Reading Golf Club

Transport Assessment

On behalf of **Fairfax (Reading) Limited and Reading Golf Club Limited**

Project Ref: 45675/5510 | Rev: - | Date: December 2020

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1 Introduction

1.1.1 This Transport Assessment (TA) has been prepared by Stantec on behalf of Fairfax (Reading) Limited and Reading Golf Club Limited (hereafter referred to as the 'client'), in support of an outline planning application with all matters reserved except access for the development of land at Reading Golf Club, involving demolition of the existing clubhouse and the erection of a new residential-led scheme, including proposed provision of Community Infrastructure.

1.2 Site Location and Background

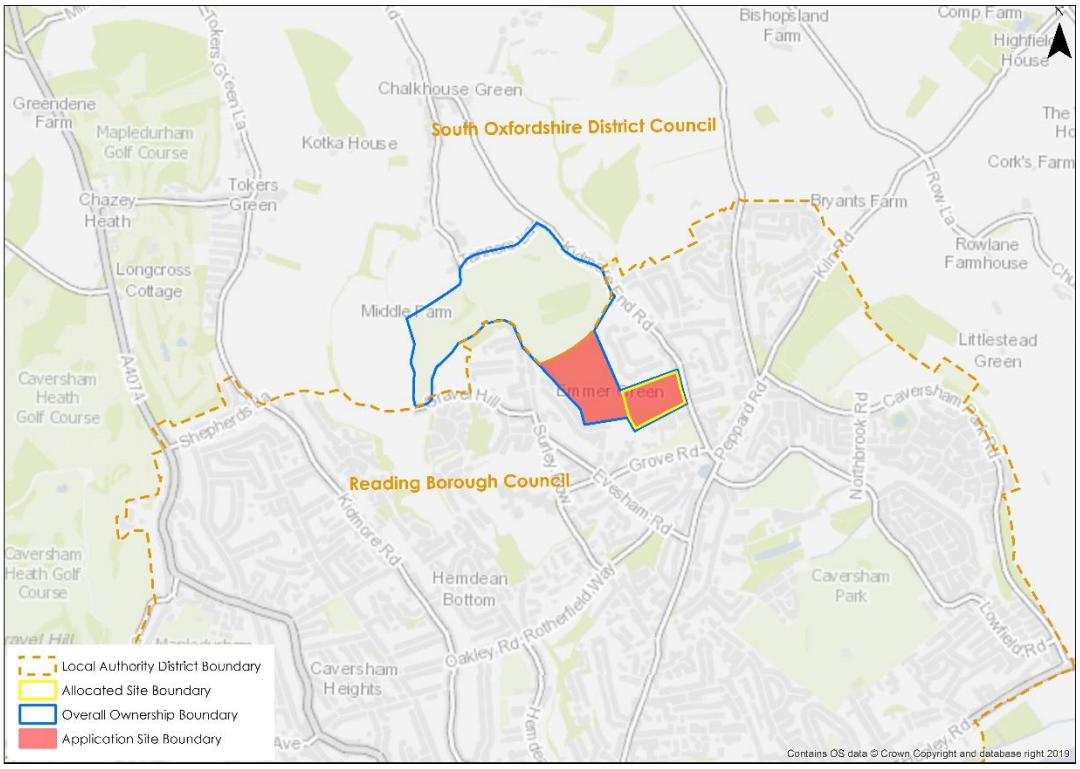
1.2.1 Reading Golf Course is located in Emmer Green, off Kidmore End Road, Reading. The golf course is 42 ha in size and straddles two local authority administrative areas, Reading Borough Council (RBC) and South Oxfordshire District Council (SODC). The application site is located entirely within RBC, who are the local planning authority responsible for planning applications where the site is located. RBC are also the local highways authority.

1.2.2 This TA has considered the illustrative masterplan, included in **Appendix A**.

1.2.3 Part of the application site is allocated for residential development in RBC's Local Plan for 90 to 130 residential homes, community provision including healthcare and replacement, clubhouse.

1.2.4 A site showing the extent of Reading Golf Course, the application site and the allocated site boundary, in relation to the wider context is shown below.

Figure 1.1: Site Location Plan



1.2.5 The scope and methodology of this TA was scoped with RBC: a Scoping Note with a summary of the overall development and the proposed scope of this TA was prepared by

Stantec and submitted to RBC in June 2019. This note, as well as any relevant correspondence with RBC's Transport Officer regarding the scope and methodology of this TA, have been included in **Appendix B** for reference.

1.2.6 A previous version of this report was submitted to RBC for planning. RBC highways development control provided comments requesting clarity and additional information. The RBC comments have been addressed in this report and on the masterplan layout. The comments and direct responses to them can be seen in **Appendix B**.

2 Policy Review

2.1.1 This section of the TA summarises transport policy relevant to the proposed development. It highlights integrated transport planning policies at national and local levels.

2.2 National Policy

National Planning Policy Framework (February 2019)

2.2.1 The National Planning Policy Framework (NPPF) was published in February 2019 and updated in June 2019. Policy has moved towards securing more sustainable outcomes with emphasis on minimising the need to travel, reducing car use and encouraging more sustainable modes of transport. In considering travel in the context of planning applications the following NPPF paragraphs are relevant:

2.2.2 Paragraph 103 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."*

2.2.3 Paragraph 111 states that *"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."*

2.2.4 Promoting Sustainable Transport section emphasises the need to plan for sustainable travel, but also to be pragmatic about the variability of transport options in different communities. This is relevant in the context of the Development, where there is an excellent provision of public transport in proximity to the site.

National Planning Practice Guidance (NPPG) - Ministry of Housing, Communities & Local Government (March 2014)

2.2.5 The NPPG is a guidance document, published in March 2014, that supports the NPPF. It provides a section on 'Travel plans, transport assessments and statements in decision-taking'. This states that TAs can positively contribute to:

- "encouraging sustainable travel;
- lessening traffic generation and its detrimental impacts;
- reducing carbon emissions and climate impacts;
- creating accessible, connected, inclusive communities;
- improving health outcomes and quality of life;
- improving road safety; and
- reducing the need for new development to increase existing road capacity or provide new roads."

2.2.6 The guidance also states that TAs should be:

- proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;
- established at the earliest practicable possible stage of a development proposal;
- be tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and
- be brought forward through collaborative ongoing working between the Local Planning Authority/Transport Authority. Engaging communities and local businesses in TAs can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities)."

2.2.7 The proposed development has been designed incorporating these principles. The design and assessment of transport and highways has been undertaken in collaboration between the design team and dialogue with RBC officers.

2.3 Local Policy

Reading Borough Local Plan (November 2019)

2.3.1 The new Reading Borough Local Plan was adopted on 4th November 2019 and sets out planning policies for development in Reading up to 2036 in order to guide development. The Local Plan succeeds the previous development plans, including the Reading Central Area Action Plan and the Core Strategy.

2.3.2 Part of the application site has been identified in Policy CA1b as a site for development of between 90 and 130 residential homes, community provision including healthcare and replacement clubhouse. The policy states that any development should;

- "Take measures to mitigate impacts on the highway network, particularly on Kidmore End Road".

2.3.3 Section 4.5 of the document outlines the Transport policies; these are based on meeting the objectives set out in the current Local Transport Plan for the period 2011- 2026.

2.3.4 Policy TR3 within the document outlines access, traffic and highway-related matters, stating;

- "Proposals involving a new or altered access onto the transport network, improvement works to the transport network, the creation of new transport infrastructure or the generation of additional trips on the transport network, consideration will be given to the effect on safety, congestion and the environment"

2.3.5 The policy further states that in order for a development to be permitted;

- "any proposed development should not have a material detrimental impact on the functioning of the transport network"

2.3.6 Policy TR4 provides guidance on cycle routes and facilities, and states;

- "Developments will be expected to make full use of opportunities to improve access for cyclists to, from and within the development and to integrate cycling through the provision of new facilities."

2.3.7 Car and cycle parking are covered within Policy TR5 of the document, outlining that developments should;

- "provide car parking and cycle parking that is appropriate to the accessibility of locations within the Borough to sustainable transport facilities, particularly public transport"

2.3.8 This is described further below within Reading Borough Council Revised Parking Standards and Design – Supplementary Parking Document (October 2011).

RBC's Climate Emergency Declaration

2.3.9 RBC declared a climate emergency on 26th February 2019. By means of announcement on their website, RBC noted the progress made by the borough since 2015 and the importance of having a Climate Action Plan. This declaration also highlighted the strategies and actions that RBC are putting in place in order to deliver a Zero Carbon future, these are:

- 'Zero Carbon Standards' within its draft Local Plan;
- The RBC Carbon Plan;
- The forthcoming consultation on options, such as a Clean Air Zone, for improving local air quality and reducing congestion prior to publishing our draft Fourth Local Transport Plan;
- The Reading Climate Change Partnership and Strategy - Reading Means Business on Climate Change; and
- The Launch of Reading Community Energy Society.

2.3.10 Particularly in terms of transport objectives, this declaration is used by RBC to call on the Government to follow the recommendations of the Committee on Climate Change and radically improve the policy framework to include more national investment in cycling and walking policies, and the expansion of public transport and car clubs using the latest zero carbon technology by working with local businesses.

Reading Borough Council Local Transport Plan 3 2011 – 2026 (April 2012)

2.3.11 The LTP3 Strategy Plan provides the context for Reading in terms of the economy, environment and quality of life. The long-term vision for transport in Reading is the aim of better 'connecting Reading' through a transport system that enables people to move around easily, safely, sustainably and in comfort promoting inclusion, intervention and innovation. This is reflected in the key LTP objectives which are:

- To facilitate more physically active travel for journeys in a healthy environment;
- To improve personal safety on the transport network;
- To provide affordable, accessible and inclusive travel options for everyone;
- To ensure that the transport network operates safely and efficiently to meet the needs of all users;
- To align transport and land use planning to enable sustainable travel choices, improve mobility, reduce the need to travel and preserve the natural environment;
- To deliver balanced packages of value for money transport solutions and make best use of existing transport investment;
- To offer sustainable transport choices for the Travel to Work Area and beyond, integrating within and between different types of transport;

- To improve journey times, journey time reliability and the availability of information; and
- To reduce carbon emissions from transport, improve air quality and create a transport network which supports a mobile, affordable low carbon future.

Reading Borough Council Revised Parking Standards and Design – Supplementary Planning Document (October 2011)

2.3.12 Parking requirements as per RBC's parking standards supplementary planning document (SPD) for the area where the development site is located are set out below:

Table 2-1: Maximum Vehicle Parking Standards (Zone 3)

Land Use	Unit Type	RBC Parking Zone 3
C3 Residential	1-bed apartment	1.5 per unit
	2-bed apartment	1.5 per unit
	3+ bed apartment	2 per unit
	1-bed house	1 per unit
	2-bed house	1.5 per unit
	3+-bed house	2 per unit
	Visitor Parking	1 space per 4 dwellings (apartments only)
D1 Clinic / Health Centre	Health Centre	3 per consulting room + 1 per FTE Staff

2.3.13 Parking associated to the development will consider the above standards. Further details are provided in Section 4.

2.3.14 In addition, this SPD sets out design requirements for parking spaces, namely:

- Parking spaces are recommended to be designed at 5000mm long x 2500mm wide, however guidance set out within 'Manual for Streets' will be considered on merit.
- Single garage: It is recommended that the internal dimensions are 7000mm long x 3000mm wide to allow easy access to/from the vehicle and sufficient storage to the rear to accommodate a bicycle.
- Double garage: It is recommended that the internal dimensions are 7000mm long x 5500mm wide to allow easy access to/from each vehicle and sufficient storage to the rear to accommodate a bicycle.
- It is recommended that parking for disabled people should not be more than 50m from the entrance to the building (100m if the route is covered). Disabled car parking spaces should be 2.4m x 4.8m plus 1.2m clearance or a footway to the side and to the rear of the space.
- Car port: It is recommended that the internal dimensions are 5000mm long x 3000mm wide to allow easy access to/from the vehicle.

RBC's Geometric Design Guidance for Residential Accesses on to Classified Roads and Commercial Access on to Adopted Roads (June 2011)

2.3.15 This document provides information on standards of highway design when access to development is required from classified roads within RBC, with the aim of not compromising highway safety.

2.3.16 The design advice included in this document has been taken into consideration with regard to the proposed site access junction for the development.

RBC's Local Cycling and Walking Infrastructure Plan (Nov 2019)

2.3.17 This document sets out plans to enhance Reading's walking and cycle network to increase walking and cycling trips across the borough.

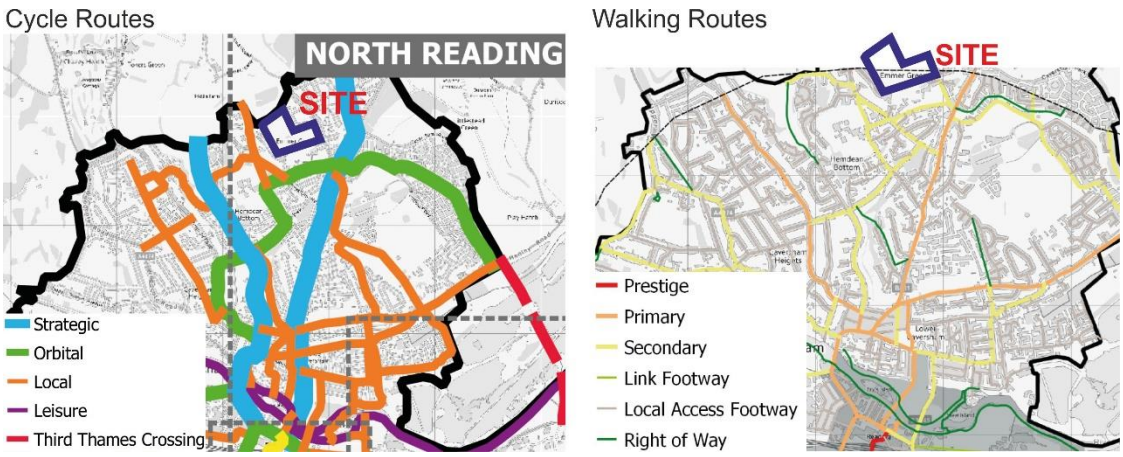
2.3.18 The site is next to a strategic cycle route on Peppard Road and an orbital cycle route along Grove Road. A local cycle route also connects directly into the site from Highdown Hill Road.

2.3.19 The site is also located between secondary pedestrian routes on Kidmore End Road, Grove Road and St Barnabas Road. The secondary link on Kidmore End Road connects to a Primary pedestrian route along Peppard Road.

2.3.20 Therefore, the site is excellently placed to enable trips on foot or by bicycle and for future residents to receive the benefits brought by Reading's plans to enhance the walking and cycling network over the next plan period.

2.3.21 Figure 2.1 is an extract from RBC's LCWIP with the sites location overlaid, illustrating the location of the site next to many walk and cycle routes planned to be enhanced by RBC.

Figure 2.1: RBC LCWIP Walk and Cycle Routes with Site Location Overlaid



source: https://www.reading.gov.uk/media/10621/RTS-2036---Local-Cycling-and-Walking-Infrastructure-Plan-Nov-2019/pdf/RTS_2036_-_Local_Cycling_and_Walking_Infrastructure_Plan_Nov_2019.pdf

RBC's Emerging Reading Transport Strategy 2036

2.3.22 This document is Reading's fourth Local Transport Plan and is currently out for statutory consultation.

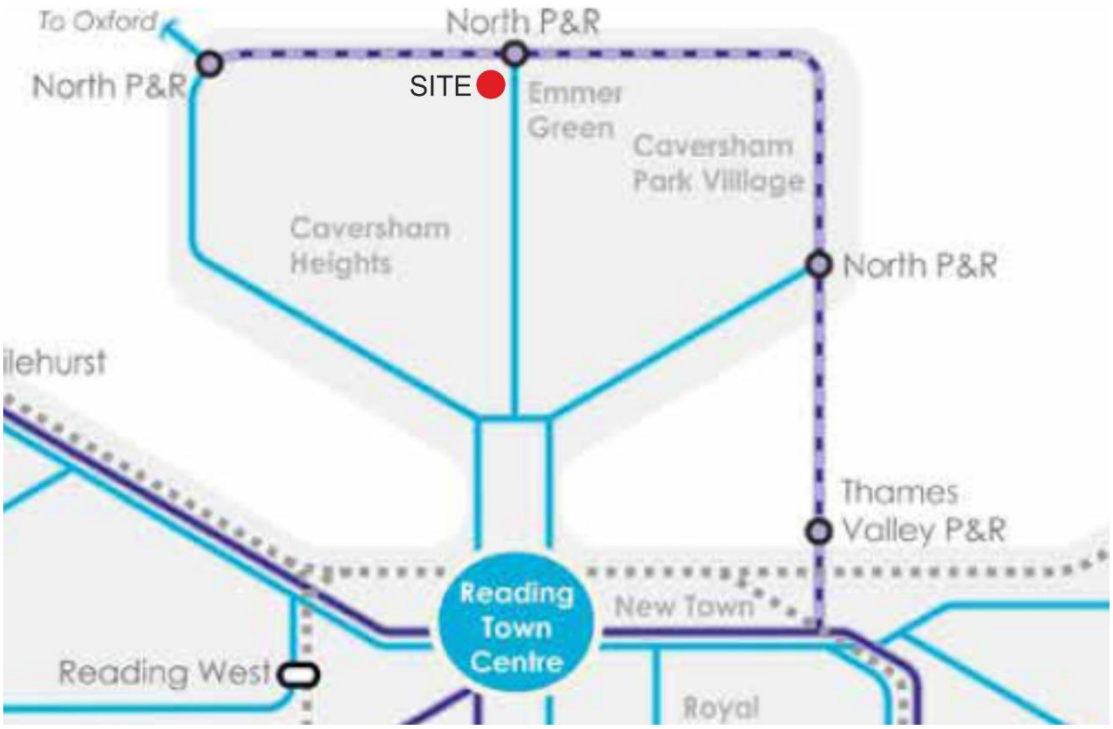
2.3.23 This document provides a vision for transport in Reading to 2036 and sets out a series of schemes and policies to achieve this vision. The strategy has a focus on sustainable travel and emphasises the benefits this can bring to people's health and climate change.

