road to Rayleigh Road. The proposed development would see the re-alignment of Alexander Lane north into the site to form part of the proposed transport corridor running through the site.
- 4.27 The proposed Alexander Lane access to the site can be seen in **Figure 4.7** and can be found in **Appendix G**.

**Figure 4.7 – Alexander Lane Access**

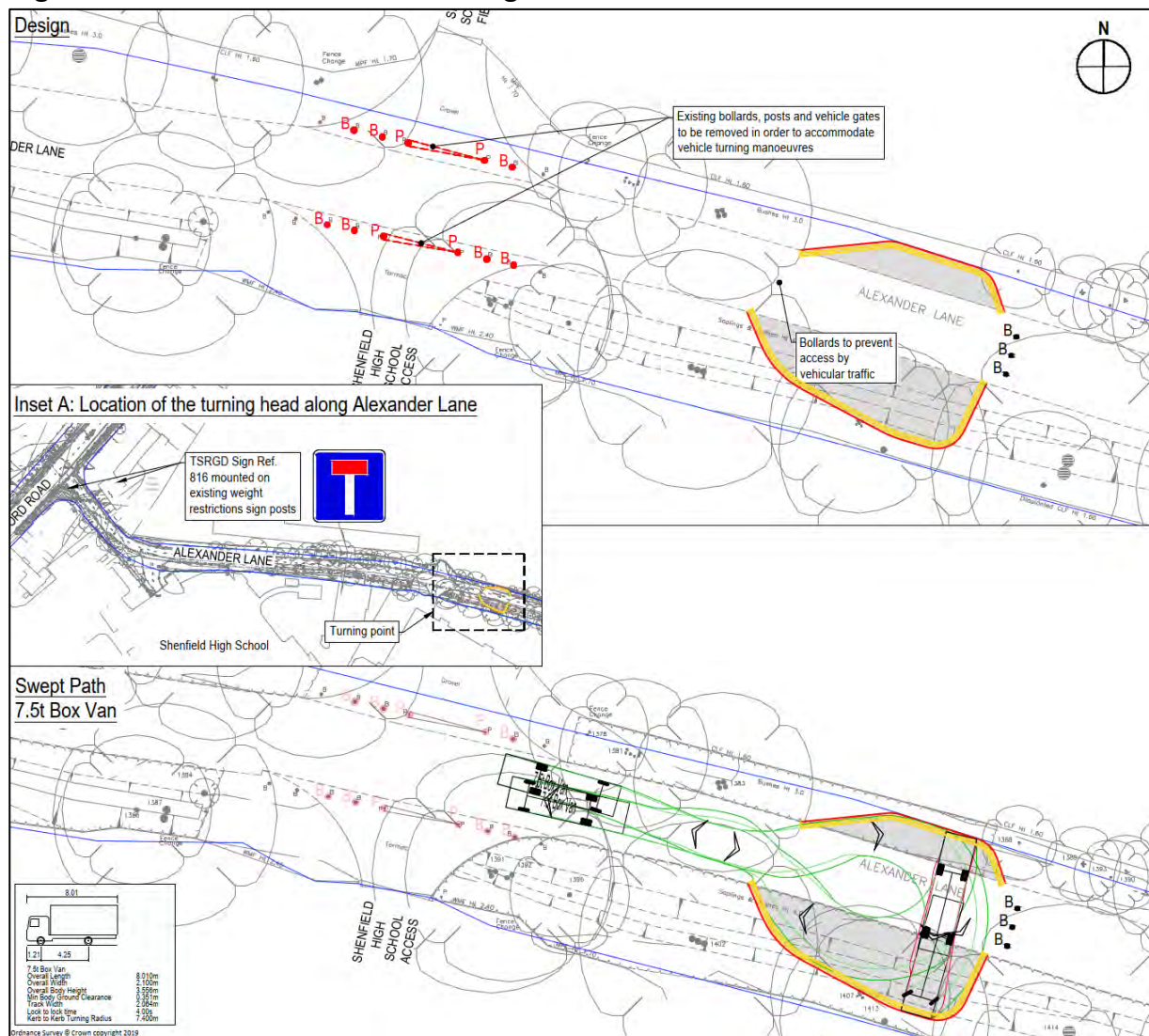


- 4.28 The new alignment of the highway would retain Alexander Lane's access towards Raleigh Road within the site redline boundary. It would involve a significant upgrading of the highway with a 5.5m road width and 2m footway maintained throughout on the eastern side of the highway within the site boundary.
- 4.29 The current alignment of Alexander Lane would be retained with access retained to the secondary school which has an existing weight limit of 7.5t vehicles. Beyond the access to the playing fields it is



proposed to provide a turning area designed to cater for vehicles of up to 7.5t. Beyond the bollards, the highway would instead be upgraded to be a Quiet Lane, providing an a new, safe, and attractive link running from east to west. A new turning head would be installed at the close of Alexander Lane to the west of the bollards, the details of which are contained in **Appendix G** and shown below at **Figure 4.8**.

**Figure 4.8 – Alexander Lane Turning Head**



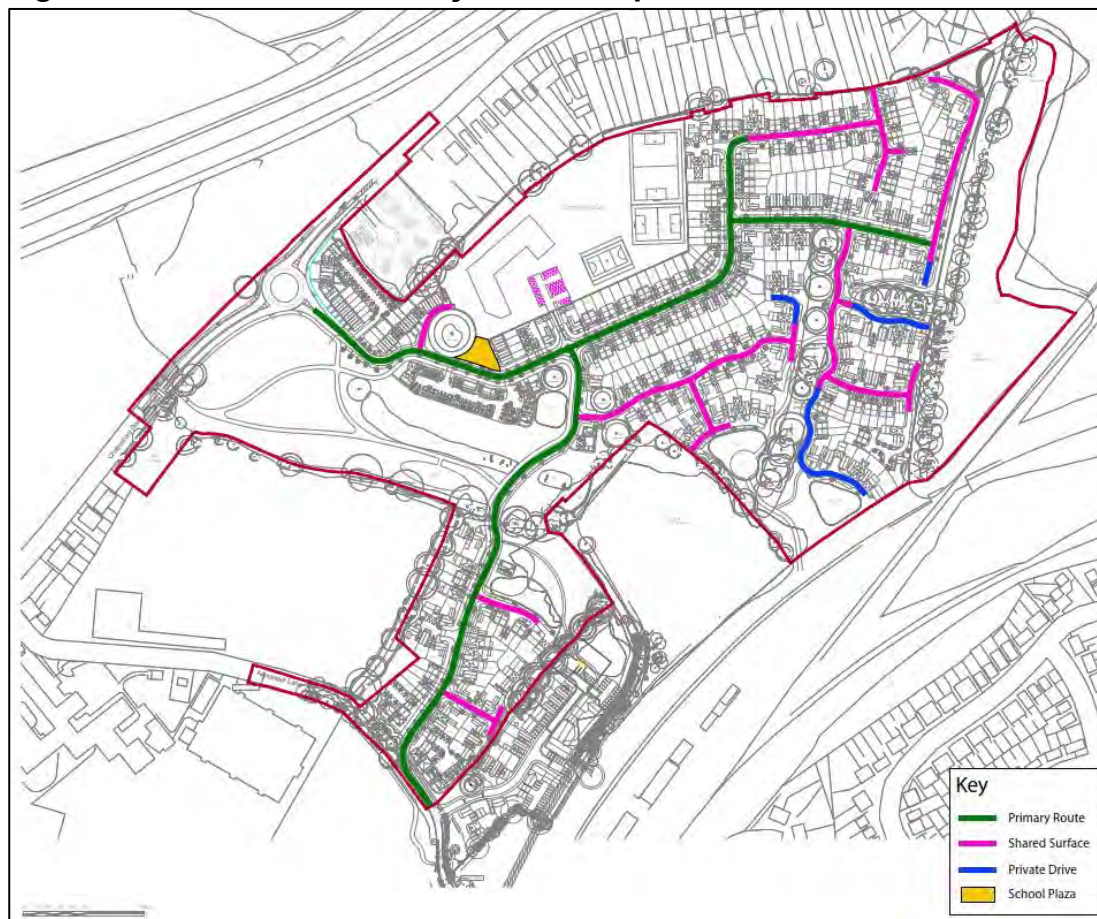
## Internal Street Network

- 4.30 In developing the internal vehicular network for the site, consideration has been given to the Essex Design Guide along with Manual for Streets and precedent studies of recent developments across the UK.



- 4.31 There are three fundamental objectives within the Highways Technical Model which this site has attempted to achieve:
- To discourage inappropriate traffic from travelling through residential areas;
  - To promote very low driver speeds within residential environments; and
  - To discourage the use of the private car, particularly for short or local trips.
- 4.32 To achieve the above, the internal highways running through the site have been designed with tighter corners and a non-direct route to discourage through-traffic and to slow vehicles travelling within the site.
- 4.33 The forward and junction visibility splays for the site can be found at **Appendix H**.
- 4.34 **Figure 4.9** categorises the highways and mobility corridors within the site and can be found at **Appendix I** along with detailed dimensions of the highways.

**Figure 4.9 – Internal Street Layout - Principles**



- 4.35 Each of the areas of the streets have been described in detail below.

#### Primary Route

- 4.36 The primary route, as shown in **Figure 4.9** and can alternatively called the spine road through the site, has been designed to accommodate the anticipated traffic volumes generated from the site (discussed at **Section 5**). The design consideration established are detailed in **Table 4.2**. This is akin to the “Access Road” within the Essex Design Guide which can provide access to 400 dwellings with footways either side.
- 4.37 The road has been designed to accommodate refuse vehicles and emergency vehicles to ensure they are able to access the site unhindered. Swept path analysis is included at **Appendix J** for reference.

**Table 4.2 - Primary Street Design Considerations**

| Design Consideration          | Justification  |
|-------------------------------|--|
| 20mph Speed Limit             | A 20mph speed limit is proposed to ensure the settlement is pedestrian and cyclists friendly. This is in line with current guidance and policy on vehicle speeds for residential areas.  |
| 5.50m Wide Carriageway        | A 5.5m carriageway is proposed. This carriageway width is proposed to reduce car dominance on the streetscape, encourage slow speeds to ensure the settlement spine road is a pedestrian friendly environment and conducive to cycling.  |
| 3.50m Shared Footway/Cycleway | A 3.5m shared footway/cycleway is provided in line with the Essex Design Guide. It will provide an active travel corridor through the site linking to the existing cycle network on Chelmsford Road and the wider allocation proposals. A shared route has been provided to ensure the speed of cyclists is reduced to ensure it is conducive to children travelling to and from school.   |
| 2m Footway                    | 2m footways are provided in line with the Essex Design Guide   |
| Verges (varying in widths)    | <p>Verges are proposed next to the carriageway with trees lining the verges/carriageway. The verges are proposed to abut the carriageway to enhance pedestrian and cyclist safety, segregating them from vehicles. Further, the placement of trees in the verges allows for shade and cooler streets for pedestrian and cyclists. This is in line with NPPF paragraph 131:</p> <p><i>“Trees make an important contribution to the character and quality of urban environments and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted</i></p> |

| Design Consideration            | Justification   |
|---------------------------------|---|
|                                 | <i>trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.”</i>   |
| Traffic Calming                 | <p>Raised tables and mini roundabouts are proposed along the spine road to reduce speeds and encourage a slower environment. The raised table is proposed in the vicinity of the school to provide flush access for those physically impaired and parents/guardians with push chairs.</p> <p>A mini roundabout is proposed to slow vehicles entering the school zone along the spine road to ensure it remains a pedestrian and cyclist friendly environment.</p> |
| Walking and Cycling Prioritised | The shared footway/cycleway is prioritised over private drives and smaller side streets to ensure the pedestrian and cycle route is continuous and well surfaced.   |

## School Plaza

- 4.38 A plaza is proposed to provide a notable entrance to the school. The school plaza is shown in **Figure 4.10** and at **Appendix K**. This has been designed as a pedestrian, scoot and cycle friendly environment, with areas for parents/guardians to gather and collect their children without impact the transport network. The plaza provides a pleasant area for parents/guardian and pupils to use whilst waiting, creating a sense of community and interaction between residents. A protected veteran tree has been utilised as a central feature of the plaza to provide a focal point as well as functionally providing shade and noise reduction.



**Figure 4.10 – School Plaza**



4.39 Furthermore, the surrounding highway has been designed to accommodate young pupils and parents. The main design considerations include:

- A raised table provided to reduce speeds, and promote accessibility for all users i.e., those physically impaired and for parents/guardians with pushchairs;
- Shared footway/cycleway connections to allow pupils to walk, cycle and scoot to school. A shared route is provided to ensure appropriate speeds are maintained by cyclists.
- Parallel crossing to enable pedestrian and cyclists to cross into the school plaza and utilise the shared footway/cycleway on either side of the carriageway; and,
- A chicane on the primary route to ensure vehicles travelling from the east slow their speed before entering the school zone.

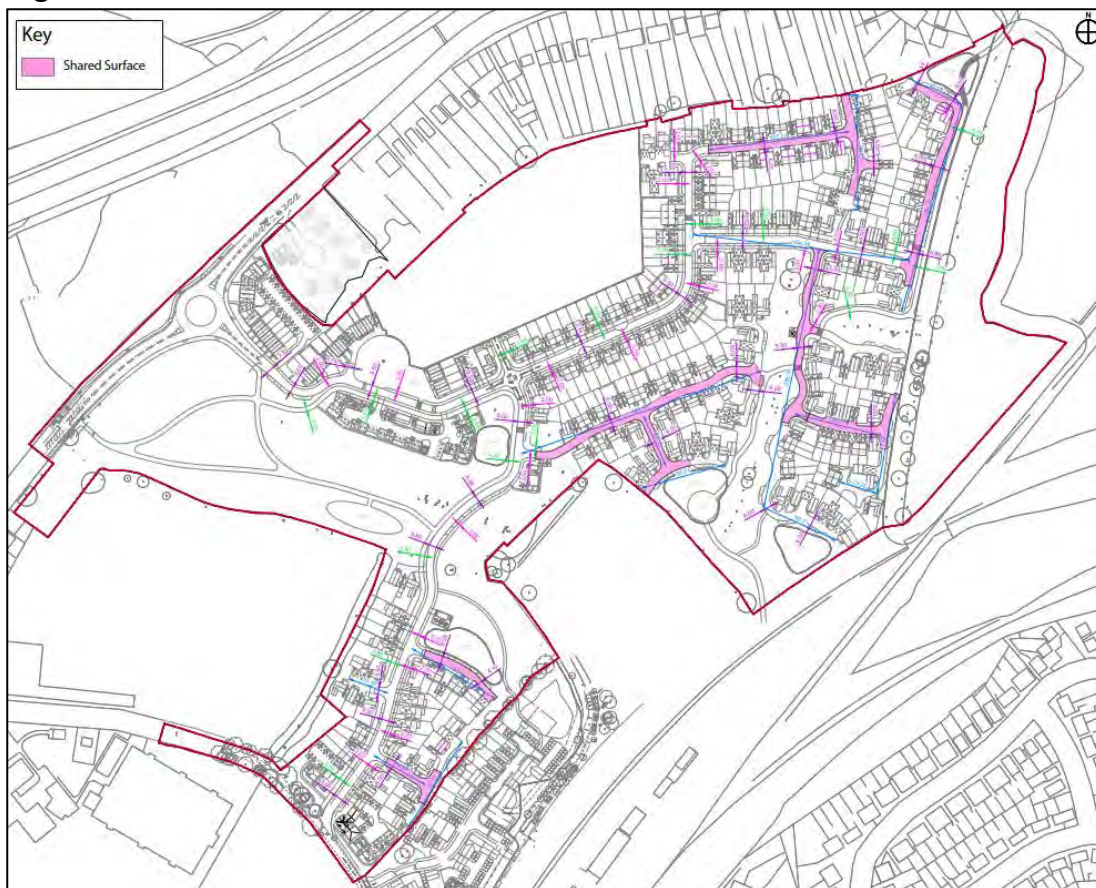
#### Shared Surfaces

4.40 Secondary to the primary route are shared surfaces, which can alternatively be viewed as side streets which lead to private drives. These predominantly provide access to a set number of dwellings across the site and link to private drives. They provide no through route for vehicles and a predominantly aimed at providing access. An extract of a shared surface from the masterplan is shown at **Figure 4.11** and at **Appendix I**.