2.3.24 There are a variety of schemes, that if delivered, would provide benefits to the proposed development in terms of sustainable travel. The following schemes have potential to directly link to the site:

- North Reading Orbital Route
- North Reading Park and Rides
- Local Pedestrian Routes
- Strategic and Town Centre Cycle Routes
- Local Cycle Routes

2.3.25 Figure 2.1 is an extract from the document with the sites location overlaid. This illustrates the proximity of the site to the public transport schemes listed above.

Figure 2.1: Proposed Strategic Public Transport Network – RBC Reading Transport Strategy 2036



source: https://www.reading.gov.uk/media/10623/Reading-Transport-Strategy-2036---Consultation-Draft-May-2020/pdf/Reading_Transport_Strategy_2036_-_Consultation_Draft_May_2020.pdf

3 Baseline Conditions

3.1 Introduction

3.1.1 This chapter of the TA establishes the existing, or 'baseline', transport conditions currently prevailing at the site and within the immediate surrounding area.

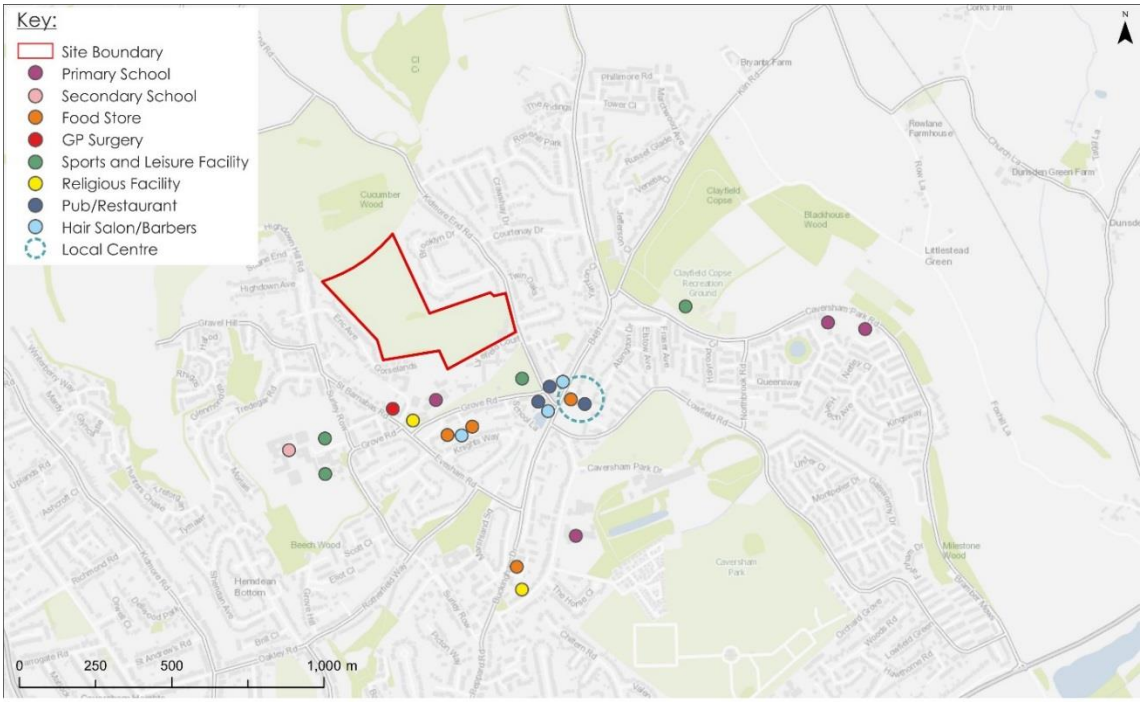
3.1.2 It is important that baseline conditions are accurately established so that the context of any potential future development at the site, and its potential impact on the surrounding transport and highway networks, can be fully understood.

3.1.3 Baseline conditions have been informed by a combination of desk-based research and on site observations.

3.1 Local Amenities

3.1.1 There are a number of local amenities within walking distance of the site, which are outlined below and illustrated in **Figure 3.1**.

Figure 3.1: Local Amenities Surrounding Development



Centres

3.1.2 Emmer Green Local Centre is located within 350m, approximately a 5-minute walk, from the site boundary and provides amenities such as:

- Post Office;
- Convenience Store;
- Express Supermarket;
- Restaurants and Take-aways, Cafes;

- Pubs;
- Barbers and beauty salon; and a
- Pharmacy.

3.1.3 Caversham District Centre is located 2.2km south of the site which can be accessed via 5 – 10-minute cycle journey and provides access to a further array of services and amenities as well as a larger supermarket.

3.1.4 Reading Town Centre is 4km from the site and approximately a 15-minute cycle journey. Bus service 23 and 24 provides direct access from the site to Reading Station and Reading Town Centre.

Leisure and Recreation

3.1.5 Emmer Green Playing Fields and Recreational Ground is found approximately 120m south of the development site, offering green space for the public in addition to general playing fields and a children's playground.

3.1.6 400m south of the site, Caversham Heights Society can be accessed providing a range of social clubs and activities that residents can participate in.

3.1.7 Approximately 1.1km east of the site, Caversham AFC, Caversham Park Tennis Club and Caversham Skatepark provide additional leisure activities which are accessible from the site.

3.1.8 To the west, Highdown Sport and Leisure Ltd and North Reading Badminton Club are located 1.0km and 1.1km away respectively.

Education

3.1.9 Emmer Green Primary School is the closest primary school to the site, located approximately 850m away by foot.

3.1.10 The nearest secondary school and sixth form is Highdown School and Sixth Form, this is located 1.1km west of the site, by foot.

Health and Medical

3.1.11 Emmer Green Surgery and District Nurse's office is within 800m the site and provides NHS services. The nearest pharmacy is a Lloyd's Pharmacy, 400m south of the site.

Distances to Local Amenities

3.1.12 **Table 3.1** provides further details on the local amenities available, in addition to the walking and cycle journey times from the site to these locations.

Table 3.1: Walking and Cycle Journey Distances to Local Amenities

Amenity Category	Name	Walking Distance	Cycle Distance
Primary School	Emmer Green Primary School	850m (10-min)	850m (3-min)
	The Hill Primary School	850m (10-min)	850m (3-min)
	Caversham Park Primary	1.5km (18-min)	1.5km (5-min)
	St Martins Catholic Primary School	1.7km (20-min)	1.7km (6-min)
Secondary School	Highdown School and Sixth Form Centre	1.1km (14-min)	1.2km (3-min)
GP Surgery	Emmer Green Surgery	850m (10-min)	850m (2-min)
Food Store	Budgens Supermarket	450m (6-min)	450m (2-min)
	True Food Community Co-op	650m (6-min)	650m (2-min)
	Tesco Esso Express	900m (11-min)	900m (3-min)
Sports and Leisure	Caversham AFC / Caversham Park Tennis Club / Caversham Skate Park	1.1km (13-min)	1.1km (4-min)
Religious Facility	St Barnabas Church	850m (10-min)	850m (2-min)
	Grace Church	1.1km (13-min)	1.1km (4-min)

3.1.13 Both **Figure 3.1** and **Table 3.1** highlight that the site is situated in a sustainable location, where an array of services and amenities can be accessed to serve the day-to-day requirements of residents and can be accessed via comfortable distances for sustainable travel modes such as walking and cycling.

3.2 Walking and Cycling Accessibility

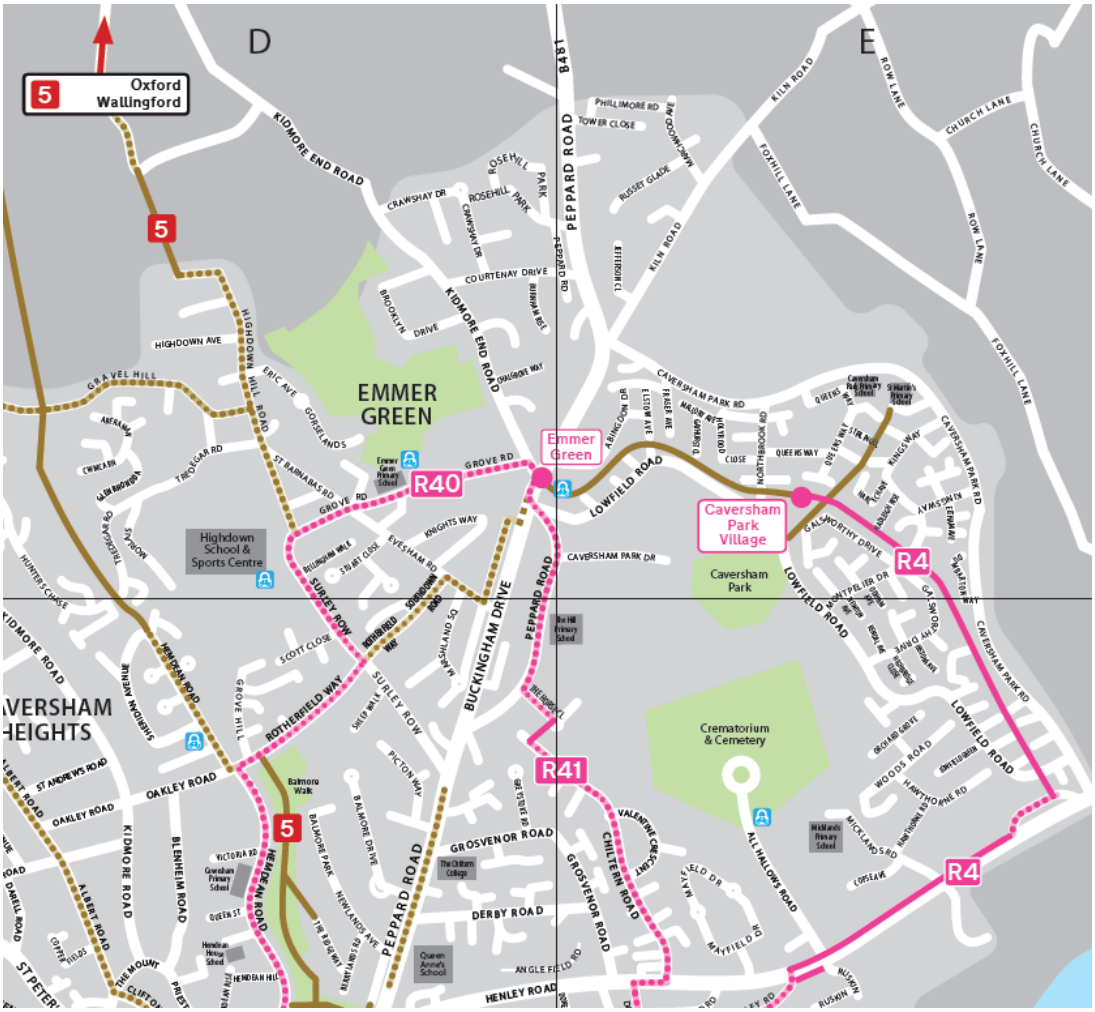
3.2.1 The site is located in a residential area with a well-connected network of streets with footways and footpaths providing access to local facilities.

3.2.2 Reading Borough Council (RBC) branded cycle routes R40 and R41 provide a connection to Reading Station and Town Centre. The station is 3.3km from the site and can be reached in approximately 15-minutes by bicycle and therefore is a realistic alternative to the car. Reading Station provides ample secure bike storage with CCTV in operation.

3.2.3 To the west of the site and travelling northbound, National Cycle Route 5 provides a connection towards Wallingford and Oxford, offering a route of leisure for new residents. The site is therefore conveniently located to access the National Cycle Network (NCN).

3.2.4 RBC's local cycle routes map is shown in **Figure 3.2**.

Figure 3.2: Local Cycle Routes

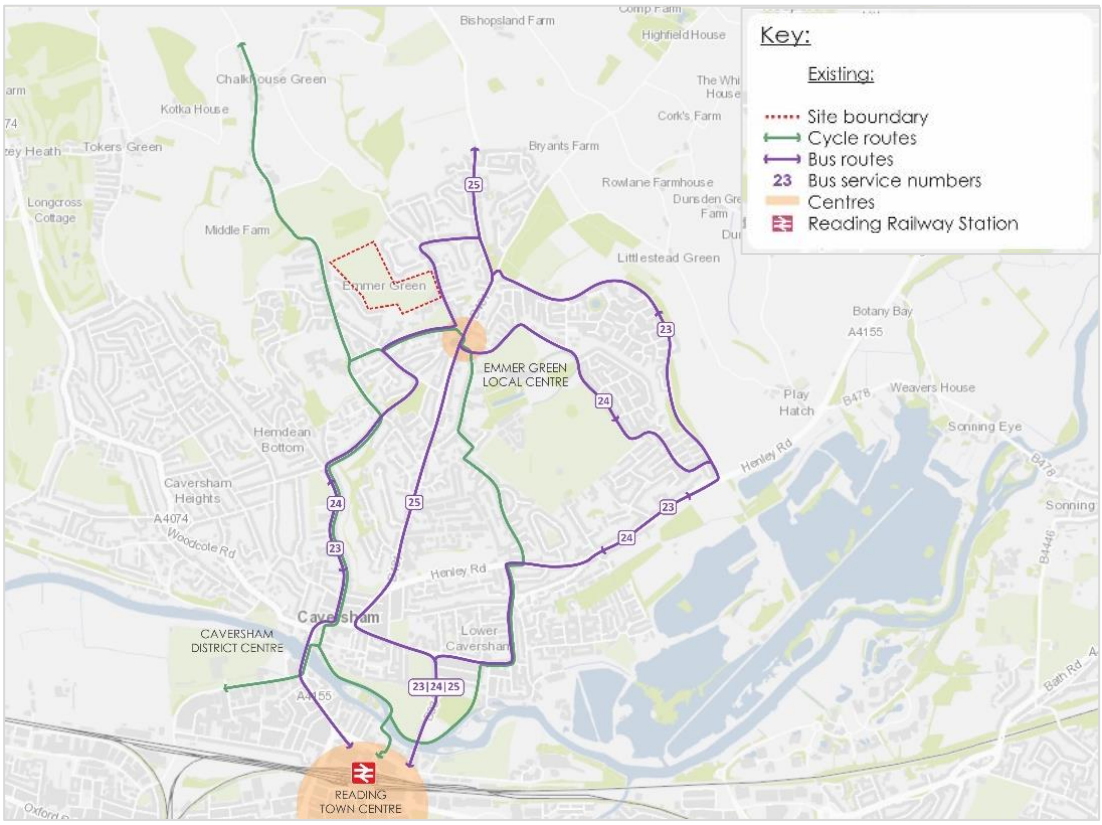


Source: http://www.reading-travelinfo.co.uk/media/12854/Reading%20Cycle%20Routes%20R4%20R40%20R41%20Oct%202011.pdf

3.3 Existing Public Transport Connections

3.3.1 A map showing the existing connections to/from the site is included in **Figure 3.3** below, whilst further information regarding these services is provided subsequently:

Figure 3.3: Public Transport Connections



Bus

3.3.2 The site has good public transport accessibility with bus services 23 and 24 routing along Kidmore End Road adjacent to the site and service 25 routing along Peppard Road. Bus stops for services 23 and 24 are located on Kidmore End Road on the eastern boundary of the site. The nearest bus stop to the site for service 25 is nearby Emmer Green local centre along Peppard Road. The services provided are summarised below in **Table 3.2**.

Table 3.2:Bus Services

Stop	Service No.	First Service	Last Service	Destination	Weekday Frequency (minutes)	Weekend Frequency (minutes)
Chalgrove Way	23	05:46	23:46	Friar Street	Every 23-30	Every 30
	24	05:27	23:22	Friar Street	Every 27-35	Every 30
Cavendish Road	25	06:00	20:39	Central Reading	Every 25-31	Every 20-60
	25	06:00	20:42	Peppard Common	Every 30	Every 60

Rail

3.3.3 Reading railway station is located 3.5km to the south of the site and provides fast and frequent services into Oxford, Basingstoke, London Paddington and other railway stations in London, and the wider regions. Reading Station provides ample secure bike storage with CCTV in operation.