- 4.41 Shared surfaces are proposed to be 6m wide and as suggested by the name have no designated carriageway/footway or cycleway. These mostly reflect 'Minor Access' or 'Mews Courts' within the Essex Design Guide. They are proposed to be slow speeds, with a mixture of movements throughout the space.
- 4.42 Shared surfaces are proposed to create a sense of place, community, and character rather than prioritising movement. In some locations, these shared surfaces provide access to a larger number of dwellings (circa 40 dwellings) than the Essex Design Guide would recommend (20 dwellings). These were deemed appropriate to create a sense of place and community on each street.
- 4.43 At the entrance to each Shared Surface the following principles have been applied:
- Shared footway/cycleway take priority; and,
  - The junction is widened to ensure refuse collection vehicles are able to access these.
- 4.44 Swept path analysis can be found at **Appendix J**.

**Figure 4.11 – Shared Surfaces**



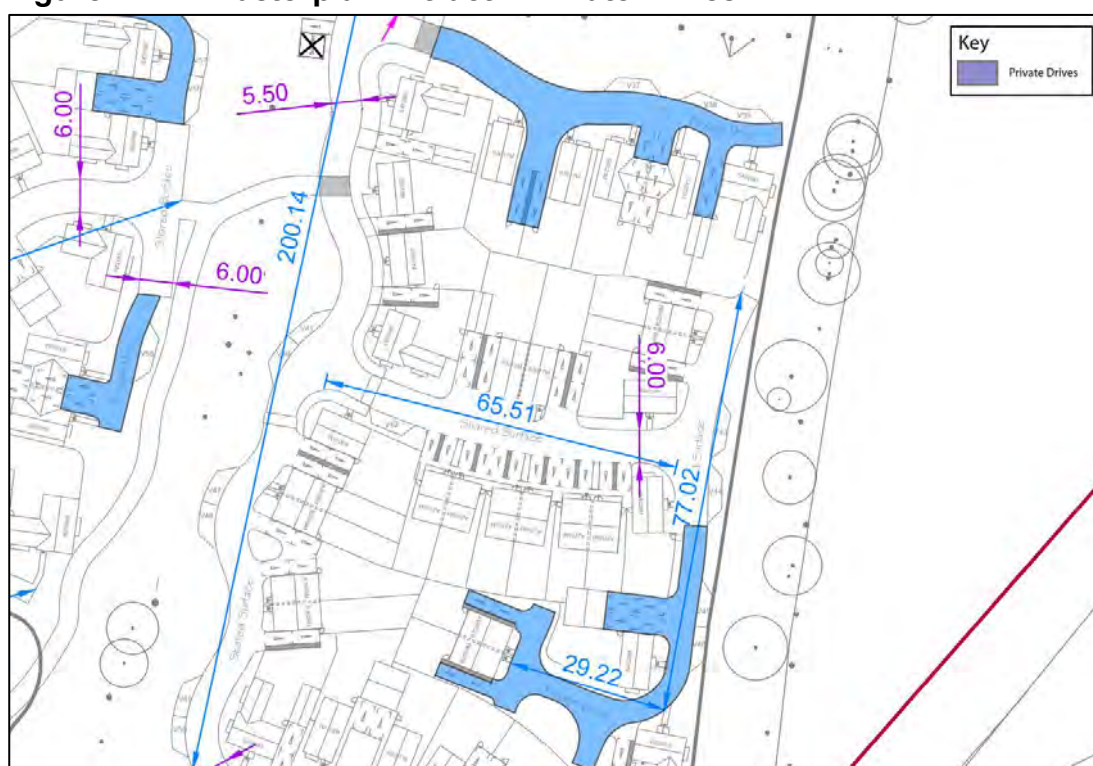
#### Private Drives

- 4.45 Private drives are provided throughout the site at the end of shared surfaces. These provide access to a small number of dwellings circa 5 to 10 dwellings. They are proposed to be 5m wide and are

akin to 'Mews Courts' and 'Shared Private Drive' within the Essex Design Guide. An extract of the masterplan showing a private drive is shown below at **Figure 4.12**.

- 4.46 Similarly, to the shared surfaces described above these are proposed to create a sense of place for these small number of dwellings and a community on these streets.
- 4.47 All private drives are provided with appropriate turning heads for a standard design vehicle. As suggested within the Essex Design Guide a refuse vehicle is not intended to use these areas and therefore their widths and junction radii have not been designed to accommodate refuse vehicles.
- 4.48 Swept path analysis can be found at **Appendix J**.

**Figure 4.12 – Masterplan Extract – Private Drives**



### Internal Movement Corridors

- 4.49 The movement corridors running through the site feature a mixture of shared surfaces and shared footways/cycleways segregated from the carriageway.
- 4.50 The mobility corridors running along the core highways comprise a 3.5m cycleway and a 2m footway. The reach of these mobility corridors ensure that all residences of the site have access to high quality active travel infrastructure and will facilitate a greater uptake in active travel within the site.

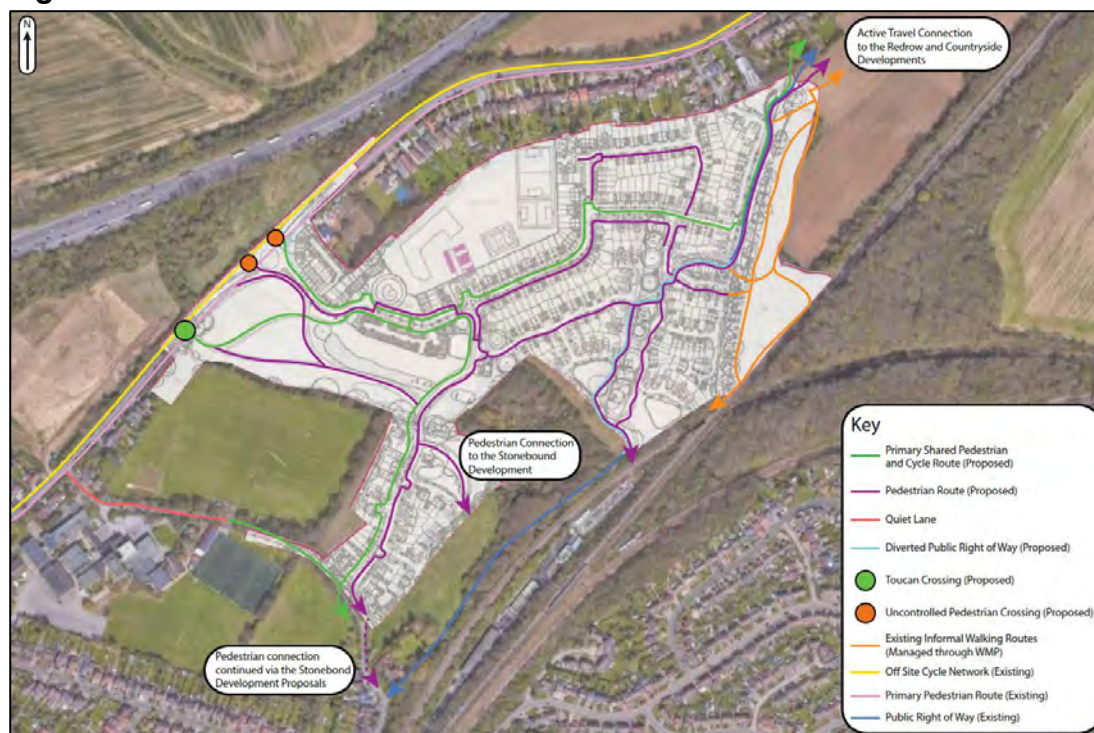
### Active Travel Links

- 4.51 The development proposals will feature comprehensive external active travel infrastructure that will ensure that walking and cycling is the natural choice of movement for residents both internally and externally.



- 4.52 The site will benefit from a number of connections externally to ensure that those wishing to access facilities external from the site are able to do so. Additionally, the central location of the site in relation to the wider allocation results in a number of through-routes, and once the whole allocation has been brought forward the development will be at the heart of a new community where active travel has been prioritised from conception.
- 4.53 The overall active travel connections within and external to the site can be seen in **Figure 4.13**.

**Figure 4.13 – Active Travel Connections**



### Chelmsford Road Connections

- 4.54 Firstly, the mobility corridor that runs adjacent to the internal highway through the site links to the new proposed roundabout junction at the west of the site. As part of the proposed roundabout junction, two crossing are available to access the shared pedestrian/cycleway on the western side of the carriageway.
- 4.55 Active travel users can then continue in either direction on Chelmsford Road, either continuing towards the northeast to access the Redrow Homes development to the north of the site or to travel towards the southeast towards Shenfield High School and onwards to Shenfield town centre.
- 4.56 To the southwest of the new proposed roundabout junction there is a dedicated access for active travel users, which links to the mobility corridors spanning the site. As part of the development proposals, the Toucan crossing will allow active travel users to safely reach the Chelmsford Road pedestrian/cycleway and the new bus stops discussed further in this section.

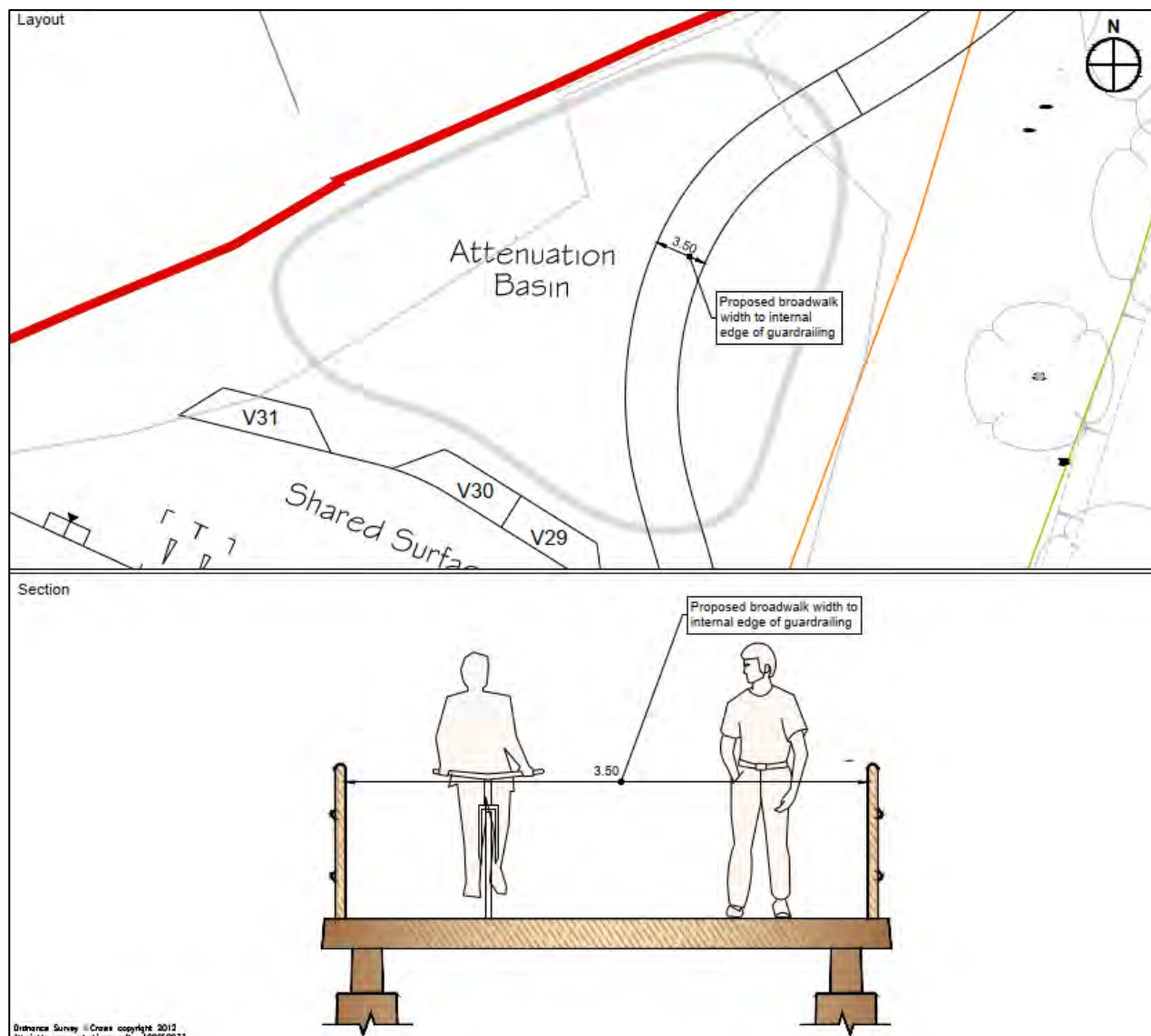
- 4.57 Alexander Lane as part of the application would be stopped-up, allowing for the creation of a quiet lane running along the southern boundary of the site. As such, this allows for an additional car-free route for users of the site to access Chelmsford Road.
- 4.58 Shenfield High School can also be accessed from Alexander Lane, and therefore the quiet lane offers an excellent route for pupils and staff who wish to access the school. The creation of a quiet lane would benefit both future residents of the site and existing residents located to the east of the site, many of whom may choose to travel along the new, quiet route to the school.

#### Connections to Redrow Homes

- 4.59 To the northeast of the site, there is an active travel connection provided to link the scheme with the Redrow Homes development to the northeast which is shown on **Figure 4.12**. Not only will this benefit in connecting the site with the scheme to the northeast, but also provide a link from the Redrow Homes site through to Shenfield to the southwest.
- 4.60 The area in question is shown to be an attenuation basin in the development proposals and as such it is proposed to create a new feature with a boardwalk connection. This is shown below at **Figure 4.14** and **Appendix L**.



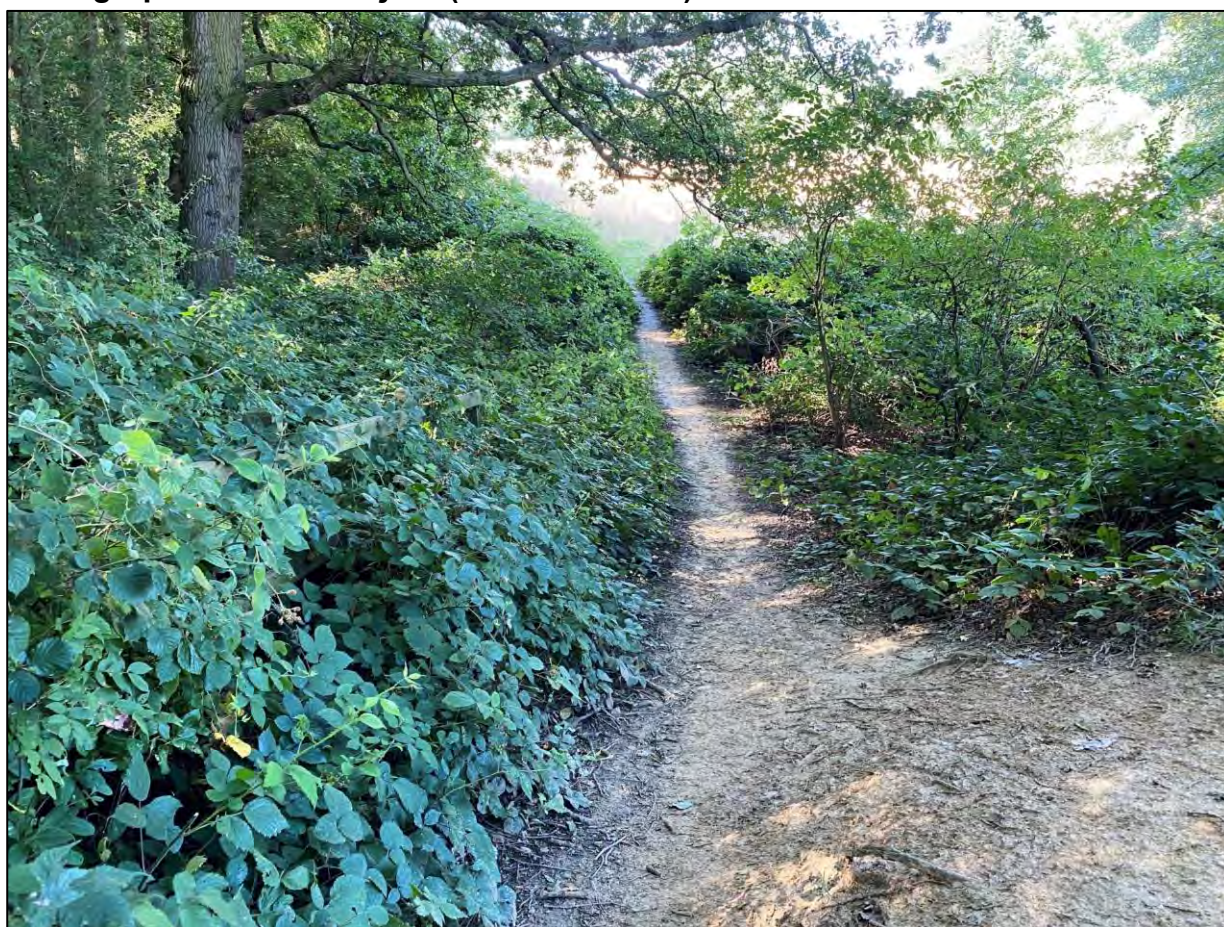
**Figure 4.14 – Boardwalk Connection between Officers’ Meadow and Redrow Homes Site**



### Footpath 86

- 4.61 As shown in **Figure 4.13**, the site proposes diverting the existing PRow Footpath 86 through the site.
- 4.62 To review the impact of such a diversion, a site visit was undertaken to the existing PRow to determine the current condition of the route and whether the proposed route would be a detriment to the quality of the route. Photographs of the site visit are can be found at **Appendix M**.
- 4.63 Of the 1km Footway 86, it is proposed to divert approximately 250m of the route through the proposed development. **Photograph 4.1** shows a section of Footway 86 that would be diverted through the site.

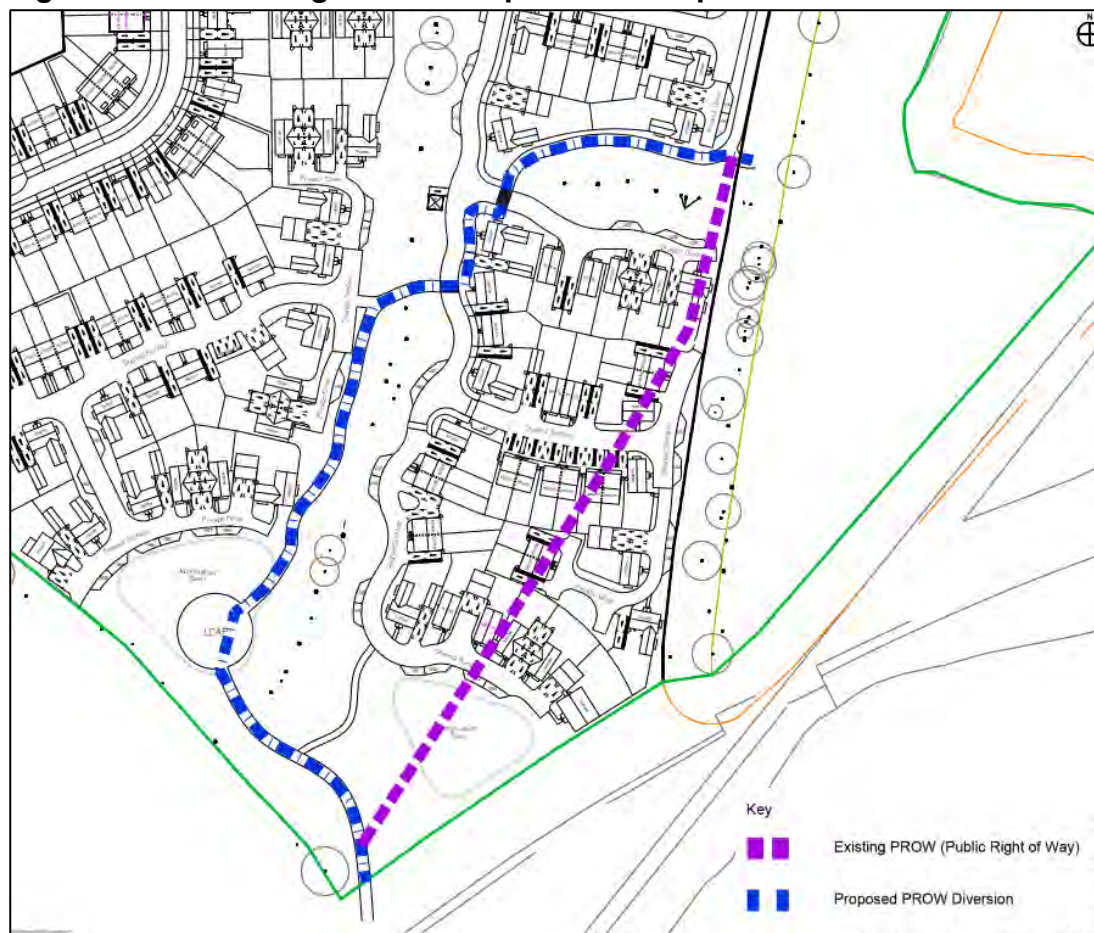
### **Photograph 4.1 – Footway 86 (To Be Diverted)**



- 4.64 As can be seen in **Photograph 4.1**, the section of PRow to be diverted is currently unpaved and narrow, restricting its use by members of the public.
- 4.65 The proposed diversion would instead travel through the proposed site, allowing users and visitors to the site to use the PRow to access the site. The diverted route will run on footways through the site and will complement the active travel offering of the development.
- 4.66 The proposals to divert the public right of way are shown in detail on the drawing included at **Appendix M** and **Figure 4.15** below.



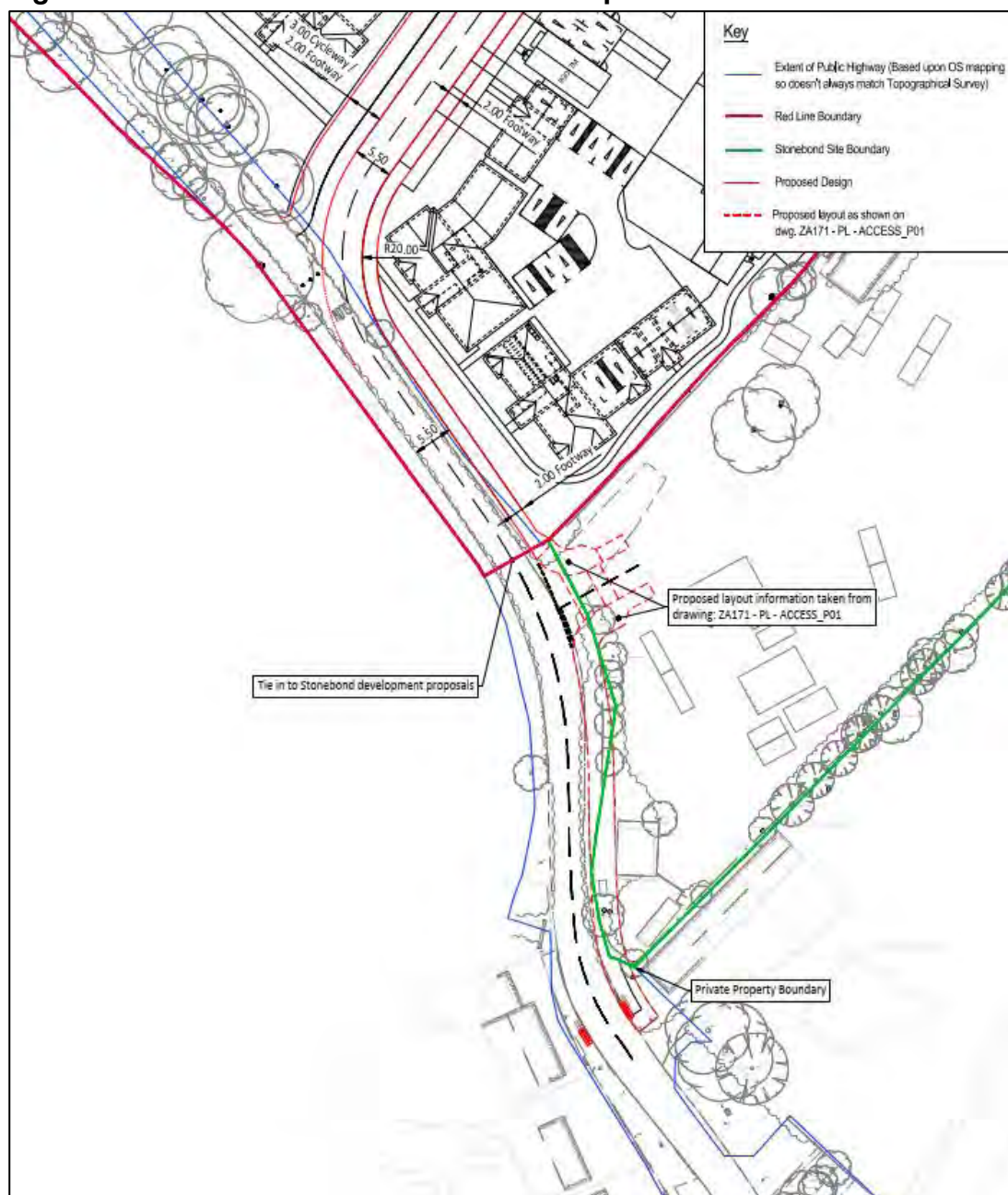
**Figure 4.15 – Existing PRow Footpath and Proposed Diversion**



#### Connections to Stonebond Properties

- 4.67 As shown on **Figure 4.13**, there are to be multiple active travel connections from the proposed site through to the Stonebond Properties development.
- 4.68 **Figure 4.16** below shows the detail of the connection proposed via Alexander Lane and can be found at **Appendix N**.

**Figure 4.16 – Connection to Stonebond Properties**



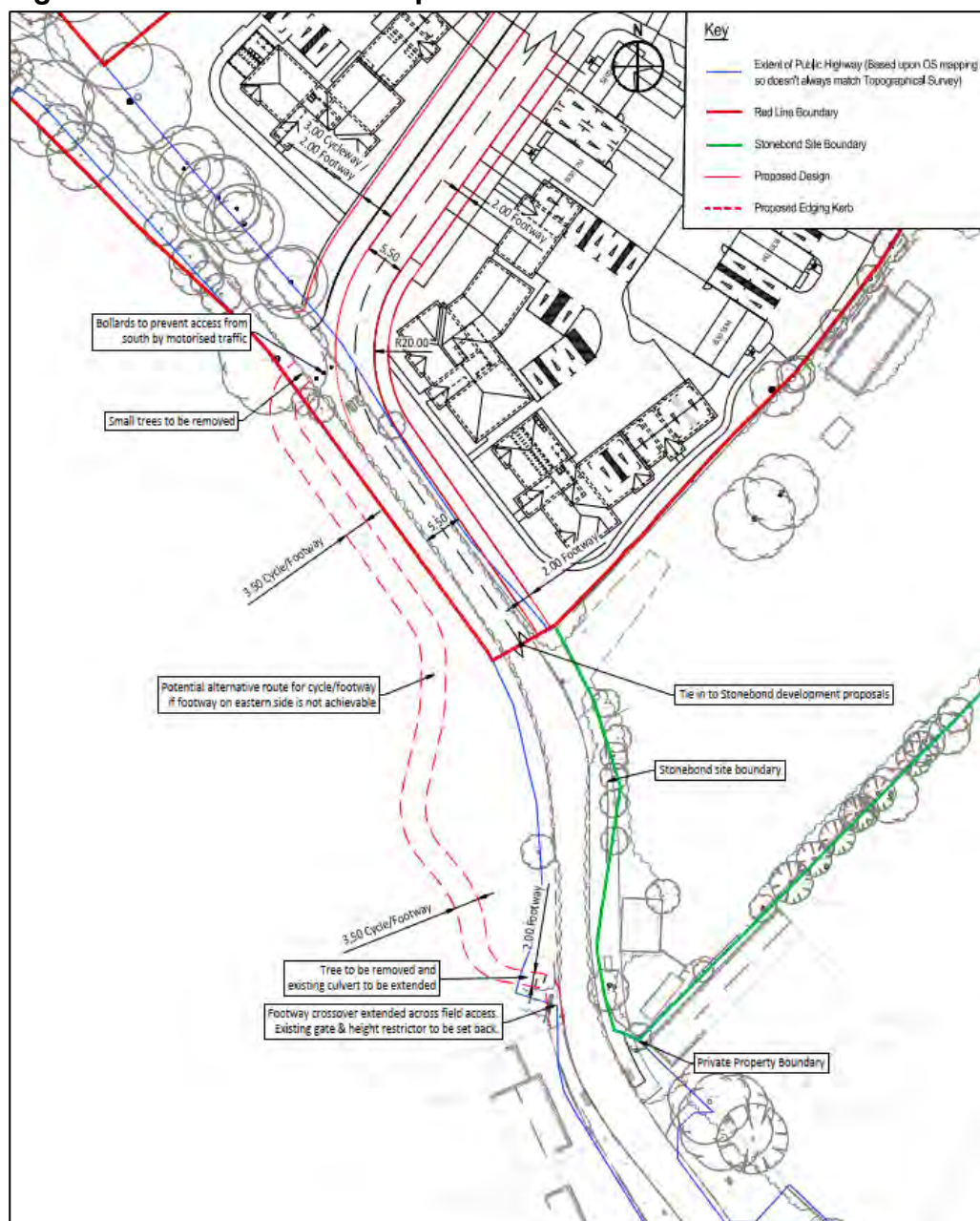
- 4.69 One access will connect directly to the north of the Stonebond Properties development with an active travel link. This link will allow direct connectivity between the different parts of the allocation. It will also provide the Stonebond Properties development with a direct link to the high-quality mobility corridor that runs through the proposed site.
- 4.70 Additionally, there will be an additional access via Alexander's Lane, utilising the footway that is to be brought forward as part of the Stonebond Properties development. This would tie into the Stonebond Properties site boundary, provide an additional link to the development, and link the site to the footway on Alexander Lane.



Alternative Footway Connection to Alexander Lane via Brentwood Council Land

- 4.71 As part of the design of the site allocation, it is proposed that footpaths will be provided by Croudace Homes Ltd along the site frontage and by Stonebond Properties along their site frontage to connect to the existing paths on Alexander Lane south of the site.
- 4.72 The potential for the Stonebond Properties development to not implement the footway is subject to planning and it is assumed that ECC would request that this is be conditioned to be provided up front.
- 4.73 Alternatively, should the Stonebond Properties development not come forward or be undeliverable as part of the wider allocation, an alternative route is potentially available to link the mobility corridor from the proposed site to Alexander Lane via BBC land to the west of Alexander Lane. This is not part of the proposed development but is an alternative option if the delivery of the Stonebond site does not come forward albeit that is extremely unlikely. This is shown in principle in **Figure 4.17** and **Appendix O**.