3.3.4 The Elizabeth Line, currently under construction, will provide further connections between Reading and London. Elizabeth Line stopping services are now operating between London Paddington and Reading, ahead of the full scheme due to be completed in 2021, providing enhanced services from Reading through to Central London. These new services will be accessible via cycling and bus services.

3.4 Local Highway Network

Kidmore End Road

3.4.1 Kidmore End Road is a single carriageway local distributor road operating a speed limit of 30mph with one lane of traffic per direction. The road runs immediately east of the site in a north-south direction and currently provides access to the site. No parking restrictions apply along Kidmore Road in the vicinity of the site with on-street parking on the eastern side of the carriageway between the junctions of St Benet's Way and Grove Road, creating a narrowing of the road.

3.4.2 A footway is provided on the western side of Kilmore End Road, which is generally 1.5m wide and is segregated from the main carriageway by means of a 2.5m-wide grass verge. A grass verge of similar width is also provided on the eastern side of the road, however there is no footway provision on this side. Moreover, street lighting is provided along Kidmore End Road along the western side of the road.

Peppard Road

3.4.3 Approximately 300m south of the site access, Kidmore End Road connects with Peppard Road by means of a priority junction. Peppard Road is a single carriageway main distributor road which provides direct access to Emmer Green in the north and Caversham and Reading Town centre in the south. Double yellow lines indicate 'no parking at any time' restrictions along the road.

3.4.4 Footways of between 2.5-3.5m in width and street lighting are provided on both sides of Peppard Road. Additionally, a pelican crossing is provided approximately 30m south of the junction, which facilitates pedestrian movement across the road.

Study Area

3.4.5 The study area for the development, scoped with RBC, includes the following junctions:

- Golf Course Access / Kidmore End Road / Chalgrove Way;
- Grove Road / Kidmore End Road;
- Kidmore End Road / Peppard Road;
- Buckingham Drive / Peppard Road mini roundabout;
- Peppard Road / Kiln Road / Caversham Park Road; and

- Peppard Road / Prospect Street / Henley Road / Westfield Road.

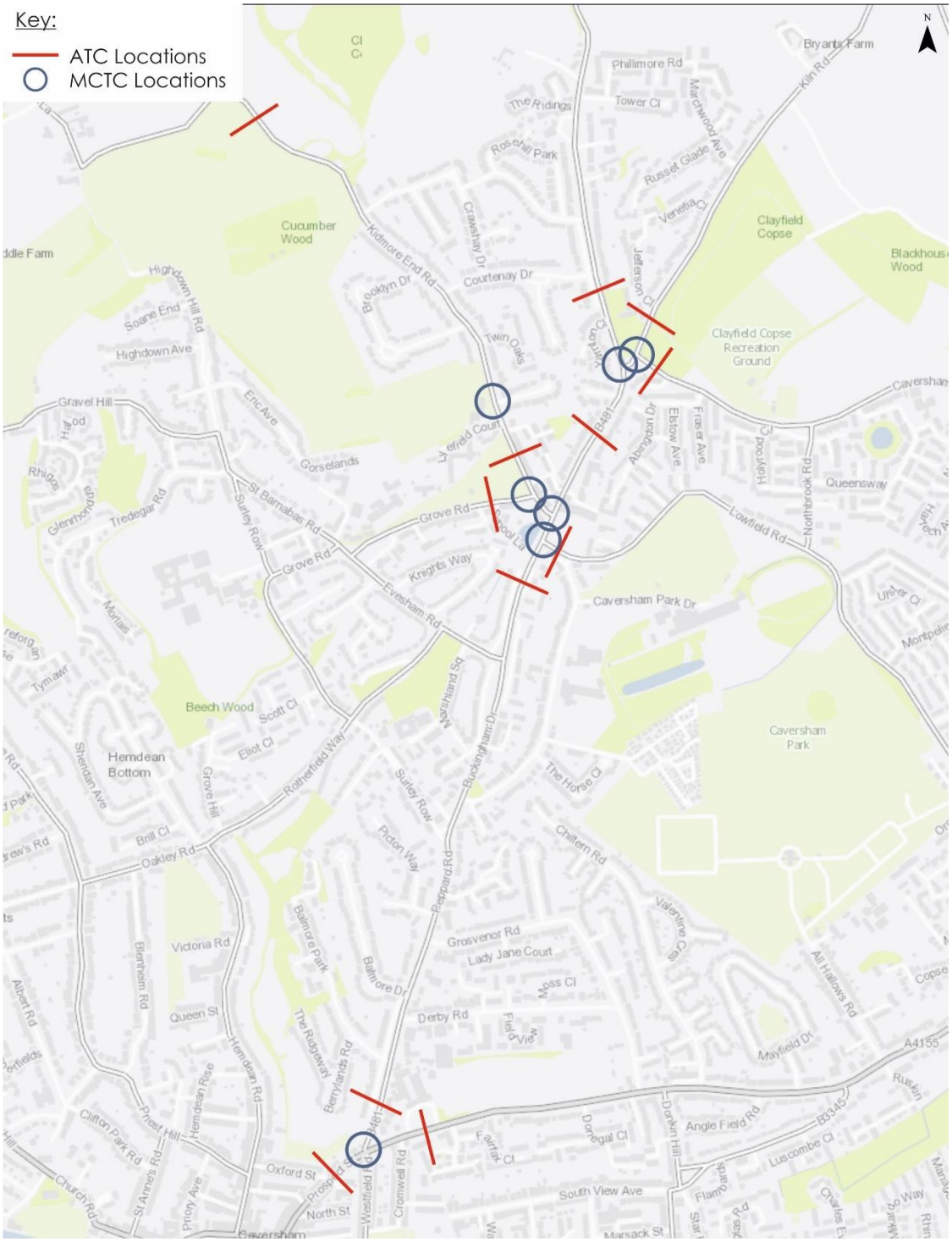
Traffic Surveys

3.4.6 Traffic surveys of the above junctions have been undertaken.

3.4.7 Traffic count survey data has been collated by means of Manual Classified Turning Counts (MCTCs) carried out on Tuesday 25th June 2019 and Automatic Traffic Counts (ATCs) between 22nd and 28th June 2019.The traffic surveys can be seen in **Appendix C**.

3.4.8 The study area, including junctions and MCTC and ATC locations can be seen in **Figure 3.4**.

Figure 3.4: ATC and MCTC Locations



3.4.9 Queue surveys were undertaken at junctions within the study area in order to validate junction models. Queue surveys were also undertaken along Kidmore End Road south of the site to determine vehicle queuing in peak hours due to parked cars along this road. Queue survey data is included within **Appendix C**.

3.4.10 **Table 3.3** shows the average delay along Kidmore End Road for cars going northbound and southbound in both AM and PM peak hours.

Table 3.3: Average Delay in Traffic Flow along Kidmore End Road

Direction of Travel	Average Delay (s)	
	AM Peak Hour 0800-0900	PM Peak Hour 1700-1800
Northbound	11	9
Southbound	7	8

3.4.11 The data indicates that the existing delay to cars travelling both northbound and southbound along Kidmore End Road in peak hours is minimal. The on-street parking acts as a form of traffic calming, slowing cars adjacent to a play area and on a walking route to primary and secondary school

3.5 Personal Injury Collisions

3.5.1 Stantec has obtained personal injury data covering the highway network surrounding the site and the junctions in the study area for the most recent three-year period from 1st October 2016 to 30th September 2019. This information was obtained from RBC and is presented in **Appendix D**

3.5.2 The collisions are classified into three categories: slight, serious and fatal, a definition of which is provided below:

- **Slight Injury**: Injuries of a minor nature, such as sprains, bruises, or cuts not judged to be severe, or slight shock requiring only roadside attention (medical treatment is not a prerequisite for an injury to be defined as slight);
- **Serious Injury**: Injuries for which a person is detained in hospital, as an in-patient, or any of the following injuries, whether or not a person is detained in hospital; fractures, concussion, internal injuries, severe cuts and lacerations, severe general shock requiring medical treatment and injuries which result in death 30 days after the accident. The serious category, therefore, covers a very broad range of injuries; and
- **Fatal Injury**: Injuries which cause death either immediately or any time up to 30 days after the accident.

3.5.3 The personal injury data has been analysed to understand if there are any existing safety issues in the proposed study area that may be adversely affected by the development proposals. **Table 3.3** provides a summary of the collision data within the study area. A plan of the accident locations is shown in **Figure 3.5**.

Table 3.3: Accident Data Summary

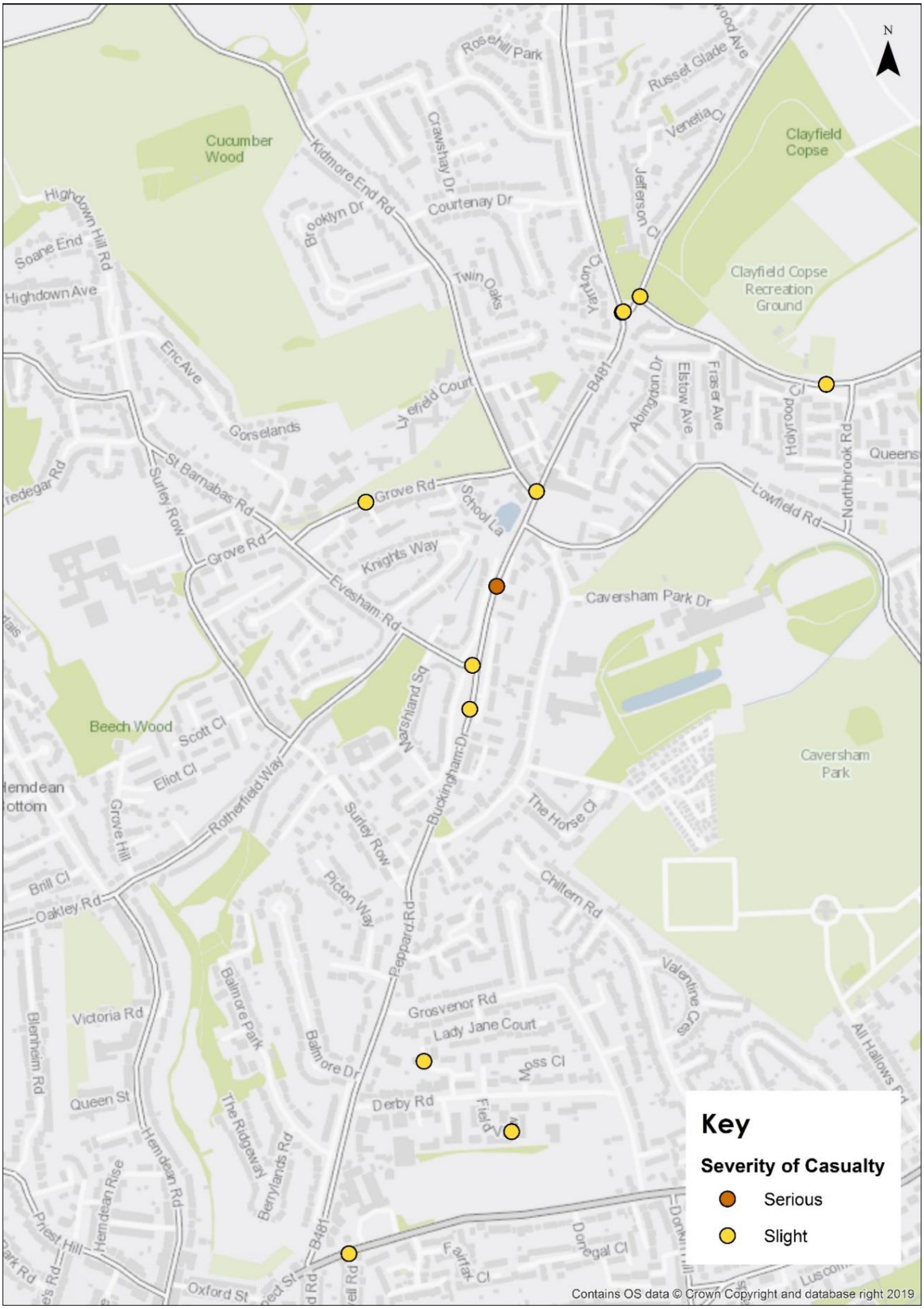
Casualty	Severity of Casualty	Year			
		1	2	3	**Total**
Total	Fatal	0	0	0	**0**
	Serious	0	0	1	**1**
	Slight	2	2	7	**11**
	Total	**2**	**2**	**8**	**12**
Pedestrian	Fatal	0	0	0	**0**
	Serious	0	0	0	**0**
	Slight	0	0	2	**2**
	Total	**0**	**0**	**2**	**2**
Cyclist	Fatal	0	0	0	**0**
	Serious	0	0	1	**1**
	Slight	0	1	1	**2**
	Total	**0**	**1**	**2**	**3**

3.5.4 **Table 3.3** shows that during the 36-month period between 1st October 2016 to 30th September 2019, there were 12 collisions resulting in 1 (8%) serious injuries and 11 (92%) slight injuries.

3.5.5 Of the accidents recorded within the 36-month time period, 5 (42%) accidents involved vulnerable road users (2 accidents involving pedestrians and 3 involving cyclists). Further analysis of these accidents concludes that each of these accidents was caused by driver error.

3.5.6 Following a detailed review of the data, no accidents appear to have been caused by highway layout and there are no clusters or accident blackspots.

Figure 3.5: Accident Data Location Plan



4 Development Proposals

4.1 Proposals

4.1.1 Planning permission is sought for an 'Outline planning application, with all matters reserved except access, for the development of land at Reading Golf Club, involving demolition of the existing clubhouse and the erection of a new residential-led scheme, including provision of community infrastructure'.

4.1.2 The current development proposals are to deliver up to 260 new residential homes and a health centre circa 600sqm. The assessment that underpins this TA is based on 260 homes and an 850sqm health centre and therefore represents a worst case assessment in terms of trip numbers. The indicative development schedule is shown in **Table 4.1**.

Table 4.1: Indicative Development Schedule

Unit Type	Number of Units
1 Bedroom Apartment	26
2 Bedroom Apartment	20
1 Bedroom Maisonette	6
2 Bedroom Maisonette	6
2 Bedroom House	40
3 Bedroom House	78
4 Bedroom House	81
Total	257

Healthcare	Size (sqm)
Health Centre	600 sqm

4.2 Access and Movement

Pedestrian and Cycle Access

4.2.1 A connected and walkable safe neighbourhood will be created with high quality links between the site and existing facilities in the local area, such as Emmer Green local centre, so that active travel is an attractive choice for residents living at the new development. Pedestrian and cycle access will be facilitated at the main vehicular site access on Kidmore End Road, and an additional access for pedestrians and cyclists at the entrance to the health centre.

4.2.2 The development will provide quiet residential streets suitable for cycling, including a 3m wide footway/cycleway along the eastern edge of the primary street. Foot/cycle paths are proposed within the development for greater permeability within the site through landscaped areas between properties. **Figure 4.1** highlights the proposed pedestrian and cycle links within the site boundary.

4.2.3 A link into Emmer Green Primary School could be provided if agreed with the school. The school can be accessed via the main access road, Kidmore End Road and Grove Road. This link is therefore not required but would provide a more direct access to the school if agreed.

4.2.4 There are also links provided into the northern end of the golf course that can be used for leisure purposes.

Figure 4.1: Pedestrian and Cycle Connections within Development

4.2.5 All streets within the development, other than the main street, will be designed as quiet roads suitable for walking and cycling.

4.2.6 The links up to the redline boundary to the north connect into land owned by the Golf Club. Informal routes will be provided, before this application is determined, through this land that connect to Highdown Hill Road and Kidmore End Road. These do not form part of this application but would provide enhanced accessibility to/from the site for pedestrians and cyclists. These links would also connect into routes included in RBC's LCWIP. A Community Infrastructure Plan is included in **Appendix K**, which shows walk and cycle links that will be delivered, and how they tie into the existing foot/cycle network. These links will be hoggin paths suitable for walking and cycling.

Vehicle Access

4.2.7 Vehicle access will be located on the eastern boundary of the site from Kidmore End Road, in a similar location to where the existing car park access to the Golf Club is located. The main all modes access design can be seen on **Drawing 45675/5510/001**. The existing northbound bus stop located on Kidmore End Road has been relocated north to accommodate the proposed site access.

4.2.8 The existing secondary access has been maintained, however it has been slightly relocated and improved to include a footway and informal crossing with tactile paving. This will provide access to the health centre and apartments above it only. This access will also form an emergency access with a droppable bollard into the site. The junction design can be seen in **Drawing 45675/5510/003**.