**Figure 4.17 – Stonebond Properties Connection via BBC Land**

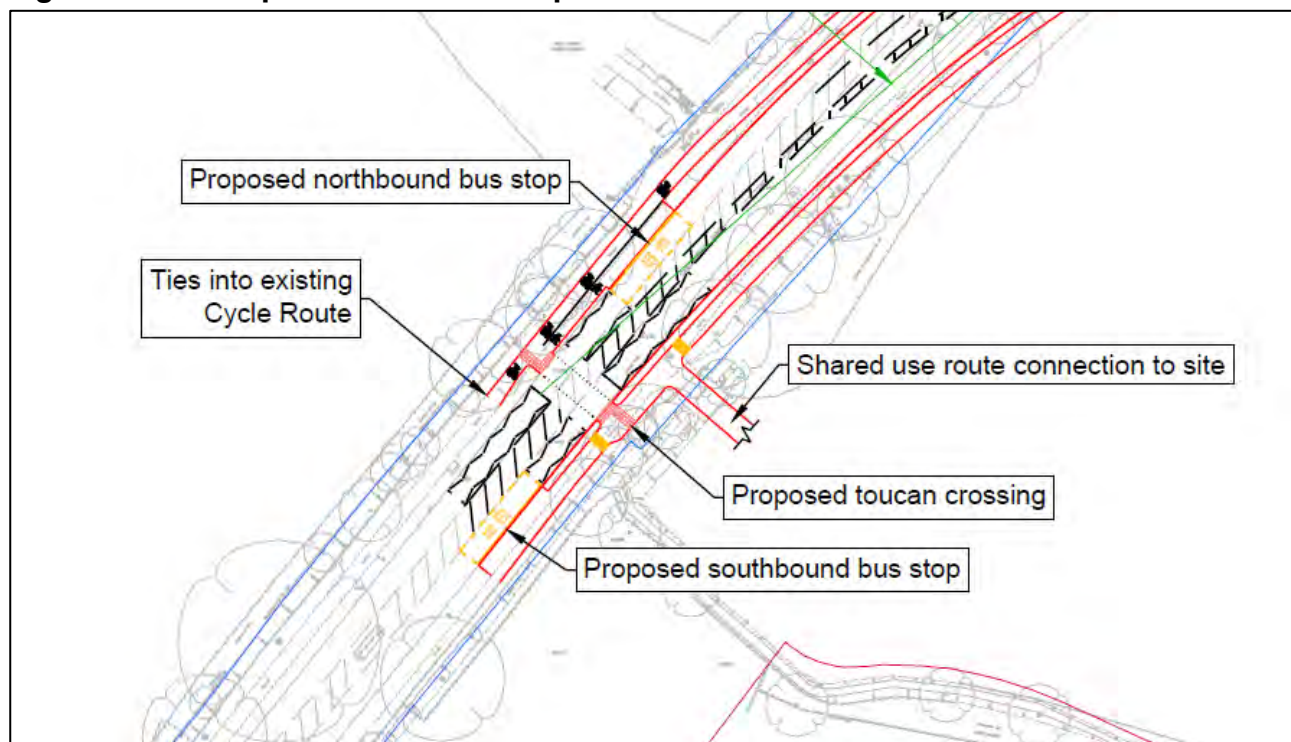


- 4.74 This would be in the form of a 3.5m cycleway/footway. To the north, small trees would need to be removed to connect the 5m cycleway/footway to the link, which would run south until rejoining Alexander Lane where there's a footway already present, necessitating a tree to be removed and an existing culvert to be extended. The footway would crossover an existing field access, whose gate and height restrictor would need to be set back.
- 4.75 This route is via Brentwood Council Land but would only be provided where the footpath provided by Stonebond Properties did not come forward which is unlikely.

## Proposed Bus Stop Improvements

- 4.76 **Figure 4.18** shows that as part of the proposed junction enhancements, there are new bus stops proposed on Chelmsford Road to the southwest of the roundabout junction. This will provide a direct link to the new, shared route that will form a key part of the movement strategy within the development and ensure that dwellings have the most direct connection to the bus connections that form part of the Chelmsford Road corridor. This can be found at **Appendix F**.

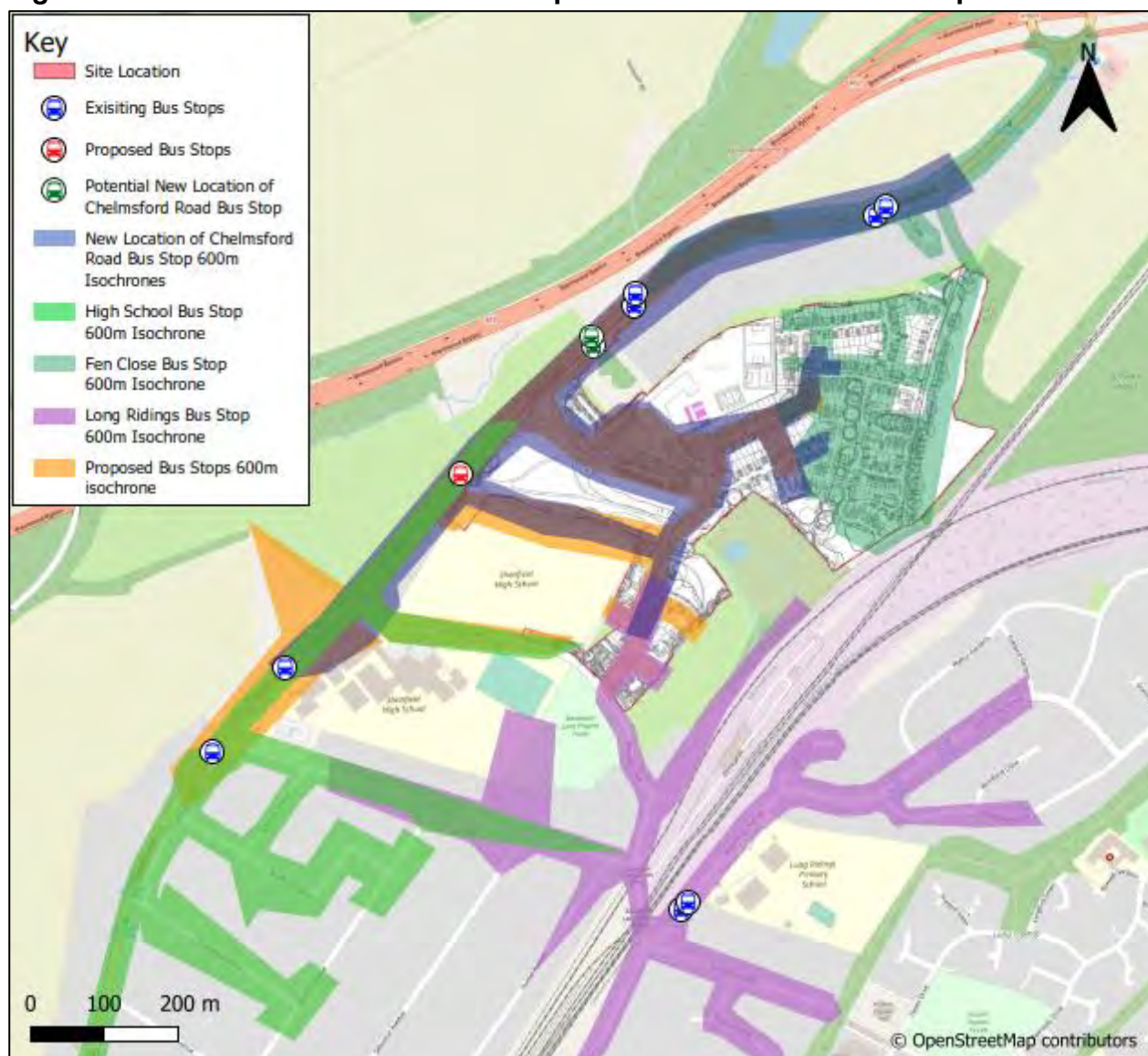
**Figure 4.18 – Proposed New Bus Stops**



- 4.77 In addition to the proposed new bus stops, the existing bus stops located on Chelmsford Road are to be relocated approximately 200m to the southwest of their existing location.
- 4.78 This is to provide improved coverage of bus services to the northern part of the site and will ensure that all dwellings located within the site are located within 600m of a bus stop.
- 4.79 **Figure 4.19** shows the 600m isochrones from the existing and proposed bus, including the relocated bus stops on Chelmsford Road.



**Figure 4.19 – 600m Isochrones from Proposed and Relocated Bus Stops**



- 4.80 **Figure 4.19** shows that all parts of the site can be accessed within 600m of the site.
- 4.81 Guidance suggests that a 400m walking distance is suitable to access bus services (Department of Environment Circular 82/73, 1973). This equates to a 5 minutes' walk at 5kph. The CIHT Bus Brochure supports this but states that "the acceptability of the walking distance is not stand-alone consideration." It goes on to suggest other factors are just as important as walking distance including:
- 4.82 Total journey time (including 'on bus' travel time and walking at the other end), passengers are likely to accept longer walks to reach faster, more frequent, and more direct bus services.
- 4.83 The quality of the route i.e., safe routes, well overlooked and with visual interest are likely to be more acceptable, such as those proposed for the site.



- 4.84 This is further supported through a report by Stagecoach (2017) “Bus Services and New Residential Developments”. This document states that trying to ensure that all dwellings are located within a 400m walk of bus stops:

*"results in an inefficient and contrived layout, greatly undermining the potential effectiveness of the proposed bus route. Stagecoach will always prefer an efficient bus routing strategy, serving the great majority of dwellings well, than one that serves all homes poorly with a low-frequency or indirect service. Thus we support policy approaches offering some degree of flexibility on walking distances to bus stops where this is appropriate".*

- 4.85 This suggests that sustainable travel contributions would be better spent on improving the frequency of services on Chelmsford Road and ensuring that safe, pleasant routes from the site link to these bus stops rather than providing financial contributions to support the provision of an entire new service.
- 4.86 Given the expectations outlined within the guidance set out above, it is not deemed inappropriate to expect residents to have to travel an additional 250m or 2-minute walk.
- 4.87 It is, therefore, considered that 600m walk would not deter residents from using the bus services and would not be a barrier to bus travel for those with reduced mobility.

### Car Parking

- 4.88 The car parking provision on site is in line with the standards set out within the Essex Parking Standards – Design and Good Practice (2009). **Table 4.3** shows the minimum carparking requirements for the site as stipulated by the Essex Parking Standards – Design and Good Practice (2009). The actual provision of carparking spaces is then detailed, showing the number of spaces on site compared to the requirements for dwellings.

**Table 4.3 - Car Parking Policy and Provision**

| No. of Bedrooms | No. Dwellings on Site | Minimum Vehicle Standard (Essex Parking Standards) | Requirement |     | Provision |
|-----------------|-----------------------|--|-------------|-----|-----------|
| 1 bed           | 54                    | 1 space per dwelling                               | 54          | 634 | 677       |
| 2+ bed          | 290                   | 2 spaces per dwelling                              | 580         |     |           |
| Visitor         | 344                   | 0.25 spaces per dwelling                           | 86          |     | 86        |

## Cycle Parking

- 4.89 Cycle parking is to be provided on site in accordance with Policy BE13 of the Brentwood Local Plan (2022), plus additional for apartment buildings within dedicated secure bin and cycle stores. The cycle parking policy is set out in **Table 4.4**.
- 4.90 The cycle parking will ensure that residents and visitors to the allocation are able to use the extensive infrastructure proposed as part of the development to reach their destinations with ease.

**Table 4.4: Cycle Parking Policy and Provision**

| No. of Bedrooms | No. Dwellings on Site | Minimum Cycle Parking   | Requirement       | Provision |
|-----------------|-----------------------|---|-------------------|-----------|
| 1 bed           | 54                    | 1 secure covered space per dwelling. None if garage or secure area is provided within curtilage of dwelling | 54 (inc. garage)  | 54        |
| 2+ bed          | 290                   |   | 290 (inc. garage) | 290       |

## Deliveries and Servicing

- 4.91 Delivery and servicing will take place on site. All deliveries and servicing will take place from within the highway which is typical across several residential areas within Essex.
- 4.92 Dwellings proposed along the primary route are provided with driveways to allow for delivery vehicles to use where a longer dwell time is anticipated. This will prevent blocking the carriageway, particularly important on the primary route where traffic volumes are likely to be higher.
- 4.93 With regard to the dwellings located within shared surfaces and private drives deliveries would be made from within the highway, however, traffic volumes on these streets will be low and unlikely to be disrupted through deliveries.
- 4.94 Deliveries to the proposed blocks of flats will be made to within the forecourts.
- 4.95 Refuse collection would be undertaken on street or within the forecourts of the proposed blocks of flats. This is typical of residential areas across the county.
- 4.96 Swept path analysis has been undertaken across the site using a standard refuse vehicle and fire tender. These drawings are included at **Appendix G** for reference.

## Travel Plans

### Residential Travel Plan

- 4.97 A residential travel plan has been prepared for the site to promote the use of active and sustainable modes of transport. The Travel Plan will detail the opportunities for movement within, to and from the proposed development. The Travel Plan will also outline the health, social, and economic benefits of travelling by active and sustainable travel modes. This is included as **Appendix P**.

### School Travel Plan

- 4.98 The proposed primary school will be supported by a Draft School Travel Plan.
- 4.99 The Travel Plan will detail the opportunities for movement within, to and from the proposed development. The Travel Plan will also outline the health, social, and economic benefits of travelling by active and sustainable travel modes. This is included as **Appendix Q**. It should be noted that a more detailed school travel plan will be conditioned and will need to be provided as part of a Reserved Matters application for the school.

## 5 Trip Generation

- 5.1 This section considers the trip generation for the 344 dwellings and the land safeguarded for a 2FE primary school and early years provision, which is expected to have a capacity of 420 pupils.

### Residential Trip Generation

#### Residential Vehicle Trips

- 5.2 To determine the likely vehicular trip generation for the site, the TRICS database has been interrogated for residential sites that are comparable to the proposed development.
- 5.3 The approach is reflective of the approach used for the Land off Chelmsford Road TA produced by Redrow Homes, which comprises part of the allocation to the north of the proposed site.
- 5.4 It is noted that the approach was agreed with ECC during the pre-application scoping discussions with the applicant.
- 5.5 The following selection parameters were used to determine similar sites:
- Land use: Residential
  - Category: Houses Privately Owned
  - Number of Dwellings Range: 200 – 800
  - Location – Suburban Area and Edge of Town
  - Sites in England; excluding Greater London
- 5.6 It is noted that selecting only private dwellings will represent the worst-case scenario with regards to the traffic generation of the site, due to the lower trips rates associated with affordable/rented accommodation.
- 5.7 The calculated vehicle trip rates from TRICS can be seen in **Table 5.1**, with the full TRICS data output located in **Appendix R**.



**Table 5.1 – Residential Vehicle Trip Rates**

| Time Period   | Arrivals | Departures | Total |
|---------------|----------|------------|-------|
| 08:00 – 09:00 | 0.140    | 0.407      | 0.547 |
| 17:00 – 18:00 | 0.380    | 0.155      | 0.535 |

- 5.8 Applying the trip rates shown in **Table 5.1** to the proposed number of dwelling (344), the residential vehicle trip generation for the peak periods can be seen in **Table 5.2**.

**Table 5.2 – Residential Vehicle Trip Generation**

| Time Period   | Arrivals | Departures | Total |
|---------------|----------|------------|-------|
| 08:00 – 09:00 | 48       | 140        | 188   |
| 17:00 – 18:00 | 131      | 53         | 184   |

- 5.9 **Table 5.2** shows the proposed number of dwellings has the potential to result in 188 two-way vehicle trips during the AM peak hour (08:00 – 09:00) and 184 two-way trips during the PM peak (17:00 – 18:00).

### Residential Person Trips

- 5.10 In order to determine the proportion of journeys undertaken by each mode of transport by future residents, reference has been made to the 2011 'Method of Travel to Work' Census information selecting the Super Output Area E02004468: Brentwood 005, which incorporates the site and its surrounding area.
- 5.11 **Table 5.3** presents the residential mode shares, which has then been applied to the total residential people trips set out in **Table 5.2**.

**Table 5.3 – Breakdown of Residential Trips**

| Mode                      | Mode Share  | AM Peak    |            |            | PM Peak    |            |            |
|---------------------------|-------------|------------|------------|------------|------------|------------|------------|
|                           |             | Arr        | Dep        | Two-way    | Arr        | Dep        | Two-way    |
| Underground (Tram)        | 2%          | 2          | 6          | 7          | 5          | 2          | 7          |
| Train                     | 40%         | 42         | 122        | 164        | 114        | 47         | 161        |
| Bus, minibus, or coach    | 1%          | 1          | 2          | 3          | 2          | 1          | 3          |
| Taxi                      | 1%          | 1          | 2          | 3          | 2          | 1          | 3          |
| Motorcycle                | 0%          | 0          | 1          | 1          | 1          | 0          | 1          |
| Driving a car or van      | 45%         | 48         | 140        | 188        | 131        | 53         | 184        |
| Passenger in a car or van | 3%          | 3          | 9          | 12         | 8          | 3          | 12         |
| Bicycle                   | 1%          | 1          | 4          | 5          | 3          | 1          | 5          |
| On foot                   | 7%          | 7          | 21         | 28         | 19         | 8          | 27         |
| Other                     | 1%          | 1          | 2          | 2          | 2          | 1          | 2          |
| <b>Total</b>              | <b>100%</b> | <b>106</b> | <b>308</b> | <b>414</b> | <b>288</b> | <b>117</b> | <b>405</b> |

- 5.12 As set out in **Table 5.3**, it is predicted that the residential dwellings will generate 414 and 405 two-way total person trips.

## Education Trip Generation

### Pupil Trips

- 5.13 As discussed in **Section 4**, the development proposals include a 2FE primary school to be located on-site, with capacity for 420 pupils. It has been assumed that the school will provide wrap around care i.e., breakfast clubs and after school clubs. Therefore, it is assumed that 25% of pupils will arrive between 7am-8am and 75% between 8am-9am. With regard to the PM peak, it is assumed that 75% of children will depart between 3pm- 4pm. The remaining number of pupils will depart the school between 4pm-5pm and 5pm-6pm, where we have assumed an even split for each hour (12.5%). With the estimated school opening hours to be 09:00 – 15:00, the total trip generation for pupils can be seen in **Table 5.4**.

**Table 5.4 – Total Pupil Trip Generation**

| Time Period   | Arrivals | Departures | Total |
|---------------|----------|------------|-------|
| 07:00 – 08:00 | 105      | 0          | 105   |
| 08:00 – 09:00 | 315      | 0          | 315   |
| 15:00 – 16:00 | 0        | 315        | 315   |
| 16:00 – 17:00 | 0        | 53         | 53    |
| 17:00 – 18:00 | 0        | 53         | 53    |

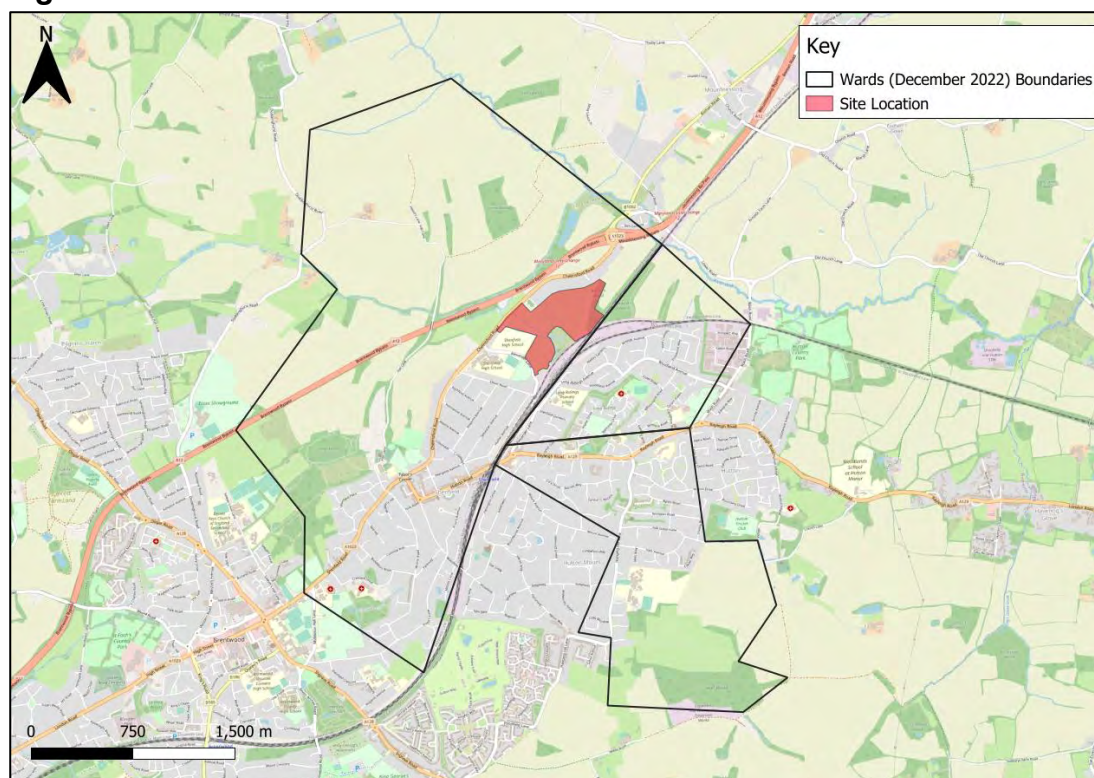
#### **On-site Pupil Yield**

- 5.14 An Education Briefing Note has been prepared by Croudace Homes Ltd, which is included at **Appendix S** for reference. This note sets out the expected yield of primary school aged children from Strategic Site R01. It shows that approximately 700 homes from the full allocation are forecast to create a total primary school pupil yield of 167 pupils. As such, the primary school proposed as part of Officers' Meadow will cater for all the anticipated primary school aged children yielded by the allocation.

#### **Off-site Pupil Yield**

- 5.15 To calculate the potential off-site demand for the primary school, a review has been undertaken of nearby residential areas, primary schools, and their current capacity. This was to determine whether there is sufficient pupil demand within 2 miles of the site to occupy the remaining primary school spaces.
- 5.16 The 2021 Census has been investigated to determine the existing number of residents between the ages of 4-11 within a 2-mile radius of the site. The wards of Hutton Central, Hutton North and Shenfield were determined to be within this zone, resulting in 1,430 pupils of primary school age. The wards selected can be seen in **Figure 5.1**. The full School Census data can be found within **Appendix T**.

**Figure 5.1 – School Census Wards**



- 5.17 The capacity of nearby primary schools was assessed using the Get Information about Schools government service. Three primary schools were identified within the radius of the site, being Long Ridings Primary School, Hutton Church of England Primary School, and Willowbrook Primary School. The total capacity of the three schools is 861. It should be noted that the education note also identifies St Mary's Church of England Primary School and St Joseph the Worker Catholic School, which we have excluded as they are not contained within the above wards assessed. It should be noted, this reduced capacity at local schools and therefore makes the assessment undertaken below robust.
- 5.18 The total pupil yield from the R03 Land North of Shenfield allocation and the estimated pupils from 2-mile radius of the site are anticipated to be 1,597. Details of the 2-mile radius pupil yield can be seen in **Table 5.5**.

**Table 5.5 – Total Pupil Demand**

| Pupil Source                | Pupil Yield  |
|-----------------------------|--------------|
| R03 Land North of Shenfield | 167          |
| Nearby Existing Residents   | 1,430        |
| <b>Total</b>                | <b>1,597</b> |

### Sustainable Pupil Trips



- 5.19 Given the existing identified capacity of nearby primary schools of 861, this results in 736 excess pupils. As such, it is expected that the remainder of pupils attending the proposed primary school will come from existing residential properties within a 1–2-mile radius of the site, who would travel to the primary school using the same sustainable modes as those living within the site.
- 5.20 From the above, it is assumed that 90% of total pupil primary school trips will be internal to the site or travel from within the 2-mile radius of the site using sustainable modes of travel. To allow for a robust assessment, the remaining 10% of pupil education trips will be assumed to be undertaken by private vehicles. This allows for an element of parental choice, children attending private schooling and some from within the site choosing to take their child to school by private vehicle.
- 5.21 Of the 90% of the internal trips identified, it is expected that 80% would walk to the site, 10% would travel by bus and the remainder would travel to site by cycle.
- 5.22 Using the above methodology, the internal education pupil multi-modal trip generation by sustainable modes can be seen in **Table 5.6**

**Table 5.6 – Education Pupil Multi Modal Trips – Sustainable Modes**

| Mode                      | AM Peak    |          |            | PM Peak  |           |           |
|---------------------------|------------|----------|------------|----------|-----------|-----------|
|                           | Arr        | Dep      | Two-way    | Arr      | Dep       | Two-way   |
| Underground (Tram)        | 0          | 0        | 0          | 0        | 0         | 0         |
| Train                     | 0          | 0        | 0          | 0        | 0         | 0         |
| Bus, minibus, or coach    | 26         | 0        | 26         | 0        | 4         | 4         |
| Taxi                      | 0          | 0        | 0          | 0        | 0         | 0         |
| Motorcycle                | 0          | 0        | 0          | 0        | 0         | 0         |
| Driving a car or van      | 0          | 0        | 0          | 0        | 0         | 0         |
| Passenger in a car or van | 0          | 0        | 0          | 0        | 0         | 0         |
| Bicycle                   | 54         | 0        | 54         | 0        | 9         | 9         |
| On foot                   | 204        | 0        | 204        | 0        | 34        | 34        |
| Other                     | 0          | 0        | 0          | 0        | 0         | 0         |
| <b>Total</b>              | <b>284</b> | <b>0</b> | <b>284</b> | <b>0</b> | <b>47</b> | <b>47</b> |

## Vehicular Pupil Trips

- 5.23 As detailed above, to allow for a robust assessment, the remaining 10% of pupil education trips will be assumed to be undertaken by private vehicle. This allows for an element of parental choice, children attending private schooling and some from within the site choosing to take their child to school by private vehicle.
- 5.24 Given not all pupils would travel in individual vehicles, a ratio of 1.2 pupils per vehicle has been made to allow for siblings or other pupils sharing vehicles to the school. In addition, it is assumed that all vehicles travelling to the school would need to depart the site within the hour, resulting in additional departures and arrivals for the AM and PM peaks respectively.
- 5.25 The resultant vehicular pupil trip generation has been seen in **Table 5.5**.

**Table 5.7 – Pupil Vehicular Trip Generation**

| Time Period   | Arrivals | Departures | Total |
|---------------|----------|------------|-------|
| 07:00 – 08:00 | 6        | 6          | 12    |
| 08:00 – 09:00 | 25       | 25         | 50    |
| 15:00 – 16:00 | 25       | 25         | 50    |
| 16:00 – 17:00 | 4        | 4          | 8     |
| 17:00 – 18:00 | 4        | 4          | 8     |

## Pupil Trips Over 2 Miles

- 5.26 It is the policy of Essex that children in Year 0 (Reception) to Year 3 can get free home to school transport if they attend their nearest school and live more than 2 miles away<sup>1</sup>.
- 5.27 Children in Year 4 to Year 6 can get free home to school transport if they attend their nearest school and live more than 3 miles away. It is still envisaged that by reaching Year 4, pupils will have already become accustomed to their travel method and would likely continue using the school bus with payment, or instead chose to travel to school via sustainable modes of travel. However, the census analysis has shown that the number living more than 3 miles from the school would likely be very low.
- 5.28 As discussed above however, to ensure a robust assessment on the impact of the development, it has been assumed that 10% of all pupil trips will be undertaken by private vehicles, which accounts for those choosing to travel over 2 miles by private vehicle.

<sup>1</sup> <https://www.essex.gov.uk/schools-and-learning/schools/school-transport>

## Education Pupil Multi Modal Trips

Using the above methodology, the multi modal trips to the school from **Table 5.6** and **Table 5.7** have been combined for the total education pupil multi modal trips in **Table 5.8**.

**Table 5.8 – Total Education Pupil Multi Modal Trips**

| Mode                      | AM Peak    |           |            | PM Peak  |           |           |
|---------------------------|------------|-----------|------------|----------|-----------|-----------|
|                           | Arr        | Dep       | Two-way    | Arr      | Dep       | Two-way   |
| Underground (Tram)        | 0          | 0         | 0          | 0        | 0         | 0         |
| Train                     | 0          | 0         | 0          | 0        | 0         | 0         |
| Bus, minibus, or coach    | 26         | 0         | 26         | 0        | 4         | 4         |
| Taxi                      | 0          | 0         | 0          | 0        | 0         | 0         |
| Motorcycle                | 0          | 0         | 0          | 0        | 0         | 0         |
| Driving a car or van      | 25         | 25        | 50         | 4        | 4         | 8         |
| Passenger in a car or van | 0          | 0         | 0          | 0        | 0         | 0         |
| Bicycle                   | 54         | 0         | 54         | 0        | 9         | 9         |
| On foot                   | 204        | 0         | 204        | 0        | 34        | 34        |
| Other                     | 0          | 0         | 0          | 0        | 0         | 0         |
| <b>Total</b>              | <b>309</b> | <b>25</b> | <b>334</b> | <b>4</b> | <b>51</b> | <b>55</b> |

## Education Employee Trips

- 5.29 The trip generation for members of staff for the primary school also needs to be considered.
- 5.30 To calculate the number of staff that would be associated with the proposed primary school, the most recent Department for Education 'School Workforce in England: 2022' has been queried. This was used to determine the pupil to teacher ratio for primary schools within England.
- 5.31 The pupil to teacher ratio for primary schools in England for 2022 was 20:7. This has been used to estimate the total number of staff members for the proposed primary school.
- 5.32 With 420 pupils and a 20:7 pupil to teacher ratio, it is estimated that 20 members of staff will work at the school.

5.33 It has been estimated that 50% of staff members would arrive on site between 07:00-08:00 and 50% between 08:00-09:00. During the evening, it is estimated that 25% would depart between 16:00-17:00 and 75% between 17:00-18:00.

5.34 Using the above, the education employee trip generation can be seen in **Table 5.9**.

**Table 5.9 – Education Employee Trip Generation**

| Time Period   | Arrival/Departure | Total Staff Trips |
|---------------|-------------------|-------------------|
| 07:00 – 08:00 | 50%               | 10                |
| 08:00 – 09:00 | 50%               | 10                |
| 16:00 – 17:00 | 25%               | 5                 |
| 17:00 – 18:00 | 75%               | 15                |

5.35 To determine the number of staff who would travel to the school by car, the 2011 Census Method of Travel to Work has been reviewed for the Brentwood 005 MSOA, where the site is located. The mode share can be seen in **Table 5.10**.