Public Transport

4.2.9 Bus stops are located on Kidmore End Road at the site access and are served by buses to and from Reading Town Centre and Reading Train Station (services 23 and 24) outlined in Section 3.2 of this TA.

4.2.10 Reading Buses is supportive of the principle of development as it offers to increase local bus patronage. The illustrative masterplan shows the GP Surgery adjacent to Kidmore End Road, which would be supported by Reading Buses as the current bus stops could serve both the development and health facility without amending the current service.

4.2.11 The northbound stop may need to be modified as it lies between the new site access to the south and the new GP Surgery to the north. Reading Buses would support retention of the current bus stop, but would seek to review the detail of the proposed revised location and layout, and to ensure that it offers an equal or even better level of accessibility in line with the Equalities Act and related requirements. The premise is to maintain the current accessibility to the stop (accounting for the level difference from the path to the road) and as required relocate the bench. The developer would be happy to agree the final design with RBC Highways and Reading Buses.

4.2.12 A number of options were discussed with Reading Buses. A short term option of bringing the current service into the site and using a localised loop road or a longer term proposal to maintain a 6.5m spine road which could support the extension of any current or future services into the SODC land and beyond. Reading Buses are concerned that short extensions offline can lead to impact on frequency, journey time and passenger experience, as such this would not be favoured. However, the future proofing of the scheme with a 6.5m link that could extend services into the north in the future would be prudent given the long term transport policy aspiration of RBC. Therefore, the road has been designed at 5.5m, in line with RBC design guidance, but includes a 1m verge that could be used to widen in future to enable a bus route to connect into the possible North Reading Orbital Route as set out in the Reading Transport Strategy 2036.

4.3 Cycle Parking Provision

4.3.1 Cycle parking provision on site will be in line with RBC's minimum cycle parking standards set out within the Revised Parking Standards and Design Supplementary Planning Document October 2011. Cycle parking and storage facilities will be designed with consideration for location, ease of use and security. The minimum cycle parking standards are shown in **Table 4.2.**

Table 4.2: Minimum Cycle Parking Standards

Land Use	Unit Type	RBC Parking Zone 1-4 Minimum Provision
C3 Residential	1-bed Apartment	0.5 per unit*
	2-bed Apartment	0.5 per unit*
	3+ bed Apartment	1 per unit*
	1-bed House	1 per unit
	2-bed House	2 per unit
	3+-bed House	2 per unit
D1 Clinic / Health Centre	Health Centre	1 space per 2 staff + 1 stand per consulting room

*If no individual secure facility e.g. store or garage associated with property, dedicated parking required. This can be in the form of communal cycle parking.

4.3.2 Based upon the information contained within **Table 4.1** and **4.2**, the minimum cycle parking provision for the residential units has been calculated and is provided within **Table 4.3**.

Table 4.3: Minimum Cycle Parking Provision

Unit Type	Number of Units	Number of Spaces
1-bed Apartment	26	13
2-bed Apartment	20	10
1 Bedroom Maisonette	6	6
2 Bedroom Maisonette	6	12
2-bed House	40	80
3+-bed House	159	318
Total	257	439

4.3.3 The total number of cycle spaces includes those provided within garages at residential properties.

4.3.4 When a secure facility, such as a store or garage associated within a property cannot be provided, such as within an apartment, dedicated secure cycle parking will be provided.

4.3.5 Cycle parking will be provided for the health centre in line with the above standards. Based on 5 treatment rooms and 10 FTE staff, this equates to 10 cycle parking spaces.

4.4 Car Parking Provision

4.4.1 Parking provision on the site will consider RBC's parking standards and emerging policies, shown in **Table 4.4** below. RBC use a 4-zone system, with each zone defined differently depending on typical land uses and proximity to public transport. The development is within Zone 3, defined as an area with a variety of land uses, within 400m walk of high frequency bus services.

Table 4.4: Maximum Vehicle Parking Standards (Zone 3)

Land Use	Unit Type	RBC Parking Zone 3
C3 Residential	1-bed apartment	1.5 per unit
	2-bed apartment	1.5 per unit
	3+ bed apartment	2 per unit
	1-bed house	1 per unit
	2-bed house	1.5 per unit
	3+-bed house	2 per unit
	Visitor Parking	1 space per 4 dwellings (apartments only)
D1 Clinic / Health Centre	Health Centre	3 per consulting room + 1 per FTE Staff

4.4.2 The development comprises predominantly three and four bedroom houses with garage and/or driveway parking, provided in line with RBC car parking standards. Communal parking spaces will be provided on site for apartment units.

4.4.3 Based upon the information contained within **Table 4.1** and **Table 4.4**, the maximum car parking provision for the residential units has been calculated, shown in **Table 4.5**.

Table 4.5: Maximum Car Parking Provision

Unit Type	Number of Units	Number of Spaces
1-bed apartment	26	39
2-bed apartment	20	30
1 Bedroom Maisonette	6	6
2 Bedroom Maisonette	6	9
2-bed house	40	60
3+-bed house	159	318
Visitor Parking	257	12
Total	26	

4.4.4 As per RBC's parking standards, proposed units with garages have been included in the parking provision for residential properties. A maximum of 69 spaces will be provided within communal parking areas to cater for residents of apartments who do not have access to a garage or driveway.

4.4.5 Visitor parking has been calculated based on the number of apartments provided within the development only at a ratio of 1 space per 4 dwellings.

4.4.6 Accessible parking will also be provided in line with RBC's parking standards (5% of the total parking capacity). Accessible parking provision typically excludes residential developments, and therefore the number of spaces has been calculated based upon the number of spaces required for apartments and for the health centre. Based upon the above information, a minimum of 5 of the parking spaces for the apartments will be accessible spaces and 2 for the health centre.

4.4.7 For the purpose of this TA, the health centre has been assumed to have 5 treatment rooms and 10 FTE Staff.Based on the RBC standards, it is assumed that the facility will require 25 spaces (15 for the treatment rooms and 10 for staff). These have been provided and can be seen on the masterplan. In any event, the facility will be delivered with the appropriate parking levels required by RBC parking standards.

Electric Vehicle Charging

4.4.8 Policy TR5 of RBC's Local Plan (2019) states that developments should make the following provision for electric vehicle charging points:

- "All new houses with dedicated off-street parking should provide charging points"; and
- "Within communal car parks for residential or non-residential developments of at least 10 spaces, 10% of spaces should provide an active charging point".

4.4.9 Based upon the guidelines set out in the Local Plan, the development will provide an active charging point for electric vehicles at all houses that have dedicated off-street parking.

4.4.10 8 active charging points will be located within communal parking areas for the apartments and 3 active charging points will be provided for the health centre parking.

Car Club

4.4.11 The site will provide for a car club vehicle. Confirmation from local car club providers Co-Wheels will determine the demand for new car club spaces in this area. This will be determined through reserved matters applications but at least one space will be provided.

Refuse, Servicing and Delivery

4.4.12 Through Reserved Matters applications, the masterplan will be designed to accommodate appropriate vehicles used for servicing and deliveries. **Drawing 5674/5501/002** shows the vehicle swept path of an RBC standard refuse vehicle and 10m rigid truck entering and exiting the development via the proposed site access.

5 Person Trip Analysis

5.1 Residential Person Trip Generation

5.1.1 The Trip Rate Information Computer System (TRICS) database version 7.7.1 has been used to calculate the proposed trip rate and subsequent trip generation for the proposed residential development. The following parameters were selected in TRICS:

- Residential: Houses Privately Owned;
- No sites within Greater London, Scotland, Wales, Northern Ireland or Ireland;
- 50 to 650 dwellings;
- Most recent 10-year period: 01/03/09 – 01/03/19;
- Location category: Suburban Area and Edge of Town; and
- Surveys include weekdays Monday – Friday.

5.1.2 These criteria resulted in the selection of 24 sites. Some sites have been manually removed from the assessment, e.g. bungalows as these could be retirement properties and are not considered representative of the site. From this, 3 sites have been excluded from the calculation. The site results in the residential person trip rates are set out in **Table 5.1**. TRICS outputs are included in **Appendix E.**

Table 5.1: Residential Person Trip Rates

Time Period	Person Trip Rates			Person Trip Generation (260 homes)		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
AM Peak (08:00 – 09:00)	0.187	0.743	0.930	49	193	242
PM Peak (17:00 -18:00)	0.596	0.243	0.839	155	63	218

Person Trip Purpose

5.1.3 The trip demands and patterns for the total residential person trips have been considered by trip purpose, based on the Department for Transport (DfT) National Travel Survey (NTS) Table NTSS0502 *Trip Start Time by Trip Purpose (Monday to Friday only) 2014/2018* which is included in **Appendix F**.

5.1.4 The trips have been considered under the following trip purposes:

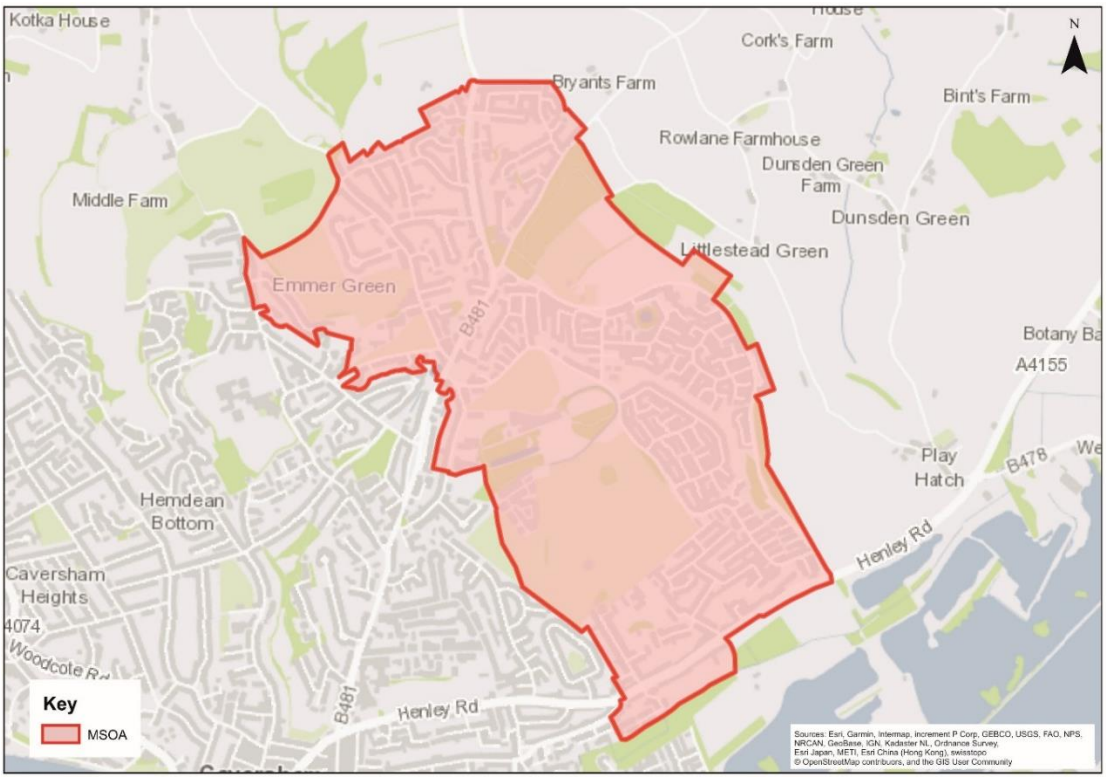
- Commuting;
- Business;
- Education;
- Escort Education;
- Retail;

- Other Personal Business and Escort;
- Visiting Friends / Entertainment / Sport; and,
- Holidays / Day Trip / Other

5.1.5 The NTS data incorporates all education types into one group. These have been separated into primary, secondary and tertiary education using the following method:

- The 2011 Census Age by Single Year dataset has been used to calculate the likely proportion of primary (ages 4 to 10), secondary (ages 11 to 15) and tertiary (ages 16 to 17), aged children based on the Middle-layer Super Output Area (MSOA) Reading 001, illustrated in **Figure 5.1**.

Figure 5.1: MSOA Reading 001



- The census data shows that 50% of children are primary school age, 38% are secondary school age and 12% are tertiary school age in this area.

5.1.6 Escort education trips are also all grouped together in the NTS. Table NTS0613 (included in **Appendix F**) gives the proportion of primary (3%) and secondary (37%) school aged children that travel to school alone. It is assumed, as other data is not available, that 37% of tertiary education aged children also travel alone.

5.1.7 This has been used to calculate the proportion of primary (97%) and secondary/tertiary (63%) school children that travel with an escort.

5.1.8 The proportion of primary (50%), secondary (38%) and tertiary (12%) school aged children calculated above has been combined with the proportions travelling with an escort and the person trip rates for each, to give the following split for residential trips with an escort education trip purpose:

- Primary escort education trips: 61%
- Secondary escort education trips: 29%
- Tertiary escort education trips: 10%

5.1.9 **Table 5.2** shows the peak hour residential trip purposes taken from NTSS0502, with the ratios calculated above applied for Education and Escort Education trips.

Table 5.2: Peak Hour Residential Trip Purposes

Purpose	%	
	AM Peak Hour 0800-0900	PM Peak Hour 1700-1800
Employment	20%	32%
Business	3%	4%
Education Primary Secondary Tertiary	29% 14% 11% 4%	3% 1% 1% 0%
Escort Education Primary Secondary Tertiary	22% 11% 8% 3%	2% 1% 1% 0%
Retail	4%	12%
Other Personal Business and Escort	18%	24%
Visiting Friends/ Entertainment/ Sport	3%	20%
Holiday/ Day Trip/ Other	4%	7%

5.1.10 The trip purposes shown in **Table 5.2** apply two-way trips for AM and PM peak. However, it is considered that trip purpose will vary by arrivals and departures. Trip purposes, split by time and arrivals/departures, have been calculated based upon the data included in **Table 5.1** and the following assumptions:

- It has been assumed that there will be no residential person trips with an education purpose arriving at their home in the AM peak hour (08:00-09:00) or departing from their home in the PM Peak hour, as all trips with an education purpose are assumed to be school pupils travelling to and from school.
- To provide a robust assessment, it is assumed that all PM peak hour (17:00-18:00) escort education trips are arrivals; these are assumed to be parents returning from work and picking their child up from after school clubs.
- 12.3% of people employed in the UK work night shifts (see evidence from the Trade Union Congress included within **Appendix G**), and therefore in the AM peak hour, it is assumed that 12.3% of trips with an employment trip purpose will be arrival trips, and 87.7% will be departure trips.

5.1.11 **Table 5.3** and **Table 5.4** show the directional trip purposes for the AM and PM peak hours. The resulting person trips for the residential development are also shown.

Table 5.3: AM Peak Purpose Trips

Purpose	AM Peak %			AM Peak Person Trips		
	Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
Employment	12%	22%	20%	6	43	49
Education Primary Secondary Tertiary	0% 0% 0% 0%	36% 18% 14% 4%	29% 14% 11% 4%	0 0 0 0	70 35 26 9	70 35 26 9
Escort Education Primary Secondary Tertiary	39% 19% 14% 5%	18% 9% 7% 2%	22% 11% 8% 3%	19 9 7 2	35 18 13 4	54 27 20 7
Retail	7%	3%	4%	3	6	10
Other Business, Personal Business and Escort	30%	14%	18%	15	28	42
Visiting Friends/ Entertainment/ Sport	6%	3%	3%	3	5	8
Holiday/ Day Trip/ Other	6%	3%	4%	3	6	9
Totals	-	-	-	49	193	242

*numbers may not sum due to rounding

Table 5.4: PM Peak Purpose Trips

Purpose	PM Peak %			PM Peak Person Trips		
	Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
Employment	32%	34%	32%	49	22	71
Education Primary Secondary Tertiary	4% 2% 1% 0%	0% 0% 0% 0%	3% 1% 1% 0%	6 3 2 1	0 0 0 0	6 3 2 1
Escort Education Primary Secondary Tertiary	3% 2% 1% 0%	0% 0% 0% 0%	2% 1% 1% 0%	4 2 2 1	0 0 0 0	4 2 2 1
Retail	12%	13%	12%	18	8	26
Other Personal Business and Escort	23%	25%	24%	36	16	52
Visiting Friends/ Entertainment/ Sport	19%	21%	20%	30	13	43
Holiday/ Day Trip/ Other	7%	8%	7%	11	5	16
Totals	-	-	-	155	64	218

*numbers may not sum due to rounding

Person Trip Generation Adjustments for Residential Trips with a Secondary Escort Education Trip Purpose

5.1.12 Due to the site's location in close proximity to a secondary school (Highdown Secondary School), a review of the secondary escort education trips has been undertaken to understand where amendments should be made to the number of secondary school escort trips derived using the TRICS and NTS data.

5.1.13 Secondary education trips are assumed to travel to Highdown Secondary School, Maiden Erlegh Chiltern Edge Secondary School and the proposed secondary school to the west of Rivermead Leisure Centre (further details provided in paragraph 5.3.6).