**Table 5.10 – Brentwood 005 MSOA Mode Share**

| Mode                      | Mode Share  |
|---------------------------|-------------|
| Underground (Tram)        | 1%          |
| Train                     | 10%         |
| Bus, minibus, or coach    | 2%          |
| Taxi                      | 1%          |
| Motorcycle                | 0%          |
| Driving a car or van      | 69%         |
| Passenger in a car or van | 5%          |
| Bicycle                   | 1%          |
| On foot                   | 10%         |
| Other                     | 1%          |
| <b>Total</b>              | <b>100%</b> |



- 5.36 As shown in **Table 5.10**, the percentage driving a car to work is 69%. Applying the car mode share to the total staff trips shown in **Table 5.9**, results in the total education employee vehicular trips in **Table 5.11**.

**Table 5.11 – Education Employee Vehicular Trip Generation**

| Time Period   | Arrival | Departure | Total |
|---------------|---------|-----------|-------|
| 07:00 – 08:00 | 7       | 0         | 7     |
| 08:00 – 09:00 | 7       | 0         | 7     |
| 16:00 – 17:00 | 0       | 4         | 4     |
| 17:00 – 18:00 | 0       | 11        | 11    |

- 5.37 Combining the pupil vehicle trip generation shown in **Table 5.7** and the total staff vehicular trip generation shown in **Table 5.11** results in the total vehicular trip generation for the primary school shown in **Table 5.12**.

**Table 5.12 – Total Education Vehicular Trip Generation**

| Time Period   | Arrival | Departure | Total |
|---------------|---------|-----------|-------|
| 07:00 – 08:00 | 13      | 0         | 13    |
| 08:00 – 09:00 | 32      | 25        | 57    |
| 15:00 – 16:00 | 25      | 25        | 50    |
| 16:00 – 17:00 | 4       | 8         | 12    |
| 17:00 – 18:00 | 4       | 15        | 19    |

### Total Development Vehicle Trips

- 5.38 The total trip generation of the proposed development can be calculated through adding the residential and education vehicular trips shown in **Table 5.2** and **Table 5.12**. The total vehicular trip generation for the site can be seen in **Table 5.13** for the peak hours only.

**Table 5.13 – Total Vehicular Trip Generation**

| Time Period   | Arrivals | Departures | Total |
|---------------|----------|------------|-------|
| 08:00 – 09:00 | 80       | 165        | 245   |
| 17:00 – 18:00 | 135      | 68         | 203   |

### Total Development Multi Modal Trips

- 5.39 The total trip generation of the proposed development can be calculated through adding the residential and education multi modal trips shown in **Table 5.3** and **Table 5.8** in the AM and PM Peak Hours only and can be seen in **Table 5.14**.

**Table 5.14 – Total Development Multi Modal Trip Generation**

| Mode                      | AM Peak    |            |            | PM Peak    |            |            |
|---------------------------|------------|------------|------------|------------|------------|------------|
|                           | Arr        | Dep        | Two-way    | Arr        | Dep        | Two-way    |
| Underground (Tram)        | 2          | 6          | 7          | 5          | 2          | 7          |
| Train                     | 42         | 122        | 164        | 114        | 47         | 161        |
| Bus, minibus, or coach    | 27         | 2          | 29         | 2          | 5          | 7          |
| Taxi                      | 1          | 2          | 3          | 2          | 1          | 3          |
| Motorcycle                | 0          | 1          | 1          | 1          | 0          | 1          |
| Driving a car or van      | 73         | 165        | 238        | 135        | 57         | 192        |
| Passenger in a car or van | 3          | 9          | 12         | 8          | 3          | 12         |
| Bicycle                   | 55         | 4          | 59         | 3          | 10         | 14         |
| On foot                   | 211        | 21         | 232        | 19         | 42         | 61         |
| Other                     | 1          | 2          | 2          | 2          | 1          | 2          |
| <b>Total</b>              | <b>415</b> | <b>333</b> | <b>748</b> | <b>292</b> | <b>168</b> | <b>460</b> |

### Trip Generation and Distribution Summary

- 5.40 This section has forecast the likely vehicle and total person trips to be site. The assessment undertaken indicates that the development will generate 238 two-way vehicle trips during the AM peak and 192 during the PM peak.
- 5.41 Regarding total person trips to the site, the assessment indicates that the development will generate 232 two-way walking/cycling and 200 public transports trips during the AM peak. The PM peak will generate 75 two-way walking/cycling and 175 public transport trips. Note this includes trips to the on-site primary school.

## 6 Trip Distribution

6.1 This section sets out the trip distribution for all mode of travel to and from the site.

### Vehicle Trip Distribution

#### Residential

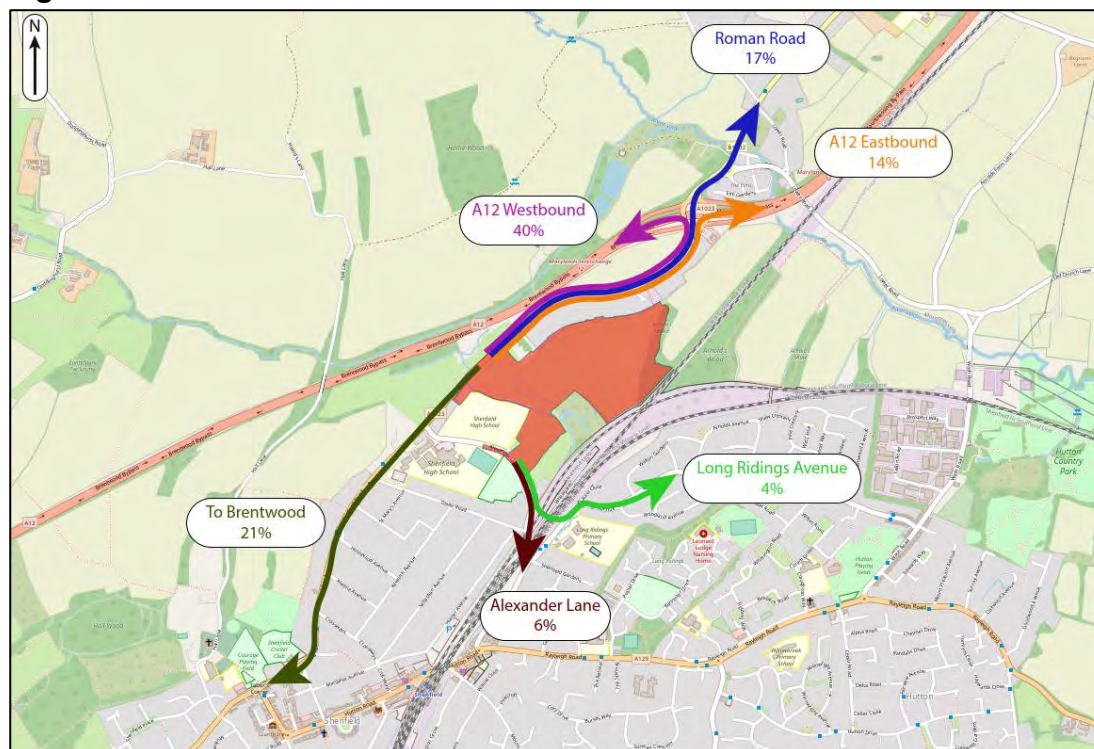
- 6.2 The distribution of the residential trips has replicated the assessment completed within the RPS Land off Chelmsford Road TA, contained within **Appendix U**. The TA based their trip distribution on the 2011 Census database, which provides details of where residents within the MSOA of Brentwood 005 work.
- 6.3 Whilst the 2011 Census database is over 10 years old, due to the COVID-19 Pandemic, the results of the 2021 Census are deemed inappropriate for the purpose of determining working locations.
- 6.4 The residential traffic based on the Census Journey to Work resulted in the following residential trip distribution for the RPS TA, which will be replicated for this development as shown in **Table 6.1**.

**Table 6.1 – Residential Distribution**

| Route                          | Distribution |
|--------------------------------|--------------|
| A12 Westbound                  | 40%          |
| A12 Eastbound                  | 14%          |
| Roman Road                     | 17%          |
| Chelmsford Road (to Brentwood) | 21%          |
| Oliver Road                    | 4%           |
| Hutton Road                    | 4%           |

- 6.5 However, as the site will benefit from an additional access of Alexander Lane, it has been determined that the westbound routes travelling via Oliver Road and Hutton Road (8%) will instead travel via the Alexander Lane access, with 2% continuing along Long Ridings Avenue, and 6% continuing south on Alexander Lane.
- 6.6 The proposed residential trip distribution flow diagrams can be seen in **Appendix V** and is shown in **Figure 6.1**.

**Figure 6.1 – Residential Distribution**



## Education

- 6.7 As discussed earlier within this section, it is estimated that 90% of trips associated with the on-site primary school will either be internal or made by pupils living within 2 miles of the site, who would travel to the site sustainably.
- 6.8 The trip distribution for the remaining primary school trips has been calculated through assessing the residential areas within the 2-mile radius that pupils would be likely to travel from. From a desktop study of the nearby residential areas, **Table 6.2** shows the proposed trip distribution for the vehicular education journeys.

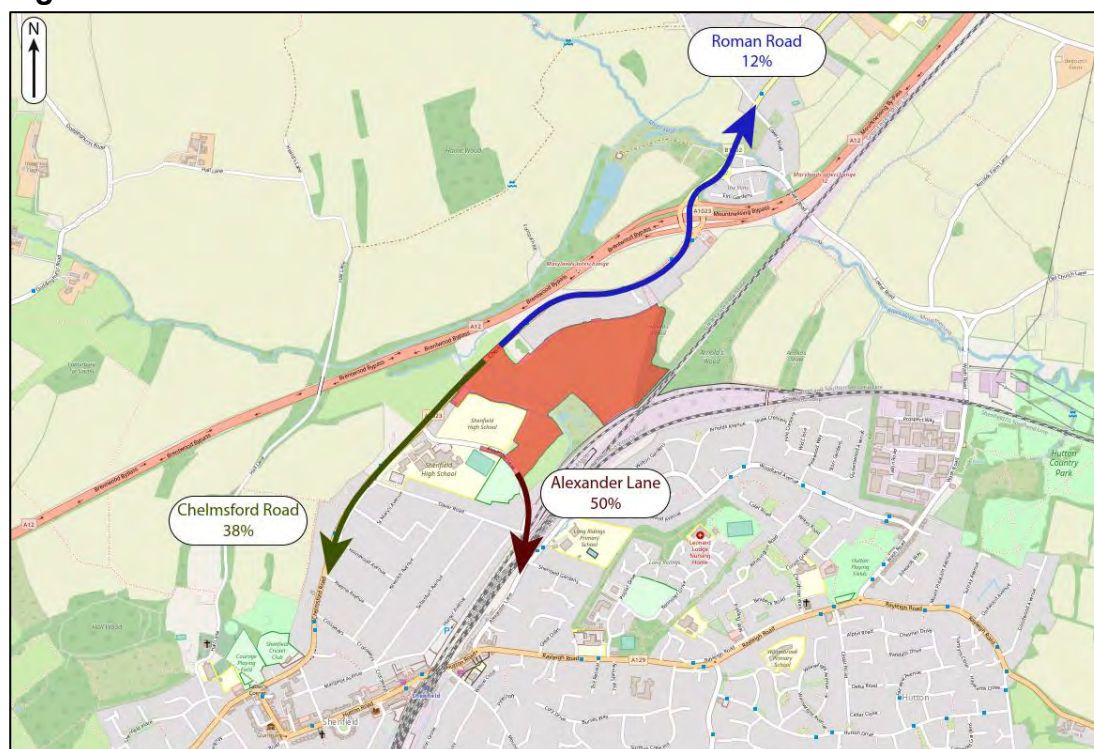
**Table 6.2 – Educational Distribution**

| Route                       | Distribution |
|-----------------------------|--------------|
| Roman Road                  | 40%          |
| Alexander Lane              | 14%          |
| Chelmsford Road (southwest) | 17%          |

- 6.9 The proposed external educational trip distribution flow diagrams can be seen in **Appendix V** and is shown in **Figure 6.2**.



**Figure 6.2 – Education External Distribution**



### **Redistribution of Existing Trips due to Realignment of Alexander Lane**

- 6.10 Whilst the masterplan has not been designed to act as a major route for through-traffic, it is acknowledged that through the closure of Alexander Lane and the provision of a through-route via the proposed development, some traffic will divert either through the site, or instead via Oliver Road located to the southwest of Alexander Lane.
- 6.11 Observed traffic surveys show the current number of vehicles travelling along Alexander Lane. This can be seen within the base traffic flow diagram in **Appendix V**. These have been diverted under the with development scenarios to represent the realignment of Alexander Lane. It has been assumed that 85% will divert through the proposed development network to Chelmsford Road and 15% will re-route via Oliver Road to Chelmsford Road.

### **Public Transport Distribution**

#### **Train Trips**

- 6.12 As detailed in **Table 5.3**, it is predicted there will be between circa 168-172 two-way person trips using the train or underground in the peak hours.
- 6.13 Given the walking and cycling improvements proposed through the site, it is assumed that the majority of people travelling to the station are likely to walk or cycle via the new connection into Alexander Lane. This new connection will create a more direct route into the town centre and to the station reducing journey times over Chelmsford Road. However, it is acknowledged that people may choose to travel to the station via Chelmsford Road particularly if living in the dwellings nearest the access.

- 6.14 In order to predict how these additional person trips will be split across the different routes calling into Shenfield station, the 2011 Census data has been interrogated using the 'Location of usual residence and place of work by method of travel to work' dataset. Using this dataset, it has been possible to calculate where these additional train passengers will be travelling to/from for work in order to determine which train service they are likely to use. The results of this are provided in **Table 6.3**.

**Table 6.3 – Breakdown of Train/Underground Trips per Route**

| Service                 | AM Peak   |            |            | PM Peak    |            |            |
|-------------------------|-----------|------------|------------|------------|------------|------------|
|                         | Arrivals  | Departures | Two-way    | Arrivals   | Departures | Two-way    |
| London Liverpool Street | 41        | 119        | 160        | 111        | 45         | 156        |
| Chelmsford              | 1         | 2          | 3          | 2          | 1          | 3          |
| Paddington              | 2         | 7          | 9          | 6          | 3          | 9          |
| <b>Total</b>            | <b>44</b> | <b>128</b> | <b>172</b> | <b>119</b> | <b>49</b>  | <b>168</b> |

- 6.15 As set out in **Table 6.3**, the largest increase in train passengers is likely to be experienced along the train service calling at destinations to London Liverpool Street with 160 and 156 additional two-way passengers predicted in the AM and PM peak hours.
- 6.16 Based on the frequencies of these train services per hour, **Table 6.4** demonstrates how many additional passengers there is likely to be on each route per train.

**Table 6.4 – Breakdown of Train/Underground Trips per Service**

| Service                 |                   |           | AM Peak  |          |           | PM Peak  |          |           |
|-------------------------|-------------------|-----------|----------|----------|-----------|----------|----------|-----------|
| Route                   | Average Frequency | Per Hour  | Arr      | Dep      | Two-way   | Arr      | Dep      | Two-way   |
| London Liverpool Street | 4 minutes         | 15        | 3        | 8        | 11        | 7        | 3        | 10        |
| Chelmsford              | 15 minutes        | 4         | 0        | 1        | 1         | 0        | 0        | 0         |
| Paddington              | 3 minutes         | 20        | 0        | 0        | 0         | 0        | 0        | 1         |
| <b>Total</b>            |                   | <b>13</b> | <b>3</b> | <b>9</b> | <b>12</b> | <b>8</b> | <b>3</b> | <b>11</b> |

- 6.17 **Table 6.4** indicates that the largest increase in train passengers is likely to be experienced along the train service calling at destinations to London Liverpool Street route 237 with circa 11 additional passengers predicted on each train in the AM and PM peak hours.
- 6.18 It is considered that these additional passengers on each train service are immaterial and can be accommodated on these services without affecting the capacity on the trains.

### **Bus Trips**

- 6.19 Whilst bus trips are predicted to be low based on the Census information with 3 two-way trips in the peak hours, it is envisaged that more residents will choose to travel to/from work via bus particularly as the proposals seek to construct additional northbound and southbound bus stops along Chelmsford Road at the site access roundabout. Residents will also use the bus services to access Shenfield Station. Given the forecasted numbers of bus trips, it is not considered that there will be a significant impact on bus services as a result of the proposals.
- 6.20 As noted in **Section 4**, with the creation of these new bus stops, the majority of dwellings will be within 600m walking distance of the bus stops and it is proposed that the existing bus services travelling along Chelmsford Road would stop at these bus stops enhancing accessibility for both future and existing residents.

### **Active Travel Distribution**

- 6.21 With regard to walking and cycling trips, the majority of nearby amenities identified in **Table 2.3** are located to the south of the site within Shenfield town, along Chelmsford Road to the south-west or to the east of the site via Alexander Lane.
- 6.22 In order to calculate the percentage of people using each route the following steps were undertaken:
- Local amenities within walking and cycling distance have been mapped from the centre of the site;
  - Google Maps Journey Time planner was used to derive the most suitable route by active modes.
- 6.23 A summary of the routes assumed for each of the amenities is detailed in **Table 6.5**.

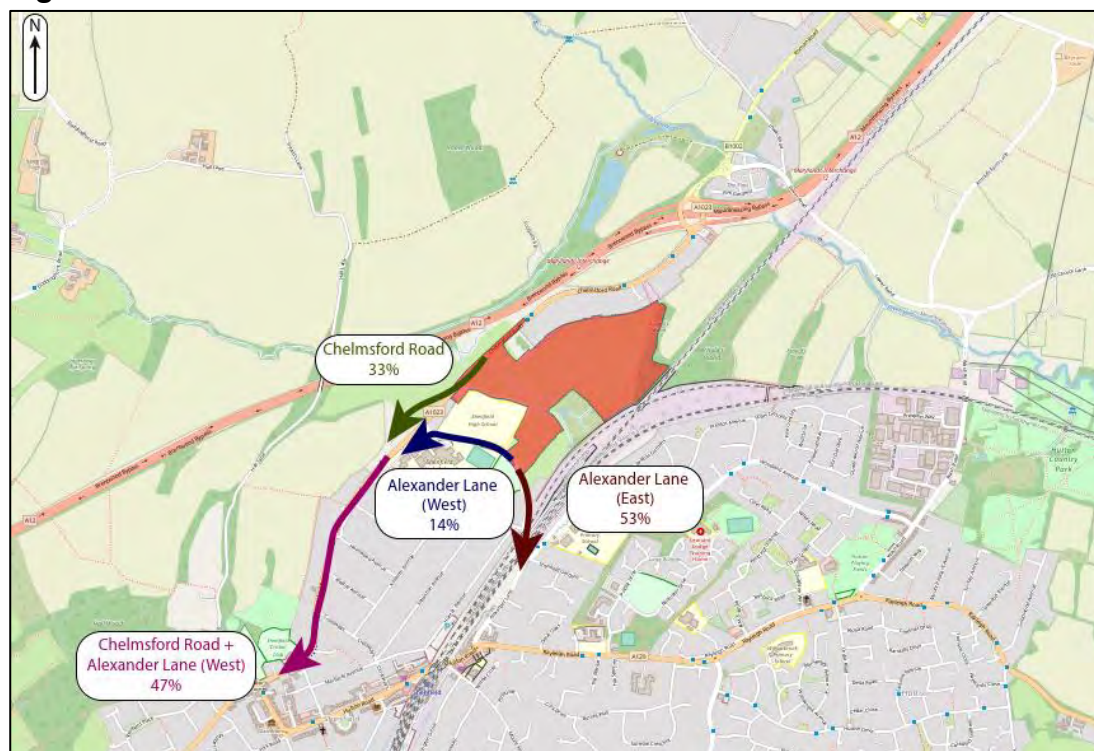
**Table 6.5 – Walking/Cycling route to/from Amenities**

| Local Facility                     | Route Assumed   |
|------------------------------------|---|
| <b>Public Transport</b>            |   |
| Chelmsford Road Bus Stop           | 100% south of site access roundabout                                  |
| Long Ridings School Bus Stop       | 100% east along Alexander Lane  |
| Shenfield Station                  | 10% south of site access roundabout and 90% east along Alexander Lane |
| <b>Schools / Education</b>         |   |
| Shenfield High School              | 10% south of site access roundabout and 90% west along Alexander Lane |
| Long Ridings School                | 100% east along Alexander Lane  |
| Poppets Day Nursery                | 100% east along Alexander Lane  |
| St Marys CofE Primary School       | 70% south of site access roundabout and 30% west along Alexander Lane |
| Sunflower Montessori Kindergarten  | 100% east along Alexander Lane  |
| <b>Leisure / Sports Facilities</b> |   |
| Shenfield Sports Centre            | 75% south of site access roundabout and 25% west along Alexander Lane |
| Alexander Lane Recreation Ground   | 20% south of site access roundabout and 80% west along Alexander Lane |
| Shenfield Cricket Club             | 70% south of site access roundabout and 30% west along Alexander Lane |
| Courage's Playing Fields           | 80% south of site access roundabout and 20% west along Alexander Lane |
| Hutton Bowls Club                  | 100% east along Alexander Lane  |
| <b>Pub / Restaurants / Food</b>    |   |
| The Rose Shenfield Bar and Dining  | 65% south of site access roundabout and 35% west along Alexander Lane |
| The Hutton Junction                | 100% east along Alexander Lane  |
| The Green Dragon                   | 70% south of site access roundabout and 30% west along Alexander Lane |
| Vault Restaurant                   | 15% south of site access roundabout and 85% west along Alexander Lane |
| Sienna's                           | 15% south of site access roundabout and 85% west along Alexander Lane |
| <b>Local Shops</b>                 |   |
| Tesco Express                      | 10% south of site access roundabout and 90% west along Alexander Lane |
| Marks and Spencer's                | 10% south of site access roundabout and 90% west along Alexander Lane |
| Cooperative                        | 10% south of site access roundabout and 90% west along Alexander Lane |
| <b>Medical Centres</b>             |   |
| Shenfield Pharmacy                 | 5% south of site access roundabout and 95% west along Alexander Lane  |
| Rockleigh Court Doctors Surgery    | 10% south of site access roundabout and 90% west along Alexander Lane |
| Nuffield Health Hospital           | 90% south of site access roundabout and 10% west along Alexander Lane |
| Brentwood Community Hospital       | 90% south of site access roundabout and 10% west along Alexander Lane |



- 6.24 Based on the routes assumed within **Table 6.5**, it is predicted that the majority of people walking and cycling will travel via Alexander Lane to the east via the new connection into the site (53%). 47% of walking/cycle trips are predicted to travel southbound along Chelmsford Road with 14% of these travelling westbound along Alexander Lane. These routes are demonstrated on **Figure 6.3**.

**Figure 6.3 – Active Travel Distribution**



## 7 Traffic Impact Assessment

7.1 This section of the report will detail the estimated traffic impact of the development on the local highway network.

### Study Area

7.2 The traffic assessment has replicated the study area from the RPS TA, which was agreed during their scoping discussions to include the following junctions:

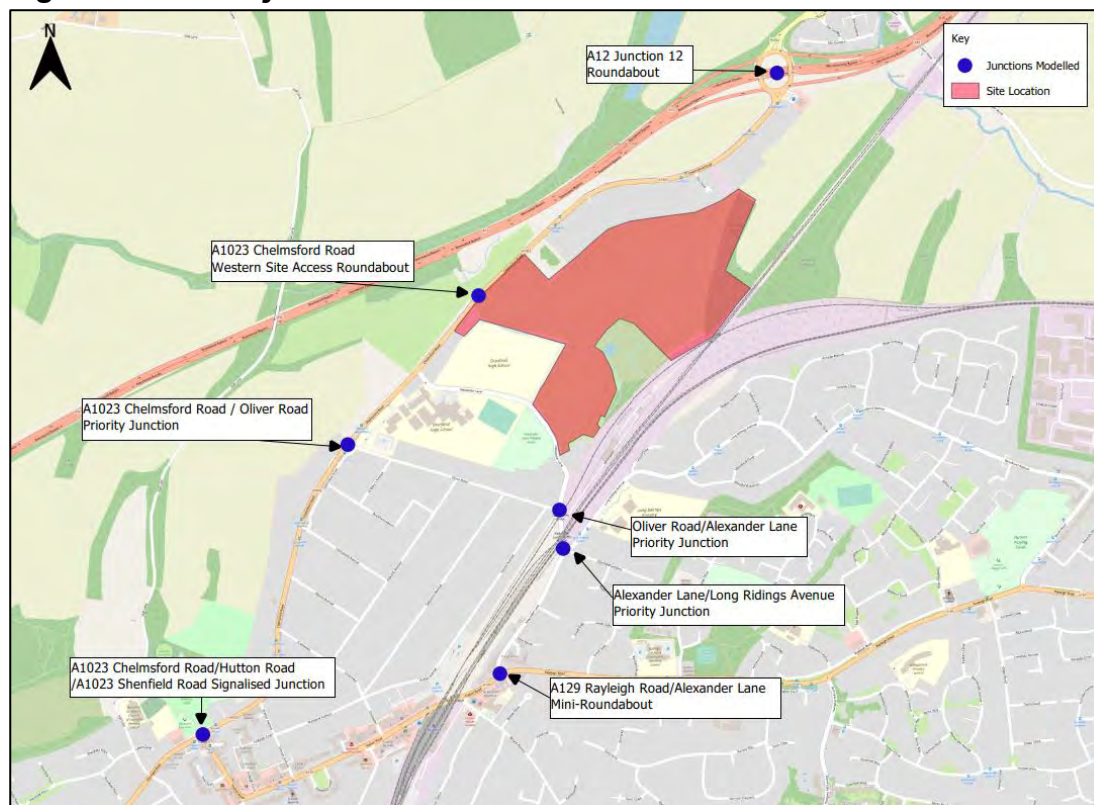
- A1023 Chelmsford Road / Alexander Lane – priority junction
- A1023 Chelmsford Road / Oliver Road – priority junction;
- A1023 Chelmsford Road / Hutton Road / A1023 Shenfield Road – signalised junction;
- A129 Rayleigh Road/ Alexander Lane – mini-roundabout;
- Alexander Lane / Long Ridings Avenue – priority junction;
- Oliver Road / Alexander Lane – priority junction; and
- A12 Junction 12 – roundabout.

7.3 Due to the proposed application closing Alexander Lane to through traffic, the A1023 Chelmsford Road / Alexander Lane junction will have significantly less traffic travelling through than at present, with traffic redistributing via the proposed development and Oliver Road. As such, it has not been assessed within this report.

7.4 In addition to the above, the western site access to Chelmsford Road has been assessed for the with development scenarios only.

7.5 The study area is shown in **Figure 7.1** for reference.

**Figure 7.1 – Study Area**



## Committed Development

- 7.6 The committed developments considered within this report has replicated the approach within the RPS Land off Chelmsford Road TA, contained within **Appendix U**. The RPS assessment considered the remainder of the Land North of Shenfield Allocation as committed developments. As such, the committed developments considered are the following:
- Redrow Homes (180 dwellings)
  - Countryside Properties (135 dwellings, 2ha employment)
  - Stonebond Properties (46 dwellings)
- 7.7 It is noted that at present, only the Redrow Homes application have submitted their transport documents. As such, assumptions have had to be made on the trip generation and distribution for the remainder of the allocation, the detail of which are shown below.
- 7.8 For the residential aspects, the same TRICS trip rate has been used as for the residential aspects of the allocation, in addition to the same distribution.
- 7.9 For the 2ha of employment for the Countryside Properties land, the assessment conducted within the RPS TA was replicated. A summary of this assessment follows:
- An estimate of 235 employees in relation to the 2ha allocation (taken from the Local Plan Transport Assessment, Stantec, 2020);

- Trip generation from TRICS using Office use on a per-employee basis to establish total person trips;
- Vehicle trips established using Census 2011 mode split of 69% for journeys to work into Brentwood MSOA area 005; and
- Trip distribution using the residential distribution assumption.

### **Assessment Scenarios**

- 7.10 In order to determine the baseline level of traffic, traffic surveys were commissioned and carried out in the vicinity of the site during May 2022. The full traffic survey data can be seen at **Appendix W**.
- 7.11 The assessment scenarios considered are reflective of the RPS TA. However, 2028 and 2033 have been chosen for the future years of assessment as opposed to 2027 and 2033 respectively, to reflect 5 and 10 years from submission of this application.
- 7.12 All the above junctions have been tested for the following scenarios set out in **Table 7.1** during the AM and PM peak hours of 08:00 – 09:00 and 17:00 – 18:00 respectively.



**Table 7.1 - Assessment Scenarios**

| Test                     | Assessment  | Description   |
|--------------------------|---|---|
| <b>Core</b>              | 2022 Observed   | Traffic Survey Data   |
|                          | 2028 Observed   | To align with the RPS assessment no TEMPRO Factor has been applied to reach 2028  |
|                          | 2028 Future Year + Proposed Development                         | The impact of the site against 2028 future year flows has been assessed to establish the direct impact of the proposals   |
| <b>Cumulative</b>        | 2028 Future Year + Committed Development                        | The wider allocation has been included within this assessment including Stonebond Properties, Redrow Homes and Countryside Properties                           |
|                          | 2028 Future Year + Committed Development + Proposed Development | The impact of the site in the context of the wider allocation has been assessed   |
| <b>National Highways</b> | 2033 Future Year + Committed Development                        | TEMPRO Growth Factors have been applied to reach 2033 and committed developments as part of the wider allocation have been assessed to establish a future base. |
|                          | 2033 Future Year + Committed Development + Proposed             | The impact of the site in the context of the traffic growth and wider allocation has been assessed  |

7.13 It should be noted that only the A12 junction has been tested for National Highway Test for the AM and PM peaks, to account for their additional traffic modelling requirements.

## Junction Modelling Results

- 7.14 The following details the results from the traffic modelling at each junction in turn. The traffic flow diagrams used to inform the assessments can be found at **Appendix V** and full modelling results are included at **Appendix X**.
- 7.15 The Junctions 9 package software has been used to model the traffic junctions, with PICADY and ARCADY being used for priority junctions and roundabout junctions respectively. LinSig traffic modelling software has been used to model traffic signal junctions.

### Western Site Access / Chelmsford Road Roundabout Junction

- 7.16 The results of the Western Site Access / Chelmsford Road roundabout junction can be seen in **Table 7.2**. As the site access is a proposed new junction, it has only been assessed for the development scenarios only.
- 7.17 **Table 7.2** shows a summary of the results.

**Table 7.2 – Western Site Access / Chelmsford Road Roundabout Modelling Results**

| Arm                 | AM  |       |      | PM |       |      |
|---------------------|---|-------|------|----|-------|------|
|                     | Q   | Delay | RFC  | Q  | Delay | RFC  |
|                     | 2028 Base + Proposed Development                        |       |      |    |       |      |
| Chelmsford Road (N) | 4   | 10    | 0.78 | 2  | 5     | 0.53 |
| Site Access         | 1   | 8     | 0.37 | 1  | 5     | 0.19 |
| Chelmsford Road (S) | 1   | 4     | 0.48 | 1  | 4     | 0.49 |
|                     | 2028 Base + Committed Development+ Proposed Development |       |      |    |       |      |
| Chelmsford Road (N) | 4   | 11    | 0.81 | 2  | 5     | 0.55 |
| Site Access         | 1   | 8     | 0.38 | 1  | 5     | 0.19 |
| Chelmsford Road (S) | 1   | 5     | 0.50 | 2  | 5     | 0.51 |

- 7.18 As can be seen in **Table 7.2**, the proposed junction would operate within its theoretical capacity in all scenarios, with minimal queuing and a maximum RFC of 0.81 during the AM peak hour.