5.1.14 Whilst the NTS data sets out that, on average, 37% of secondary education trips are escorted, we have reviewed the proportion of trips to each school that are likely to be escorted, taking into account the fact that shorter distance trips are less likely to be escorted than longer distance trips, and there are a number of secondary schools local to the site (whereas the national data, by its nature, includes areas where the nearest secondary school may be several miles away).

5.1.15 It has been assumed that 20% of children travelling to Highdown School and 50% of children travelling to Chiltern Edge will be escorted (due to the provision of a bus service that is likely to be used by the other 50% of children). For the proposed secondary school west of Rivermead Leisure Centre, it is assumed that 100% of children travelling to the school will be escorted. The distribution of secondary escort education trips is set out in paragraph 5.3.10.

5.1.16 **Table 5.5** and **Table 5.6** show the distribution of secondary education trips and the adjusted escort education trips to each secondary school.

Table 5.5: Distribution of Secondary Education Trips

Secondary School	% Distribution	AM			PM		
		Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
Highdown School	50%	0	13	13	1	0	1
Maiden Erlegh Chiltern Edge	25%	0	7	7	1	0	1
Proposed Secondary School	25%	0	7	7	1	0	1

Table 5.6: Adjusted Secondary Escort Education Trips

Secondary School	% of Children	% of Children Escorted	AM			PM		
			Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
Highdown School	50%	20%	0	3	3	0	0	0
Maiden Erlegh Chiltern Edge	25%	50%	0	3	3	0	0	0
Proposed Secondary School	25%	100%	0	7	7	1	0	1

5.1.17 Comparing Table 5.6 to Tables 5.3 and 5.4 shows, that following the adjustments, there is a decrease in AM secondary escort education trips of 8 trips, and a decrease in PM secondary escort education trips of 1 trip.

Summary

5.1.18 The revised person trip generation by trip purpose is shown in **Table 5.7** and **Table 5.8**, accounting for the adjusted escort education trips calculated above.

Table 5.7: Residential AM Peak Purpose Trips for Assessment

Purpose	AM Peak Person Trips		
	Arrive	Depart	Two-Way
Employment	6	43	49
Education Primary Secondary Tertiary	0 0 0 0	70 35 26 9	70 35 26 9
Escort Education Primary Secondary Tertiary	19 9 0 2	35 18 12 4	54 27 13 7
Retail	3	6	10
Other Business, Personal Business and Escort	15	28	42
Visiting Friends/ Entertainment/ Sport	3	5	8
Holiday/ Day Trip/ Other	3	6	9
Totals	41	192	235

*numbers may not sum due to rounding

Table 5.8: Residential PM Peak Purpose Trips For Assessment

Purpose	PM Peak Person Trips		
	Arrive	Depart	Two-Way
Employment	49	22	71
Education Primary Secondary Tertiary	6 3 2 1	0 0 0 0	6 3 2 1
Escort Education Primary Secondary Tertiary	4 2 1 1	0 0 0 0	4 2 1 1
Retail	18	8	26
Other Personal Business and Escort	36	16	52
Visiting Friends/ Entertainment/ Sport	30	13	43
Holiday/ Day Trip/ Other	11	5	16
Totals	154	64	217

*numbers may not sum due to rounding

5.2 Health Centre Person Trip Generation

5.2.1 The TRICS database version 7.7.1 was used to calculate the proposed trip rate and subsequent trip generation for the healthl centre. The following parameters were selected in TRICS:

- Health: GP Surgeries;
- No sites within Greater London, Scotland, Wales, Northern Ireland or Ireland;
- 200 to 1,500 sqm GFA;
- Most recent 10-year period: 01/03/09 – 01/03/19;
- Location category: Suburban Area and Edge of Town; and
- Surveys include weekdays Monday – Friday.

5.2.2 These criteria resulted in the selection of eight sites. The proposed person trip rates generated by the health centre are set out in **Table 5.9**. TRICS outputs are included in **Appendix E**.

Table 5.9: Health Centre Person Trip Rates

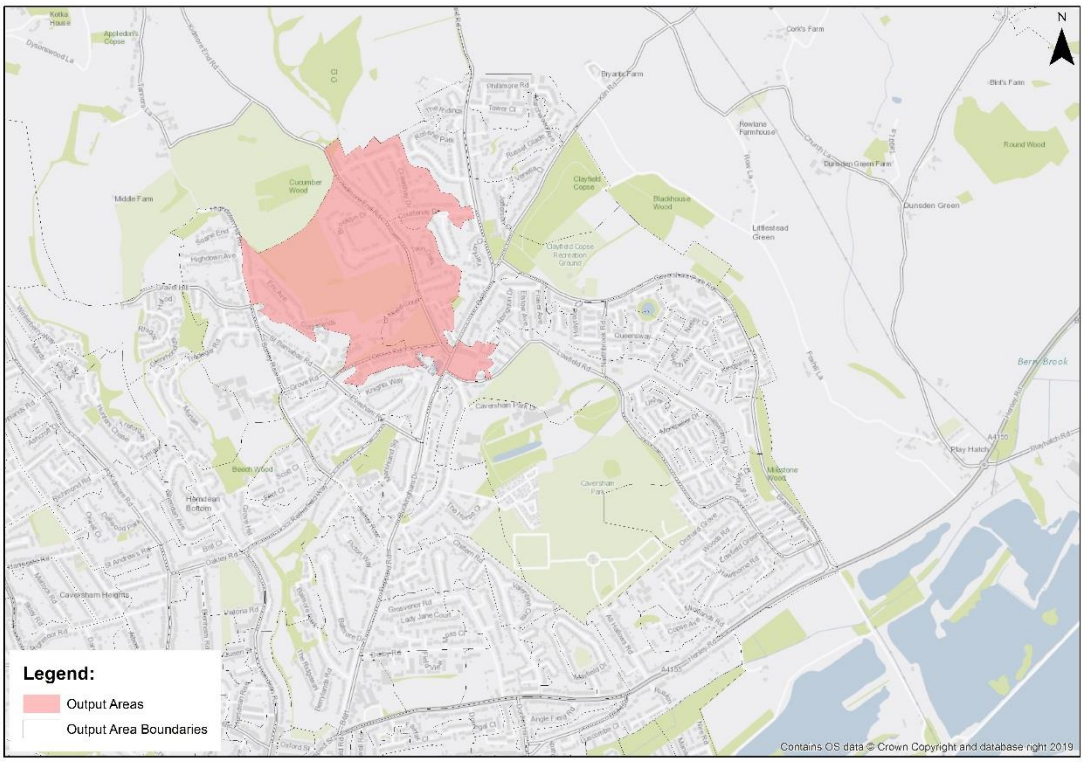
Time Period	Person Trip Rates			Person Trip Generation (260 homes)		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
AM Peak (08:00 – 09:00)	6.583	3.652	10.235	56	31	87
PM Peak (17:00 -18:00)	2.848	4.416	7.264	24	38	62

5.3 Residential Person Trip Distribution

Employment

5.3.1 Trips have been distributed using 2011 Census Travel to Work (TTW) data Output Area (OA) level data for OAs E00082891, E00082893, E00082894 and E00082899, shown in **Figure 5.2**.

Figure 5.2: Output Areas



Education

5.3.2 Education trips have been distributed manually to the nearest schools to the development site, as set out below.

Primary

5.3.3 Due to its close proximity to the development site, it is assumed that all primary school trips will travel to Emmer Green Primary School.

Secondary

5.3.4 It is assumed that 50% of education trips will be assigned to Highdown Secondary School, the closest secondary school to the site. The remaining 50% of secondary school trips are assumed to be split evenly between Maiden Erlegh Chiltern Edge and the proposed secondary school located west of Rivermead Leisure Centre. Current information suggests this school could open in September 2021, prior to occupancy of the first homes at Reading Golf Course.

Tertiary

5.3.5 Due to the wide selection of tertiary education available in Reading and the wider area, at sixth forms, colleges and apprenticeships, tertiary education trips are likely to be spread across a wide area, rather than to a small number of destinations. Therefore, these trips will be distributed based on Travel to Work 2011 Census data.

Escort Education

Primary

5.3.6 All primary escort education trips will travel to Emmer Green Primary School as this is where all primary school pupils are anticipated to travel to.

Secondary

5.3.7 It has been assumed that 20% of children travelling to Highdown School and 50% of children travelling to Chiltern Edge will be escorted (due to the provision of a bus service that is likely to be used by the other 50% of children). For the proposed secondary school west of Rivermead Leisure Centre, 100% of children travelling to the school have been assumed to be escorted.

5.3.8 The distribution of secondary escort trips is shown in **Table 5.10** below.

Table 5.10: Escort Education Trip Percentages

Secondary School	% of Children	% of Children Escorted	% Secondary Education Escorted Trips
Highdown	50%	20%	21%
Maiden Erlegh Chiltern Edge	25%	50%	26%
Proposed Secondary School	25%	100%	53%

Tertiary

5.3.9 Tertiary escort education trips are all assumed to be made by car, and therefore have been distributed using 2011Census TTW distribution data for car trips only.

Other

5.3.10 All other trips have been distributed based on TTW data as trips will vary from local to wider areas

5.3.11 Other trip purposes include the categories:

- Other Personal Business;
- Other Escort;
- Visiting Friends, Entertainment and Sports; and,
- Holiday, Day Trip and Other

5.3.12 It is acknowledged that Census TTW data covers employment trips only. However, It is likely that trips with education, retail or visiting friends / sports / entertainment purpose would travel locally to Reading, whilst trips with a holiday / day trip purpose would likely travel further across country. Other personal business and escort trips are assumed to be a mix of wider and local trips. Therefore, it is considered that utilising the TTW data, on average, would provide reasonable representation of these trip purposes as this will give a balanced distribution and worst-case scenario both locally and within the wider area.

5.4 Health Centre Trip Distribution

5.4.1 The catchment area for the health centre is assumed to be the same as the existing Emmer Green Surgery which covers the Caversham area.

5.4.2 It is assumed that a proportion of patients to the new health centre would be from the proposed development. To acknowledge this internal trip generation between new homes on site and the health centre it is assumed that the new health centre would cater for a similar number of patients as Emmer Green Surgery and that all new residents of the development would register at the new health centre.

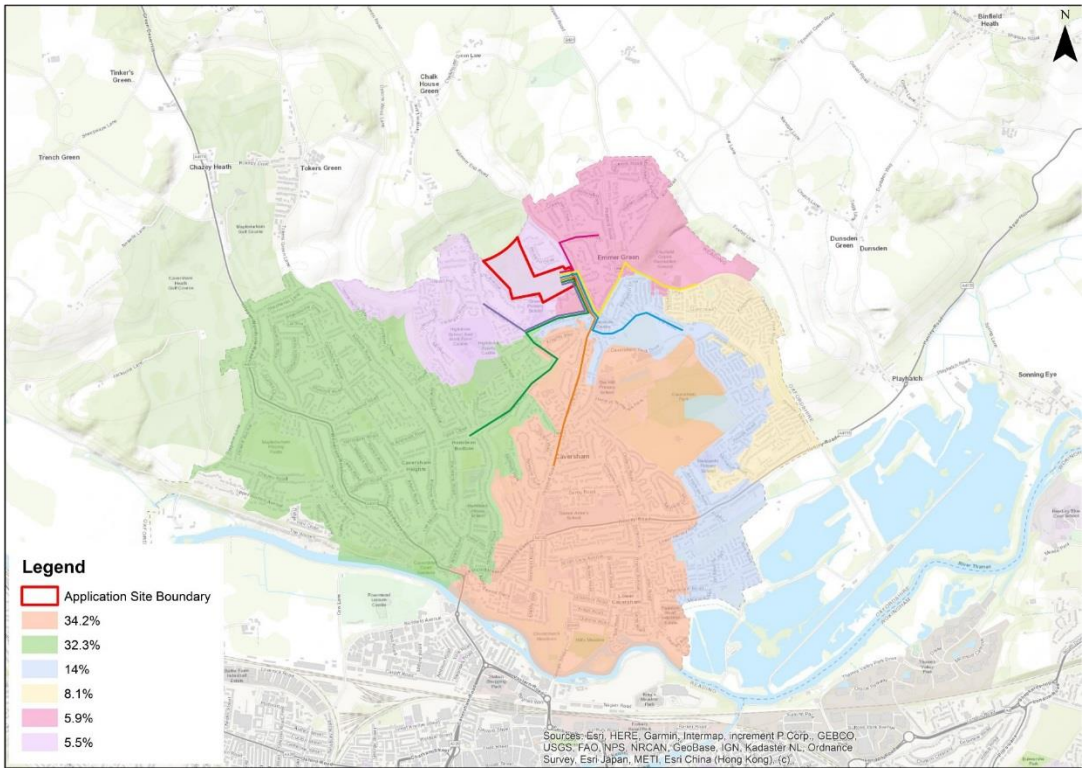
5.4.3 Based on information on the NHS website, Emmer Green Surgery has 10,910 registered patients. Therefore, for the purpose of this assessment, is assumed that the new health centre would cater for approximately 10,000 patients.

5.4.4 The population and housing numbers for Reading 001 MSOA have been extracted from Census 2011 to determine how many people may live at the site once fully developed. This shows that 7,781 people live in 3,205 dwellings which equates to an average household of 2.43 people. Therefore, for the purpose of this assessment it is assumed that approximately 850 people could live at the development.

5.4.5 Based on the above, it is assumed that 9% of patients will be from the new development.

5.4.6 The remaining 91% of person trips will be manually distributed based on key routes to the site from north Reading to the health centre as set out in **Figure 5.3**.

Figure 5.3: Health Centre Person Trip Distribution



5.5 Residential Trip Mode Share

Employment Trip Purpose

5.5.1 Origin-destination mode share data from the 2011 Census is only available at Middle-layer Super Output Area (MSOA) level and above. Therefore, the corresponding MSOA for each destination OA has been determined to allow mode share to be calculated.

5.5.2 **Table 5.11** summarises the overall mode share calculated for residential trips to employment.

Table 5.11: Overall Residential to Employment Trip Mode Share

Method of Travel to Work	Mode Share %
Train	7%
Bus	9%
Taxi	0%
Motorcycle	1%
Car Driver	67%
Car passenger	5%
Pedestrian / Cyclist	11%
Other	0%
Total	100%

Education Trip Purpose

Primary

5.5.3 Due to the short distance between the development site and Emmer Green Primary School, it is assumed that all primary education trips will be undertaken by walking or cycling.

Secondary

5.5.4 Of the 50% of secondary education trips to Highdown Secondary School, 80% of trips are assumed to be walk or cycle due to the close proximity to the development site, with the remaining 20% travelling as car passengers.

5.5.5 Of the 25% of secondary school trips to Maiden Erlegh Chiltern Edge, 50% of trips are assumed to be travel by bus, as there is a direct school bus service to Maiden Erlegh Children Edge Secondary School from the site to the school. The remaining 50% of trips are assumed to travel as car passengers.

5.5.6 All trips to the proposed secondary school located west of Rivermead Leisure Centre are assumed to be car passenger trips.

Tertiary

5.5.7 Mode share for tertiary education trips has been calculated based on the 2011 Census TTW data as these trips are assumed to be undertaken by a mixture of modes.

Escort Education Trip Purpose

Primary

5.5.8 All escort education trips travelling to Emmer Green Primary School are assumed to be accompanying children by either walking or cycling, as set out in paragraph 5.5.7.

Secondary

5.5.9 All escort trips to secondary schools are assumed to be undertaken by car.

Tertiary

5.5.10 All escort trips to tertiary education are assumed to be undertaken by car.

All Other Residential Trip Purposes

5.5.11 Other trip purposes include the categories:

- Other Personal Business;
- Other Escort;
- Visiting Friends, Entertainment and Sports; and,
- Holiday, Day Trip and Other.

5.5.12 Mode share for all other residential trip purposes have been calculated based on the 2011 Census TTW data as these trips are assumed to be undertaken by a mixture of modes.

5.5.13 The mode share for other journey purposes will vary. It is likely that trips with education, retail or visiting friends / sports / entertainment purpose may be made on foot, or by cycle or bus, as they are envisaged to be shorter journeys, whilst trips with a holiday or day trip purpose would likely travel by car or rail due to the longer distance. Other personal business and escort trips are assumed to be a mix of methods of travel as trip length may vary. Therefore, it is considered that utilising the TTW data, on average, would provide reasonable representation of mode share and provides origin-destination specific mode shares.

5.5.14 **Table 5.12** summarises the other trip purpose mode share as set out above.

Table 5.12: Overall Other Residential Trip Purpose Mode Share

Method of Travel to Work	Mode Share %	AM Person Trips			PM Person Trips		
		Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
Train	7%	2	4	6	7	3	10
Bus	9%	2	5	7	9	4	13
Taxi	0%	0	0	0	0	0	0
Motorcycle	1%	0	1	1	1	0	1
Car Driver	67%	16	36	52	64	28	92
Car passenger	5%	1	2	4	4	2	6
Pedestrian / Cyclist	11%	3	6	9	11	5	15
Other	0%	0	0	0	0	0	0
Total	100%	24	54	78	96	42	137

Summary

5.5.15 Based on the trip generation trip rates set out in Section 5.1, **Table 5.13** details the person trips by mode of travel to work

Table 5.13: Overall Residential Person Trip Mode Share

Method of Travel to Work	AM Mode Share %	PM Mode Share %	AM Person Trips			PM Person Trips		
			Arrive	Depart	Two-Way	Arrive	Depart	Two-Way
Train	4%	7%	2	7	9	10	5	15
Bus	6%	9%	3	12	15	14	6	19
Taxi	0%	0%	0	0	0	0	0	0
Motorcycle	1%	1%	0	1	1	1	1	2
Car Driver	44%	65%	22	75	104	99	42	141
Car passenger	8%	5%	1	17	18	8	3	11
Pedestrian / Cyclist	37%	13%	13	74	87	22	7	29
Other	0%	0%	0	0	0	0	0	0
Total	100%	100%	42	186	234	154	63	218

5.6 Health Centre Trip Mode Share

5.6.1 TRICS data for the health centre has been used as set out in Section 5.1 to determine the mode share for people travelling to and from the health centre. A car driver mode share of 60% has been calculated for two-way trips, with the majority of other users of walking to and from the health centre, and a small percentage cycling.

5.7 Vehicle Trip Assignment

5.7.1 Vehicle trips have been assigned to the local highway network using an 'all or nothing' assignment tool using CUBE software.

5.7.2 The assignment tool is a simple all or nothing assignment tool, assigning traffic to the network via the fastest route based on rush hour average speeds. The 'HERE' Traffic Patterns dataset provides average traffic speeds on individual road segments, calculated from past traffic flow measurements recorded via Bluetooth information from vehicles. The data includes the following key attributes:

- Average road speed estimates at 15-minute or 60-minute increments for each day of the week;
- Speeds are available in MPH or KPH, and;
- Average traffic speeds are calculated from past traffic flow measurements of GPS records from three car manufacturers across the country.

5.7.3 The speeds were formatted in such a way that the assessment included an AM and PM peak period based on the average speeds over the assessment time periods, using 2019 data extracted for neutral days of the week (Tuesday, Wednesday and Thursday).

5.7.4 The speeds assigned to each link are not static. This means that as part of the calibration stage, if the routes that were identified to be used by traffic are not deemed to be suitable or they are not an accurate representation of those taken, it is possible to adjust them, therefore making such routes less attractive and as such traffic will redistribute on more logical routes.

5.7.5 For this assessment the only traffic within the tool will be development-generated traffic. Delays approaching junctions are taken into account, as these would have lowered the average speed on a link, although individual turning movements are not taken into account.

5.7.6 The resulting AM and PM peak hour development traffic assignment plots are included in **Appendix H**.

5.8 Vehicle Trip Comparison

5.8.1 A comparison between peak hour vehicle trip generation for the existing use, the 130 home allocation (factoring down the 260 numbers) and the proposed 260 home development has been undertaken. The purpose of this is to provide information and context only. **Table 5.14** summarises this.

Table 5.14: Vehicle Trip Comparison

Scenario	AM Peak Hour (0800 to 0900)			PM Peak Hour (1700 to 1800)		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
Existing Golf Club	10	1	11	10	7	17
130 homes	13	38	51	49	21	70
260 homes	25	75	100	97	42	139
Health Centre	32	16	48	13	19	32

6 Sustainable Transport Strategy

6.1 Introduction

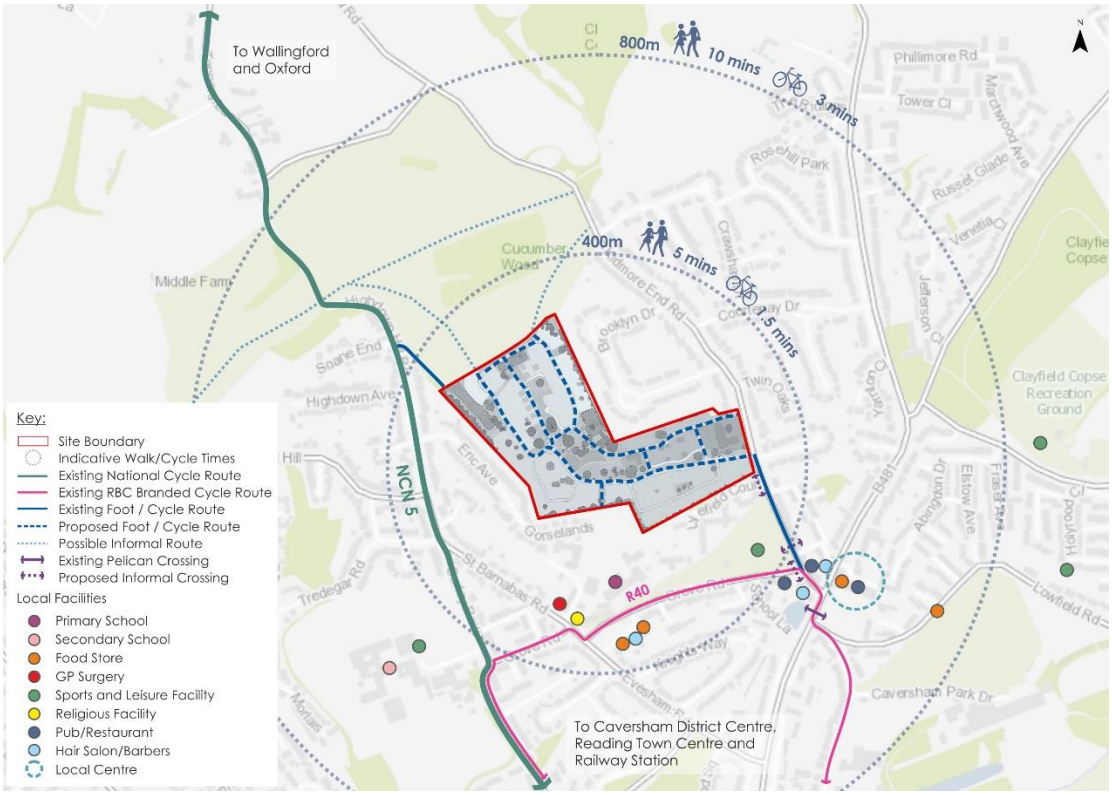
6.1.1 The site is located within a residential area that already provides good sustainable infrastructure for residents. Further improvements can be provided by the development to improve access to local facilities for residents who travel via sustainable modes.

6.1.2 As set out in section 2 of this report, RBC's Transport Strategy 2036 focusses on sustainable travel and the health benefits it provides. The site is located in a good position to benefit from planned improvements to the walking and cycling network and public transport network as part of RBC's Transport Strategy and their Local Cycling and Walking Infrastructure Plan. Therefore, through a combination of successful travel planning at the site and RBC's marketing and promotion of routes through their Transport Strategy, residents of the new development will have excellent opportunity to reap the healthy lifestyle benefits of sustainable travel.

6.2 Walking and Cycling Connectivity

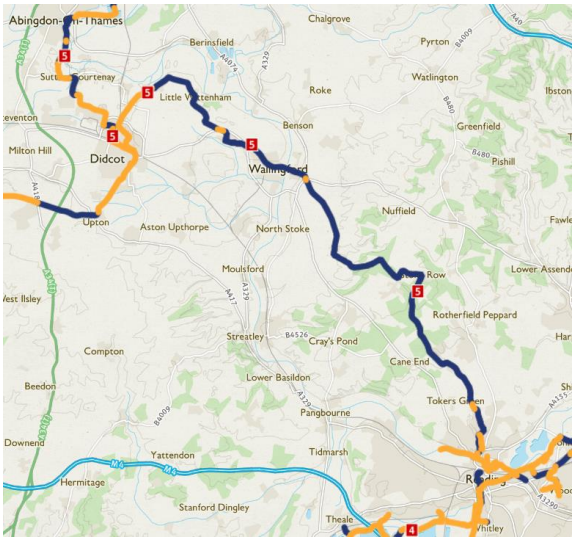
6.2.1 The development can provide sustainable connections to the open space to the north in South Oxfordshire as well as to the south to Emmer Green local centre and surrounding local facilities. **Figure 6.1** shows the site connectivity to the north and south.

Figure 6.1: Wider Sustainable Connections



6.2.2 Pedestrian and cycle links can be extended from the site, connecting to the traffic free cycle route NCN 5 to the north (see Section 4 of this report and **Appendix K**). As can be seen in **Figure 6.2**, this route connects Reading/Caversham with Didcot, Oxford and beyond to the north.

Figure 6.2: NCN 5Wider Sustainable Connections



Source https://www.sustrans.org.uk/find-a-route-on-the-national-cycle-network/route-5/

6.3 Pedestrian Infrastructure Improvements

6.3.1 A raised informal crossing, comprising a flat-top speed hump with a Duratherm herringbone imprint, is proposed on Kidmore End Road, Lyefield Court at its junction with Kidmore End Road, and on Grove Road at its junction with Kidmore End Road. Traffic calming measures such as these can improve traffic safety at the junction by slowing vehicles down when entering and exiting the junction as well as increasing visibility of pedestrians to other road uses. These informal crossings will be provided with tactile paving to facilitate the crossing of visually impaired pedestrians.

6.3.2 A concept drawing of the proposed pedestrian improvements is shown in **Drawing 45675/5501/004**.

6.4 Public Transport

6.4.1 As stated in Section 4.2, the illustrative masterplan could allow for a bus loop within the site, which would suggest that the existing bus services could be extended so that buses are able to enter and exit the development via this loop and provide a more accessible service to the residents of the development. As stated Reading Buses, would favour supporting the development in the short term via the current stops on Kidmore End Road, as this would maximise accessibility for the new development and those from the area seeking access to the new health facility.

6.4.2 As with large sections of Emmer Green, the existing bus stops are accessible to residents of the development and provide good access to bus services from all homes, even if some are more than 400m from the stop. The furthest distance to the north eastern edge of the site is 700m. Within the development high quality, overlooked, lit and surfaced walking routes to the bus stops on Kidmore End Road will be provided. Through successful travel planning, new residents living at the development will be aware of the bus services and how to access them.

6.4.3 The 400m 'rule' is taken from IHT 'providing for journeys on foot' published twenty years ago. This research is considered out of date and there are more recent studies that should be considered. White Young Green published 'How far do people walk' in 2015. This document sets out that previous guidance is outdated and has limited evidence to support the advice

given. The National Travel Survey has been used as an evidence base to assess how far people are actually willing to travel to a bus stop as part of their journey. This evidence led approach shows an 85th percentile of 800m which is recommended to be used for planning purposes.

6.4.4 In addition to this, there is a key agenda across the country regarding healthy lifestyles. People are beginning to understand the importance of the effects of healthy living, not only on their physical health but also mental health. People are more inclined to have personal health agendas and will be prepared to walk slightly further to catch a bus than advised twenty years ago.

6.4.5 The Reading Buses app provides real time information and live bus tracking to residents, so they know exactly when a bus is due to arrive. This leads to decreased waiting times at bus stops and should make residents more inclined to walk between 1 and 8 minutes (depending on where they live on the site) to access a bus stop as they are less likely to miss the bus or have to wait for an extended period of time to catch a bus.

6.4.6 Based on the information set out in paragraphs 6.4.2 to 6.4.5, the distance to bus stops at this development is not considered an issue. The provision of high quality, lit and surfaced routes, to a frequent bus service, with a bus tracking app, provides good public transport accessibility for the site.

6.4.7 The northbound stop may need to be modified as it lies between the new site access to the south and the new health centre to the north. As per Reading Buses requirements the premise is to maintain the current accessibility to the stop (accounting for the level difference from the path to the road) and as required relocate the bench. The developer would be happy to agree the final design with RBC Highways and Reading Buses.

6.4.8 If the development was extended into SODC land this could offer possible merit given the increase in patronage, noting that that the future proofing with the 6.5m spine road would at least consider the long term nature of the schemes and the future unknowns in terms of Planning and Transport policy across RBC and SODC.

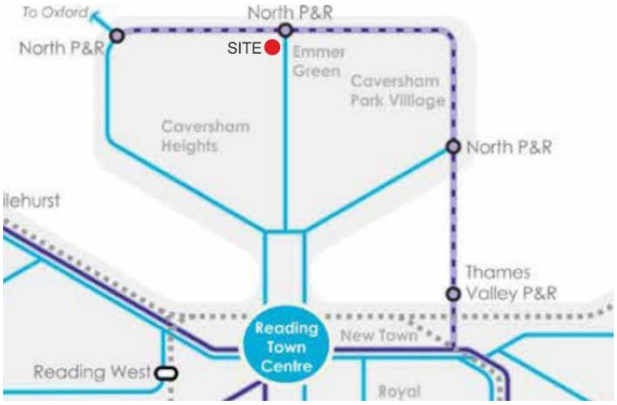
6.4.9 The future scheme could also offer additional consideration to Reading Buses, if linked to the latest RBC Local Transport Plan proposals as listed in Section 3.2.22 to 25, which shows the northern peripheral road within South Oxfordshire which links A4074 with the A4155 and Third Bridge. The future proofing of the current road link would maximise the future options for increasing public transport accesses to the area of North Caversham.

6.5 Future Policy Considerations

6.5.1 Within Section 2 of this report, RBC's Local Cycling and Walking Infrastructure Plan (Nov 2019) and Emerging Reading Transport Strategy 2036 are defined. The cycling aspects and connectivity to the proposed site have already been addressed in the previous sections of this report.

6.5.2 The emerging transport policies are aspirational and long term, however the site is excellently placed to enable trips on foot or by bicycle and for future residents to receive the benefits brought by Readings plans to enhance the walking and cycling network over the next plan period.

Figure 6.3: Proposed Strategic Public Transport Network



source: https://www.reading.gov.uk/media/10623/Reading-Transport-Strategy-2036---Consultation-Draft-May-2020/pdf/Reading_Transport_Strategy_2036_-_Consultation_Draft_May_2020.pdf

6.5.3 As the site has sought to be future proofed with respect to public transport, it offers additional benefits not only to the development, but other residents in the area, as there would be scope to consider current and future public transport services through the site.

6.5.4 The site would look to promote the vision for transport as per the 2036 plan and look to maximise the opportunities for sustainable travel and emphasises the benefits this can bring to people's health and climate change.

7 Highway Impact

7.1 Study Area

7.1.1 Detailed junction assessments have been undertaken on the following junctions within the agreed study area:

- Golf Course Access / Kidmore End Road / Chalgrove Way;
- Grove Road / Kidmore End Road;
- Kidmore End Road / Peppard Road;
- Buckingham Drive / Peppard Road mini roundabout;
- Peppard Road / Kiln Road / Caversham Park Road; and
- Peppard Road / Prospect Street / Henley Road / Westfield Road.

Figure 7.1: Junction Locations – Capacity Assessment Study Area

7.2 Scenarios

7.2.1 The capacity impacts of development traffic have been assessed at each of the junctions within the study area for the following scenarios:

- **Base Year:** 2019 surveyed flows;
- **Future Base:** Existing 2019 surveys flows plus background traffic growth to year of full occupation 2026; and
- **Future Base + Development:** Existing 2019 surveyed flows plus background traffic growth to year of full occupation 2026 plus full development (260 homes and 850sqm health centre).

7.3 Background Traffic Growth

7.3.1 TEMPro 7.2 and the NTM AF15 Dataset have been used to determine growth factors for background traffic. growth rates calculated have bene used to inform the capacity assessments in the TA, based on Reading's MSOA area 001.

7.3.2 The calculated growth rates have been manually adjusted to take into account the background growth generated from the Reading Golf Course development itself, and therefore 260 households were removed from the 'future year' growth.

7.3.3 The factors calculated from TEMPro including the adjusted future year households are summarised in **Table 7.1**.

Table 7.1: TEMPro Growth Factors 2019 to 2026

Growth Period	Road Type	AM 07:00 – 09:59	PM 16:00 – 18:59
2019-2026	Urban Principal	1.0519	1.0446

7.4 Capacity Assessments

7.4.1 Stand-alone capacity models of the junctions have been produced using appropriate industry standard software (Junctions 9 and LinSig). These have been validated against the traffic surveys and on-site observations and used to assess development traffic impact.

7.4.2 Base year modelled turning flows have been taken from the traffic surveys presented in **Section 3.4**.

7.4.3 The proposed trip generation, distribution and assignment detailed in **Section 5** have been used to generate turning flows for the future year assessment. Traffic flow diagrams are included in **Appendix H.**

7.4.4 Traffic flows for all future year scenarios have been factored up using the TEMPro growth rates presented in **Section 7.3**.

Kidmore End Road

7.4.5 As stated in Section 3, there is minimal existing delay on Kidmore End Road due to on-street parking and the subsequent narrowing of the road. A viable scheme was considered to reduce the impact of the proposed development on this delay, involving widening the road using the existing grass verge.