## A1023 Chelmsford Road / Oliver Road – Priority Junction

7.19 The results of the A1023 Chelmsford Road / Oliver Road priority junction can be seen in **Table 7.3**.

**Table 7.3 – A1023 Chelmsford Road / Oliver Road Priority Junction Modelling Results**

| Arm             | AM   |       |      | PM |       |      |
|-----------------|--|-------|------|----|-------|------|
|                 | Q  | Delay | RFC  | Q  | Delay | RFC  |
|                 | 2022 Base  |       |      |    |       |      |
| Oliver Road     | 2  | 35    | 0.62 | 1  | 16    | 0.37 |
| Chelmsford Road | 1  | 13    | 0.31 | 1  | 9     | 0.13 |
|                 | 2028 Base + Proposed Development                         |       |      |    |       |      |
| Oliver Road     | 4  | 66    | 0.78 | 1  | 21    | 0.46 |
| Chelmsford Road | 1  | 14    | 0.34 | 1  | 9     | 0.13 |
|                 | 2028 Base + Committed Development + Proposed Development |       |      |    |       |      |
| Oliver Road     | 5  | 84    | 0.82 | 1  | 23    | 0.50 |
| Chelmsford Road | 1  | 14    | 0.34 | 1  | 9     | 0.14 |

7.20 As can be seen in **Table 7.3**, the junction would operate within its theoretical capacity, with an RFC of below 0.85 in all scenarios.

7.21 There is a maximum delay of 84 seconds for vehicles waiting to turn from Oliver Road to Chelmsford Road. Despite the delay, the maximum queuing result is 5 vehicles, thus the impact on the surrounding network is small.

## A1023 Chelmsford Road / Hutton Road / A1023 Shenfield Road – Signalised Junction

7.22 The results of the A1023 Chelmsford Road / Hutton Road / A1023 Shenfield Road signalised junction can be seen in **Table 7.4**.

**Table 7.4 – A1023 Chelmsford Road / Hutton Road / A1023 Shenfield Road Modelling Results**

| Arm                  | AM   |     |       |      | PM   |     |       |      |
|----------------------|--|-----|-------|------|------|-----|-------|------|
|                      | DoS  | MMQ | Delay | PRC  | DoS  | MMQ | Delay | PRC  |
|                      | 2022 Base  |     |       |      |      |     |       |      |
| A1023 Shenfield Road | 74.2   | 14  | 14    | 21.3 | 79.1 | 18  | 39    | 13.8 |
| Chelmsford Road      | 39.4   | 1   | 1     |      | 40.0 | 1   | 1     |      |
| Hutton Road          | 19.9   | 1   | 1     |      | 17.3 | 1   | 1     |      |
|                      | 2028 Base + Proposed Development                         |     |       |      |      |     |       |      |
| A1023 Shenfield Road | 75.8   | 14  | 34    | 13.7 | 78.9 | 19  | 15    | 10.9 |
| Chelmsford Road      | 40.5   | 1   | 1     |      | 41.4 | 1   | 2     |      |
| Hutton Road          | 25.3   | 1   | 1     |      | 17.3 | 1   | 2     |      |
|                      | 2028 Base + Committed Development + Proposed Development |     |       |      |      |     |       |      |
| A1023 Shenfield Road | 76.9   | 15  | 35    | 16.5 | 83.4 | 21  | 17    | 7.9  |
| Chelmsford Road      | 41.8   | 1   | 2     |      | 43.0 | 1   | 2     |      |
| Hutton Road          | 20.2   | 1   | 2     |      | 17.5 | 1   | 2     |      |

7.23 As can be seen in **Table 7.4**, the proposed junction would operate well within its theoretical capacity in all scenarios.



## A129 Rayleigh Road/ Alexander Lane – Mini-Roundabout

7.24 The results of the A129 Rayleigh Road/ Alexander Lane – mini-roundabout can be seen in **Table 7.5**.

**Table 7.5– A129 Rayleigh Road/ Alexander Lane – Mini-Roundabout Modelling Results**

| Arm               | AM   |       |      | PM |       |      |
|-------------------|--|-------|------|----|-------|------|
|                   | Q  | Delay | RFC  | Q  | Delay | RFC  |
|                   | 2022 Base  |       |      |    |       |      |
| Rayleigh Road (E) | 3  | 16    | 0.71 | 2  | 9     | 0.31 |
| Rayleigh Road (W) | 2  | 10    | 0.58 | 2  | 11    | 0.40 |
| Alexander Lane    | 2  | 17    | 0.64 | 1  | 13    | 0.20 |
|                   | 2028 Base + Proposed Development                         |       |      |    |       |      |
| Rayleigh Road (E) | 3  | 17    | 0.72 | 2  | 9     | 0.52 |
| Rayleigh Road (W) | 2  | 11    | 0.60 | 2  | 12    | 0.65 |
| Alexander Lane    | 3  | 19    | 0.68 | 1  | 13    | 0.48 |
|                   | 2028 Base + Committed Development + Proposed Development |       |      |    |       |      |
| Rayleigh Road (E) | 3  | 17    | 0.73 | 2  | 10    | 0.53 |
| Rayleigh Road (W) | 2  | 11    | 0.60 | 2  | 12    | 0.65 |
| Alexander Lane    | 3  | 20    | 0.69 | 1  | 13    | 0.48 |

7.25 As can be seen in **Table 7.5**, the junction would operate within its theoretical capacity in all scenarios, a maximum RFC of 0.73 during the AM peak.

## Alexander Lane / Long Ridings Avenue – Priority Junction

7.26 The results of the Alexander Lane / Long Ridings Avenue priority junction can be seen in **Table 7.6**.

**Table 7.6 – Alexander Lane / Long Ridings Avenue – Priority Junction Modelling Results**

| Arm                 | AM  |       |      | PM |       |      |
|---------------------|---|-------|------|----|-------|------|
|                     | Q   | Delay | RFC  | Q  | Delay | RFC  |
|                     | 2022 Base   |       |      |    |       |      |
| Long Ridings Avenue | 1   | 12    | 0.30 | 1  | 10    | 0.18 |
| Alexander Lane      | 1   | 8     | 0.10 | 1  | 8     | 0.09 |
|                     | 2028 Base + Proposed Development                        |       |      |    |       |      |
| Long Ridings Avenue | 1   | 13    | 0.31 | 1  | 10    | 0.19 |
| Alexander Lane      | 1   | 8     | 0.10 | 1  | 8     | 0.09 |
|                     | 2028 Base + Committed Development+ Proposed Development |       |      |    |       |      |
| Long Ridings Avenue | 1   | 13    | 0.31 | 1  | 10    | 0.20 |
| Alexander Lane      | 1   | 8     | 0.10 | 1  | 8     | 0.09 |

7.27 As can be seen in **Table 7.6**, the junction would operate well within its theoretical capacity in all scenarios, with minimal queuing and a maximum RFC of 0.31 during the AM peak.

## Oliver Road / Alexander Lane – Priority Junction

7.28 The results of the Oliver Road / Alexander Lane priority junction can be seen in **Table 7.7**.

**Table 7.7 – Oliver Road / Alexander Lane – Priority Junction Modelling Results**

| Arm                 | AM  |       |      | PM |       |      |
|---------------------|---|-------|------|----|-------|------|
|                     | Q   | Delay | RFC  | Q  | Delay | RFC  |
|                     | 2022 Base   |       |      |    |       |      |
| Oliver Road         | 2   | 18    | 0.53 | 1  | 17    | 0.47 |
| Long Ridings Avenue | 1   | 7     | 0.03 | 1  | 7     | 0.01 |
|                     | 2028 Base + Proposed Development                        |       |      |    |       |      |
| Oliver Road         | 2   | 22    | 0.60 | 2  | 18    | 0.52 |
| Long Ridings Avenue | 1   | 7     | 0.03 | 0  | 7     | 0.01 |
|                     | 2028 Base + Committed Development+ Proposed Development |       |      |    |       |      |
| Oliver Road         | 2   | 23    | 0.61 | 2  | 18    | 0.53 |
| Long Ridings Avenue | 1   | 7     | 0.03 | 1  | 7     | 0.01 |

7.29 As can be seen in **Table 7.7**, the junction would operate well within its theoretical capacity in all scenarios, with minimal queuing and a maximum RFC of 0.61 during the AM peak

## A12 Junction 12 – Roundabout

7.30 The results of the A12 Junction 12 roundabout can be seen in **Table 7.8**.

**Table 7.8 – A12 Junction 12 Modelling Results**

| Arm  | AM        |       |      | PM      |       |      |
|--|-----------|-------|------|---------|-------|------|
|  | Q         | Delay | RFC  | Q (PCU) | Delay | RFC  |
|  | 2022 Base |       |      |         |       |      |
| A12 (E)  | 12        | 50    | 0.91 | 2       | 8     | 0.52 |
| Chelmsford Road  | 2         | 5     | 0.49 | 2       | 4     | 0.48 |
| A12 (W)  | 2         | 6     | 0.45 | 2       | 8     | 0.55 |
| Roman Road   | 2         | 6     | 0.59 | 1       | 4     | 0.39 |
| 2033 Base  |           |       |      |         |       |      |
| A12 (E)  | 13        | 51.27 | 0.92 | 3       | 10    | 0.56 |
| Chelmsford Road  | 2         | 7     | 0.49 | 2       | 5     | 0.53 |
| A12 (W)  | 2         | 5     | 0.45 | 2       | 8     | 0.60 |
| Roman Road   | 2         | 6     | 0.59 | 1       | 4     | 0.42 |
| 2028 Base + Proposed Development + Committed Development |           |       |      |         |       |      |
| A12 (E)  | 29        | 108   | 0.99 | 3       | 10    | 0.62 |
| Chelmsford Road  | 2         | 6     | 0.60 | 2       | 4     | 0.52 |
| A12 (W)  | 2         | 7     | 0.47 | 3       | 8     | 0.56 |
| Roman Road   | 3         | 7     | 0.62 | 1       | 4     | 0.43 |
| 2033 Base + Proposed Development + Committed Development |           |       |      |         |       |      |
| A12 (E)  | 31        | 119   | 0.99 | 3       | 10    | 0.62 |
| Chelmsford Road  | 2         | 6     | 0.61 | 2       | 4     | 0.53 |
| A12 (W)  | 2         | 7     | 0.48 | 3       | 8     | 0.56 |
| Roman Road   | 3         | 7     | 0.64 | 1       | 4     | 0.45 |

7.31 As can be seen in **Table 7.8**, the junction would experience some queuing on the A12 (East) arm during the AM peak but not in the PM peak.

7.32 The results shown in **Table 7.8** accord with the results demonstrated by RPS within their TA for the junction. In response to National Highways request to consider the risk associated with the development impact on the junction, a risk assessment report was produced by RPS, which can be found at **Appendix Y**.



- 7.33 Within the report, it is noted that the addition of the R03 Land North of Shenfield allocation increases the queue length at the junction, with the results in **Table 7.8** showing a maximum queue length of 31 vehicles. This equates to queue length of 186m based on a vehicle length of 6m.
- 7.34 The predicted average queue length does not exceed the length of the slip road, which is circa 450m to the diverge. This allows sufficient length for vehicles to decelerate and stop at the back of the queue, and thus there are not safety risks with regards to the future traffic anticipated.
- 7.35 Whilst the development does result in an increase in delay of approximately 69 second when compared with the 2022 Base scenario, it is not considered that this increase in delay justifies mitigation measures as it will be imperceptible over the length of journeys made on the strategic road network.
- 7.36 Therefore, our conclusions align with the conclusion of the RPS risk assessment which concluded the following:

*“The additional traffic associated with the proposed development will increase queues and delay during the AM peak, but it is not considered that the impacts are severe and do not have a significant increase in safety risk. Therefore, the A12 Junction 12 roundabout will not require any mitigation to accommodate the R03 allocations”.*

### **Traffic Assessment Summary**

- 7.37 The results show that the additional traffic generated by the proposed development can be accommodated on the highway network.
- 7.38 The realignment of Alexander Lane results in the distribution of exiting traffic either through the proposed site or via Oliver Road. This has been shown to be acceptable with all junctions on the local network operating within their operational capacity.
- 7.39 The increase in traffic on the A12 slip road results in an increase in queuing length during the AM peak hour. However, this has been shown not to be a safety risk, and the increase in delay of approximately 69 seconds does not justify mitigation measures on the junction as the effects are not considered severe as set out in NPPF.

## 8 Summary and Conclusion

- 8.1 Vectos has been appointed by Croudace Homes Ltd to provide transport and highways advice in relation to the development of Officers' Meadow, Shenfield. The site forms part of the R03 Allocation within the Brentwood Local Plan (2016-2033).
- 8.2 The development description for the application is as follows:
- "Hybrid planning application for 344 units including 35% affordable housing, safeguarded land for a 2FE primary school and early years facility, public open space and associated landscaping, drainage and highways infrastructure."*
- 8.3 Access to the site is provided to the north in the form of a priority-controlled roundabout on Chelmsford Road. This will be a three-arm roundabout that will provide a suitable access through the Officer's Meadow site and maintaining through movements along Chelmsford Road.
- 8.4 Alexander Lane is proposed to be re-aligned to provide access to the site from the south. The re-alignment will travel through the site and connect to Chelmsford Road at the main site access junction. The re-alignment will prevent rat running to Chelmsford Road by providing a longer and a more undulating route than currently exists on Alexander Road.
- 8.5 The site benefits from an excellent public transport network, with frequent buses to Brentwood via Shenfield and towards Chelmsford City Centre within walking distance of the site. The site is located within an acceptable walking and cycling distance of Shenfield train station. The station provides access to the Elizabeth Line and Greater Anglia services. These combine to provide very frequent services towards London, with Greater Anglia services providing links to Chelmsford and other destinations in Essex.
- 8.6 There already exists a good active travel network in the vicinity of the site, with a cycleway located on Chelmsford Road providing a traffic-free link towards Shenfield and Brentwood, and a number of pedestrian routes that can be utilised to access the numerous local facilities within the centre of Shenfield.
- 8.7 The development proposals support both national and local policy, being part of the Land North of Shenfield allocated site. The development proposals will seek to meet all of the requirement's requirement of the allocation, in order to ensure the creation of a sustainable site that will form an extension to Shenfield.
- 8.8 The development proposals include several improvements including both highway and active travel improvements. The active travel proposals include links to the wider allocations, the existing cycle network on Chelmsford Road and the diversion and upgrade of Footpath 86. In relation to public transport, as part of the proposals it is the intention to provide two new bus stops and relocate two existing bus stops to ensure all residents are within 600m of a bus service.
- 8.9 The traffic modelling assessment undertaken shows that the additional traffic generated by the proposed development can be accommodated on the highway network.

- 8.10 The realignment of Alexander Lane results in the distribution of exiting traffic either through the proposed site or via Oliver Road. This has been shown to be acceptable with all junctions on the local network operating within their operational capacity.
- 8.11 The increase in traffic on the A12 slip road results in an increase in queuing length during the AM peak hour. However, this has been shown not to be a safety risk, and the increase in delay of approximately 69 seconds does not justify mitigation measures on the junction which aligns with the assessment undertaken by RPS on behalf of the risk for National Highways and does not result in a severe impact on the highway network.

## **Conclusion**

- 8.12 In conclusion the development:
- is located in an accessible and sustainable location;
  - provides a comprehensive package of sustainable transport improvements for both new residents, visitors to the site and the local community;
  - ensures safe and suitable access to the site can be achieved for all users;
  - the design of streets, parking areas, other transport elements and the content of associated standards reflects current national design guide, and the national model design code; and
  - would not result in a severe impact from the development on the transport network or on highway safety.