7.4.6 Upon reviewing the existing queue survey data and proposed development flows, it is expected that the average delay will increase by four seconds in the AM peak hour, and five seconds in the PM peak hour following completion of the development. Therefore, considering the traffic flow and minimal increases expected to vehicle delay, widening the road and narrowing the grass verge is not considered necessary.

Golf Course Access / Kidmore End Road / Chalgrove Way

7.4.7 **Drawing 45675/5510/001** shows the proposed site access at the development. This junction has been tested using Junctions 9. The results of these assessments are summarised in **Table 7.1** with the Junctions 9 outputs included in **Appendix I.**

Table 7.1: Golf Course Access / Kidmore End Road / Chalgrove Way Junction Assessment Results

	AM Peak Hour 0800 - 0900			PM Peak Hour 1700 - 1800		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2026 Future Year + Development						
Site Access	0.2	8.79	0.17	0.1	8.30	0.11
Kidmore End Road (S)	0.0	5.20	0.00	0.0	4,98	0.01
Chalgrove Way	0.0	5.82	0.02	0.0	5.92	0.02
Kidmore End Road (N)	0.0	5.43	0.01	0.0	5.73	0.03

7.4.8 The results demonstrate that the proposed site access junction operates efficiently and causes minimal delay to traffic on Kidmore End Road.

Grove Road / Kidmore End Road

7.4.9 The junction has been tested using Junctions 9. The results of these assessments are summarised in **Table 7.2** with the Junctions 9 outputs included in **Appendix I.**

Table 7.2: Grove Road / Kidmore End Road Junction Assessment Results

	AM Peak Hour 0800 - 0900			PM Peak Hour 1700 - 1800		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2019 Base Year						
Grove Road	0.2	8.73	0.19	0.1	7.04	0.11
Kidmore End Road	0.2	6.81	0.14	0.1	6.45	0.06
2026 Future Year						
Grove Road	0.2	8.88	0.20	0.1	7.11	0.11
Kidmore End Road	0.2	6.84	0.14	0.1	6.45	0.06
2026 Future Year + Development						
Grove Road	0.3	9.38	0.23	0.2	7.58	0.13
Kidmore End Road	0.3	6.63	0.17	0.1	6.41	0.08

7.4.10 The results demonstrate that the junction currently operates efficiently, and traffic generated by the proposed development is predicted to causes minimal delay to traffic at this junction.

Kidmore End Road / Peppard Road

7.4.11 The junction has been tested using Junctions 9 software and the results of these assessments are summarised in **Table 7.3** with the Junctions 9 outputs included in **Appendix I.**

Table 7.3: Kidmore End Road / Peppard Road Assessment Results

	AM Peak Hour 0800 - 0900			PM Peak Hour 1700 - 1800		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2019 Base Year						
Kidmore End Road	0.5	15.63	0.35	0.4	15.96	0.30
Peppard Road	0.1	4.55	0.06	0.1	4.53	0.08
2026 Future Year						
Kidmore End Road	0.6	16.83	0.38	0.5	16.97	0.32
Peppard Road	0.1	4.53	0.06	0.2	4.51	0.08
2026 Future Year + Development						
Kidmore End Road	1.7	30.02	0.63	1.0	24.56	0.51
Peppard Road	0.2	4.63	0.09	0.5	4.93	0.19

7.4.12 The results demonstrate that the junction currently operates efficiently, and that traffic generated by the proposed development causes minimal delay to traffic and can be accommodated at the junction in its current form of a priority T-junction.

7.4.13 Despite the capacity assessment predicting that the current design can accommodate traffic generated by the development, a mini roundabout arrangement has been designed to help better manage traffic flows and provide a form of traffic calming around the Emmer Green local centre and signalised pedestrian crossing on Peppard Road. **Drawing 45675/5510/005** shows the proposed mini roundabout.

7.4.14 The proposed junction option has been tested using Junctions 9 software and the results of these assessments are summarised in **Table 7.4** with the Junctions 9 outputs included in **Appendix I**.

Table 7.4: Kidmore End Road / Peppard Road Proposed Mini Roundabout Assessment Results

	AM Peak Hour 0800 - 0900			PM Peak Hour 1700 - 1800		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2026 Future Year + Development						
Peppard Road (S)	3.4	18.51	0.78	4.3	22.29	0.82
Kidmore End Road	0.8	13.20	0.43	0.4	9.75	0.29
Peppard Road (N)	1.2	7.70	0.55	1.3	7.64	0.56

7.4.15 The results demonstrate that changing the arrangement of the junction to a mini roundabout will not adversely affect traffic flow, with maximum queues expected along Peppard Road of three vehicles in the AM peak hour and four vehicles in the PM peak hour.

7.4.16 The results demonstrate that the existing junction or a mini roundabout scheme can both accommodate traffic generated by the new development. The mini roundabout scheme is the developers preferred solution as it acts as a traffic calming scheme for traffic travelling along Peppard Road. However, it is understood that RBC have concerns with this approach and they would prefer the junction arrangement to remain as existing. Both options are acceptable to the developer and it is proposed that the final form of the junction is determined by RBC.

Buckingham Drive / Peppard Road Mini Roundabout

7.4.17 The junction has been tested using Junctions 9 software and the results of these assessments are summarised in **Table 7.5** with the Junctions 9 outputs included in **Appendix I.**

Table 7.5: Buckingham Drive / Peppard Road Assessment Results

	AM Peak Hour 0800 - 0900			PM Peak Hour 1700 - 1800		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2019 Base Year						
Peppard Road (W)	4.7	48.48	0.84	4.8	43.30	0.85
Buckingham Drive	7.0	30.25	0.89	4.1	19.70	0.81
Peppard Road (N)	3.3	21.91	0.77	4.6	29.86	0.83
2026 Future Year						
Peppard Road (W)	7.5	73.28	0.91	7.3	62.37	0.91
Buckingham Drive	10.9	44.74	0.94	5.2	24.36	0.85
Peppard Road (N)	4.5	28.17	0.82	6.2	38.93	0.88
2026 Future Year + Development						
Peppard Road (W)	11.8	109.94	0.98	9.6	80.67	0.95
Buckingham Drive	14.5	57.34	0.96	8.8	38.88	0.92
Peppard Road (N)	7.2	42.54	0.89	9.5	56.05	0.93

7.4.18 The results show that the junction is currently operating above theoretical maximum efficiency operating capacity of 85% RFC, therefore any increase in flows will impact delays from the 2019 results. This can be seen in the 2026 future year assessments where delays, RFCs and queues are predicted to be higher.

7.4.19 The predicted impact from traffic generated by the development is considered minimal, the largest increase in RFC is 7% and 7% in the AM and PM peak hours respectively. These result in queue increases of 3 vehicles in both the AM and PM peak hours.

7.4.20 These small increases are considered insignificant and therefore no improvements are required as part of this development.

Peppard Road / Kiln Road / Caversham Park Road

7.5.1 The junction has been tested using Junctions 9 software.

7.5.2 For the purposes of the assessment, the Peppard Road / Kiln Road priority junction and the Kiln Road / Caversham Park Road priority junction have been linked and assessed together due to the interaction between the two junctions because of their close proximity.

7.5.3 Lane based models for the AM and PM peak hours have been created in Junctions 9 in order to effectively assess the operation of both priority junctions in terms of blocking back between junctions. Lane based models do not report on RFC, therefore results are presented in the following table as delays and queues only.

7.5.4 The results of these assessments are summarised in **Table 7.6** with the Junctions 9 outputs included in **Appendix I.**

Table 7.6: Peppard Road / Kiln Road / Caversham Park Road Junction Assessment Results

	AM Peak Hour 0800 - 0900		PM Peak Hour 1700 - 1800	
	Queue (Veh)	Delay (s)	Queue (Veh)	Delay (s)
2019 Base Year				
Peppard Road (N)	0.1	0.59	0.0	0.08
Kiln Road	2.5	26.08	1.4	16.72
Peppard Road (S)	0.9	5.40	0.5	2.57
Kiln Road (N)	0.3	8.19	0.0	0.98
Caversham Park Road	16.7	178.67	1.0	13.63
Kiln Road (S)	0.9	7.22	0.7	7.17
2026 Future Year				
Peppard Road (N)	0.1	0.78	0.0	0.08
Kiln Road	2.6	28.28	1.8	18.29
Peppard Road (S)	1.3	7.39	0.4	2.54
Kiln Road (N)	0.3	10.27	0.1	1.56
Caversham Park Road	30.7	330.26	1.9	24.74
Kiln Road (S)	1.0	7.53	0.7	7.20
2026 Future Year + Development				
Peppard Road (N)	0.2	0.83	0.0	0.17
Kiln Road	2.6	28.29	1.9	18.21
Peppard Road (S)	1.8	8.39	0.6	2.81
Kiln Road (N)	0.4	10.44	0.1	1.95
Caversham Park Road	35.5	389.78	2.4	24.77
Kiln Road (S)	1.2	7.56	0.9	7.24

7.5.5 The results show that the Caversham Park Road approach is predicted to operate with relatively high queues and delays in 2026 in the AM peak hour, in particular the Caversham Park Road approach which is predicted to delay vehicles by up to 330 seconds.

7.5.6 Impacts from traffic generated by the development are minimal with the largest increase in queue of five vehicles in the AM peak hour and less than 1 vehicle in the PM peak hour. These small increases are considered insignificant and therefore no improvements are required as part of this development. The issue of large delays predicted on Caversham Park Road is related to the current highway layout and predicted traffic growth to 2026, not the impact of the 15 two-way peak hour trips predicted to/from the development.

Peppard Road / Prospect Street / Henley Road / Westfield Road

7.5.7 The Peppard Road / Prospect Street / Henley Road / Westfield Road is a signalised junction and has been tested using LinSig V3. The results of these assessments are summarised in **Table 7.7** with the LinSig outputs included in **Appendix J.**

Table 7.7: Peppard Road Prospect Street / Henley Road / Westfield Road Junction Assessment Results

	AM Peak Hour 0800 - 0900			PM Peak Hour 1700 - 1800		
	DoS	Average Delay s/pcu	Queue (PCU)	DoS	Average Delay s/pcu	Queue (PCU)
2019 Base Year						
Peppard Road	90.3	54.8	17.4	97.1	92	19.8
Henley Road	49	31.2	4.8	54.1	32.8	7.1
Westfield Road	84.2	90.9	6.3	91.4	83.2	11.9
Prospect Street	91.5	55.5	19.2	96.1	73.7	22.9
2026 Future Year						
Peppard Road	94.9	69.4	20.9	97.5	92.3	20.8
Henley Road	55.5	32.9	5.1	56.6	33.2	7.6
Westfield Road	88.9	105.0	7.3	101.4	151.2	18.7
Prospect Street	96.1	72.4	23.4	100.3	103.6	29.5
2026 Future Year + Development						
Peppard Road	97.7	82.4	24.7	105.8	186.1	34.9
Henley Road	51.7	31.8	5.1	55.0	32.1	7.3
Westfield Road	100.0	178.2	10.9	101.4	151.2	18.7
Prospect Street	97.8	82.1	25.6	104.2	149.4	40.2

7.5.8 The results show that the junction currently operates above the maximum theoretical operating capacity of 90% degree of saturation for a signalised junction in both peak hours. There are relatively large queues on Peppard Road and Prospect Street in the AM peak hour and both of these and Westfield Road in the PM peak hour.

7.5.9 The results show that in 2026 these queues are predicted to increase with the junction operating very close to full capacity 100% in the AM peak hour and above full capacity in the PM peak hour. Therefore, any additional traffic at the junction will simply join the back of a queue at these approaches over capacity.

7.5.10 The results show that the impact of development traffic at the junction in the AM peak hour is minimal with the largest increase in queue of four cars on both Peppard Road and Westfield Road.

7.5.11 However, the PM peak hour is predicted to see greater impacts, because it is over capacity in the 2026 assessment year. The largest increase in queuing is 14 cars on Peppard Road and 11 cars on Prospect Street.

7.5.12 There are limited opportunities to deliver physical junction improvements due to space constraints. The junction is surrounded by active frontages and land boundaries of walls, fences, trees and hedgerow. Therefore, it is proposed that the developer will provide an appropriate amount(exact amount agreed through S106 negotiations) to RBC to enable them to introduce a smarter signal operating scheme such as MOVA. As a general rule, MOVA has the potential to increase capacity at a junction by up to 12% and therefore should provide some benefit to the junction.

8 Summary

8.1 Development Proposals

8.1.1 This TA is in support of an outline planning application with all matters reserved, except access, for the development of land at Reading Golf Club, involving demolition of the existing clubhouse and the erection of a new residential-led scheme of up to 260 homes with associated parking and health centre circa 600sqm.

8.2 Assessment

8.2.1 This TA has been completed in line with the methodology scoped with RBC.

8.2.2 This assessment has identified the need or benefits of a package of supporting transport improvements, which are summarised below.

8.3 Walk and Cycle

8.3.1 A connected and walkable safe neighbourhood will be created with high quality links between the site and existing facilities in the local area, such as Emmer Green local centre to the south of the site and leisure routes to the north of the site, so that active travel is an attractive choice for residents living at the new development. Routes will be lit, appropriately surfaced and overlooked and therefore will facilitate walking and cycling through the site.

8.3.2 The following improvements are proposed to enhance pedestrian and cycle accessibility to/from the site:

- Provision of raised informal crossing points with herringbone imprint on Lyefield Court at its junction with Kidmore End Road, Kidmore End Road just north of Grove Road and on Grove Road at its junction with Kidmore End Road. These traffic calming features should slow traffic and increase the visibility of pedestrians to drivers.

- Provision of a mini roundabout at the junction of Kidmore End Road and Peppard Road with imprinted crossing across the Kidmore End Road approach. A mini roundabout acts as a traffic calming feature, slowing traffic on all approaches and next to the signalised pedestrian crossing over Peppard Road which provides connection to Emmer Green local centre for pedestrians. The imprinted crossing raises driver's awareness to pedestrians in the area. There is also an option to retain the current layout and provide an raised and/or imprinted crossing if RBC wish.

8.3.3 The site is located in a good position to benefit from planned improvements to the walking and cycling network and public transport network as part of RBC's Transport Strategy and their Local Cycling and Walking Infrastructure Plan.

8.3.4 Informal walk and cycle routes through land owned by the golf club to the north of the red line boundary will tie into the development and provide routes into open space and further increase connections from the site to routes to be improved through RBC's LCWIP.

8.4 Public Transport

8.4.1 The site has good public transport accessibility with bus services 23 and 24 routing along Kidmore End Road adjacent to the site and service 25 routing along Peppard Road, a short walk from the site. These services provide six buses per hour at peak times to Reading Railway Station and Town Centre. Journey times vary between 20 and 30 minutes depending on the time of day and service.

8.4.2 The master plan promotes the use of the current stops on Kidmore End Road, to serve the development site and the proposed health centre from the wider Caversham area. The bus stops are accessible to residents of the development and provide good access to bus services from all homes, even if some are more than 400m from the stop. The development will promote high quality, overlooked, lit and surfaced walking routes to the bus stops on Kidmore End Road will be provided. Through successful travel planning, new residents living at the development will be aware of the bus services and how to access them including use of Reading Buses App.

8.4.3 The master plan retains a 5.5m spine road with 1m verge which offers the ability to consider re-routing current or future services into the development and beyond into the SODC area to the north in the long term. The later would be of interest to Reading Buses, given the widen planning and transport policy considerations for the north Caversham area.

8.4.4 Reading railway station provides fast and frequent services into Oxford, Basingstoke, London Paddington and other railway stations in London, and the wider regions. The Elizabeth Line, currently under construction, will provide further connections between Reading and London. Elizabeth Line stopping services are now operating between London Paddington and Reading, ahead of the full scheme due to be completed in 2021, providing enhanced services from Reading through to Central London. These new and existing services are accessible to residents of the development via cycling and bus services.

8.5 Travel Plan

8.5.1 A residential Travel Plan has been prepared alongside this TA and submitted as part of the planning application.

8.5.2 With raised awareness of the pedestrian and cycle routes available to residents through travel plans, smart technology and the health benefits they promote, walking and cycling offers an attractive travel choice for new residents.

8.5.3 Through successful travel planning, new residents living at the development will be aware of the bus services and how to access them.

8.6 Vehicular Access and Off-Site Highway

8.6.1 The masterplan will be designed to accommodate necessary movements by car and service and emergency vehicles but prioritise active modes where possible.

8.6.2 Vehicular access is proposed as a priority junction onto Kidmore End Road. The junction has been designed to achieve appropriate Manual for Streets visibility requirements and RBC design guidance and accommodate refuse and delivery vehicles turning movements.

8.6.3 Through capacity assessments, it has been demonstrated that the junction is predicted to operate within capacity and cause minimal delays to traffic.

8.6.4 The secondary/emergency access onto Kidmore End Road has been retained and shifted slightly to the north to provide access to the health centre and flats above only. This also acts as an emergency access with a droppable bollard into the rest of the site which has been designed to accommodate a fire tender in case of emergency.

8.6.5 The TA has determined that the following improvements are necessary to accommodate impacts of traffic generated by the development.

- Two options for Kidmore End Road / Peppard Road: A mini roundabout junction arrangement i to provide traffic calming and better cater for increased traffic flow along

Kidmore End Road or retain the existing layout. Both options have been assessed and the results demonstrate that the junctions will operate within capacity.

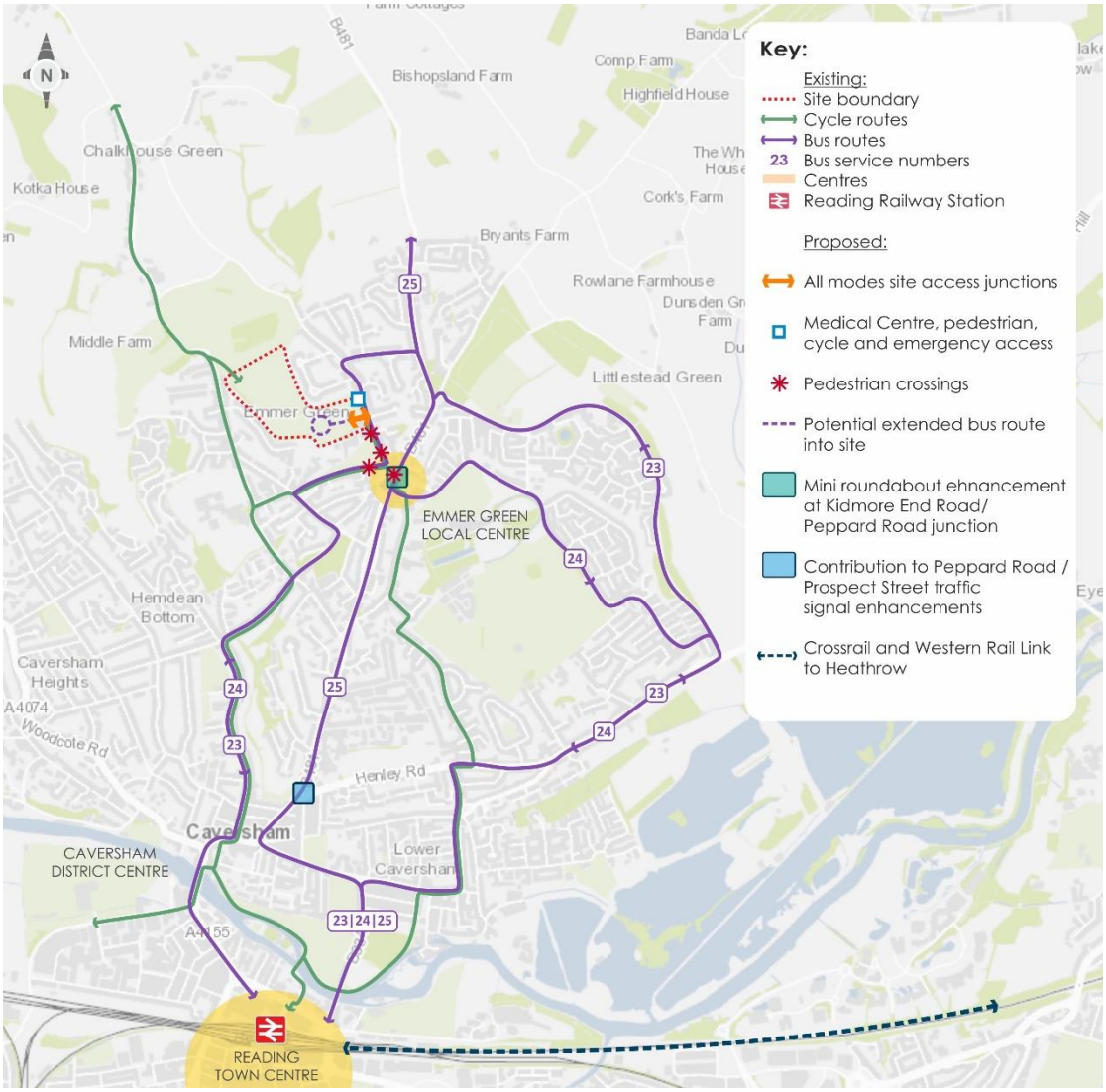
- It is proposed that the developer will provide an appropriate contribution (amount to be determined through S106 negotiations) to RBC to enable them to introduce a smarter signal operating scheme such as MOVA at the Peppard Road / Henley Road / Prospect Street / Westfield Road signalised junction. The existing junction has been assessed to determine the impact of the proposed development on the local highway network. The results show that the junction currently operates above the maximum theoretical operating capacity of 90% degree of saturation for a signalised junction in both peak hours. Based on the day of the traffic survey, there are relatively large queues on Peppard Road and Prospect Street in both peak hours and Westfield Road in the PM peak hour.

8.7 Transport Strategy Summary

8.7.1 In summary, the proposed transport package will provide improvements for existing users and for new residents and visitors to the proposed development. The package offers accessibility enhancements to encourage more sustainable means of travel in the area and will mitigate any significant impacts on the highway where possible. The location of the site lends itself to the creation of a community that can access their homes via sustainable modes of travel and therefore reducing the need to rely on single occupancy car use.

8.7.2 **Figure 8.1** shows the proposed transport strategy for the site.

Figure 8.1: Proposed Transport Strategy



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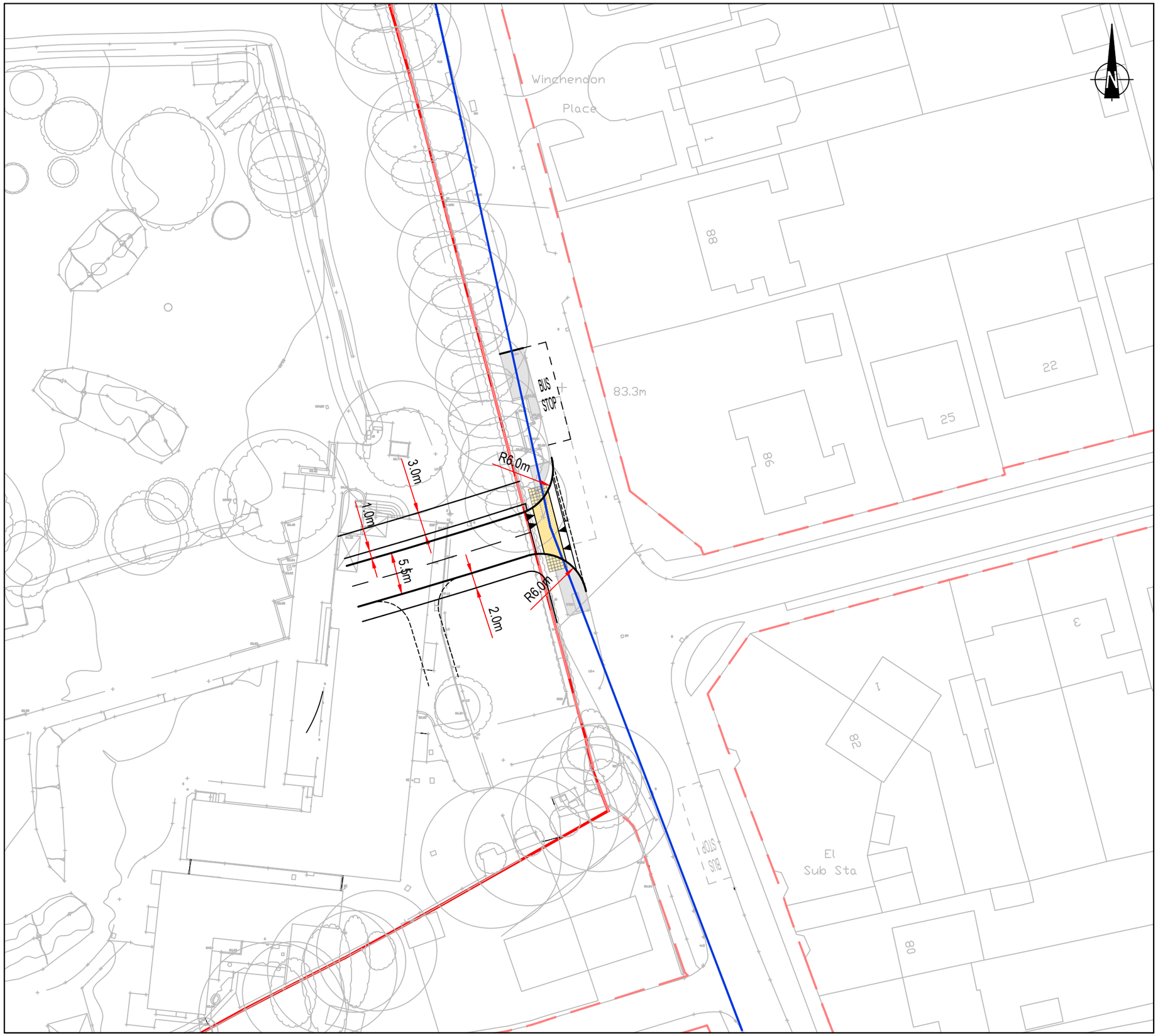

KEY

- INDICATIVE SITE BOUNDARY
- HIGHWAY BOUNDARY
- 2.4m X 70m VISIBILITY SPLAY (AS REQUESTED BY RBC)
- NEW AREAS OF HARDSTANDING
- TACTILE PAVING
- HERRINGBONE IMPRINT RAISED CROSSING

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READING GOLF CLUB
SITE ACCESS LAYOUT

Client

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Date of 1st Issue	Designed	Drawn
11/12/2020	-	ED
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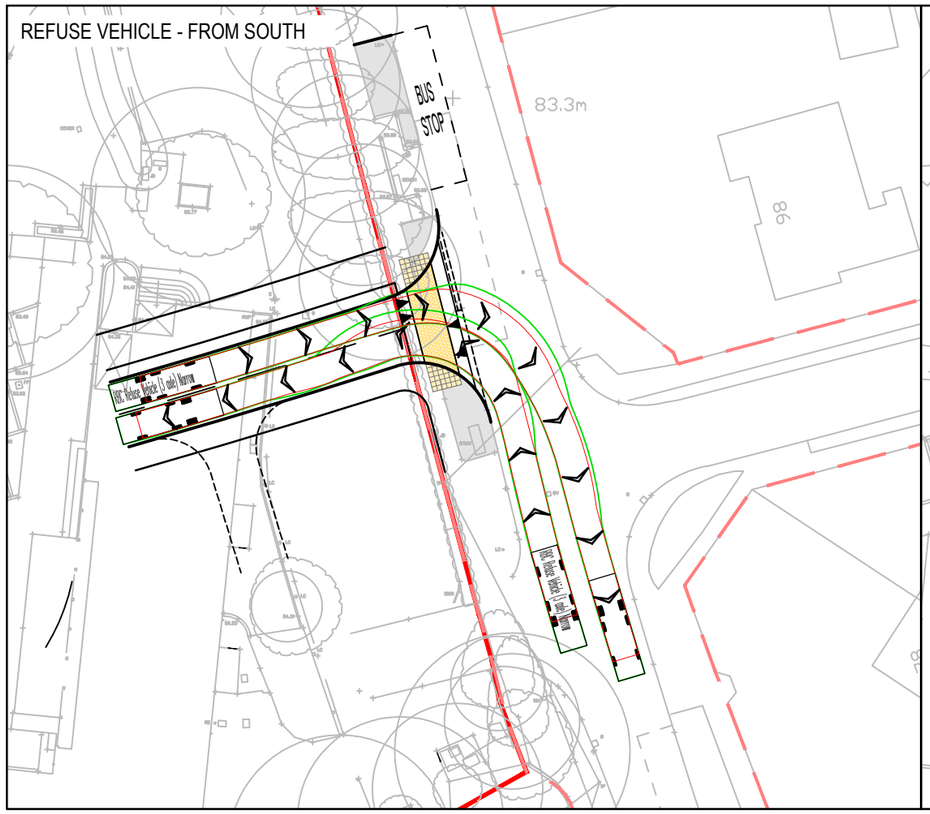
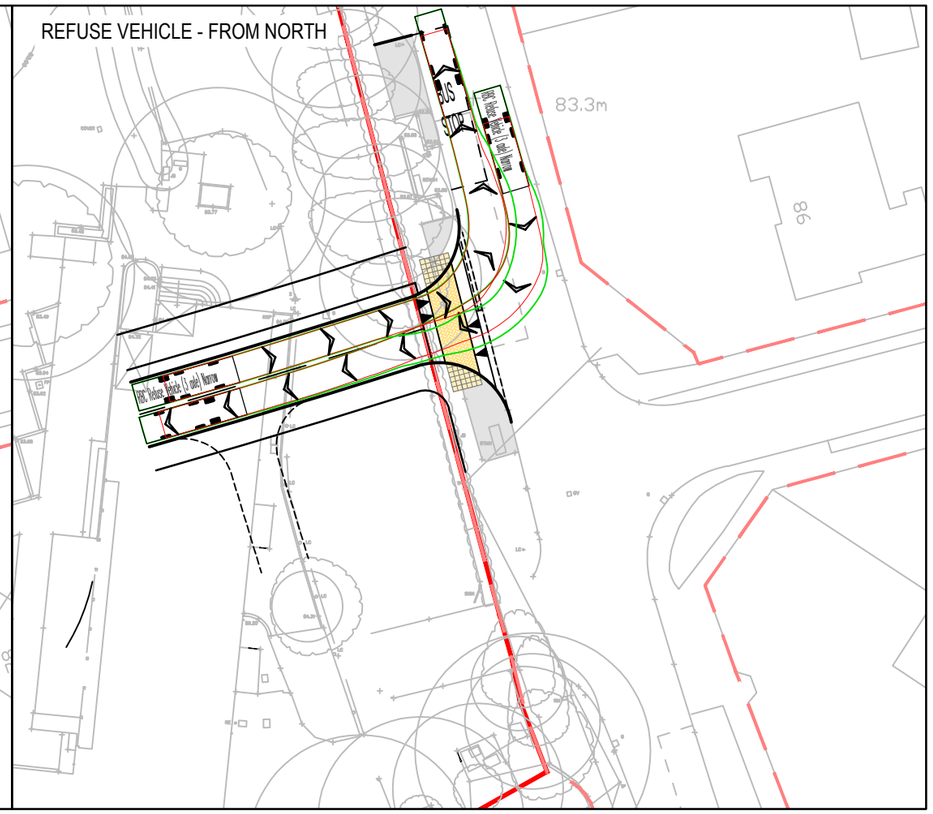
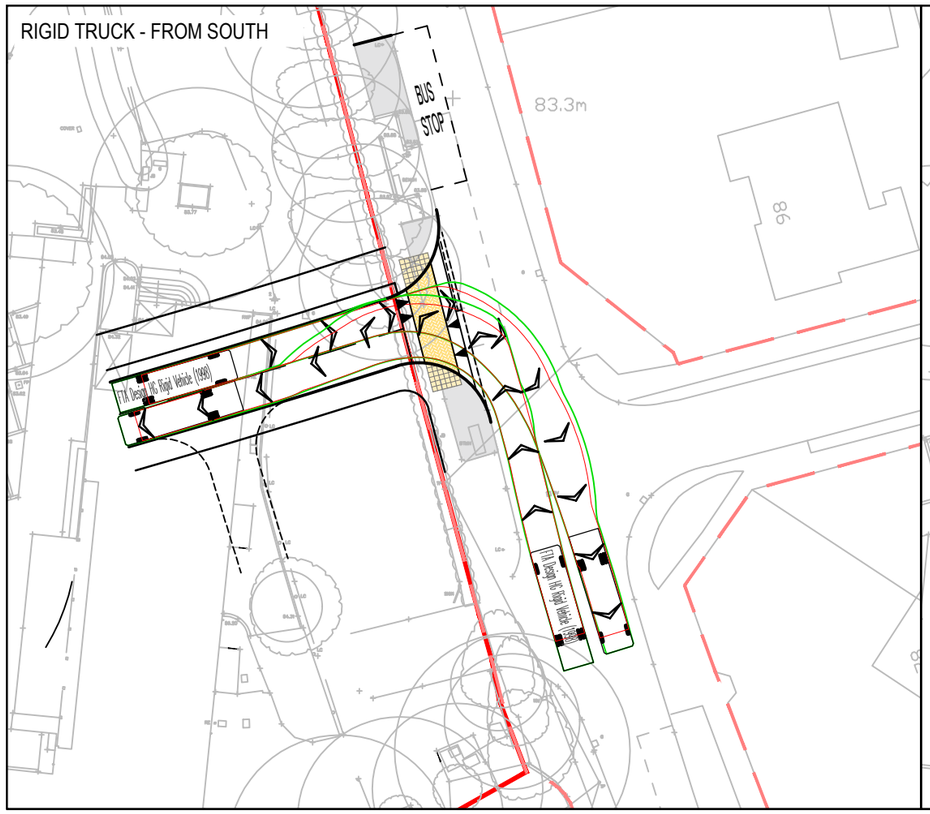
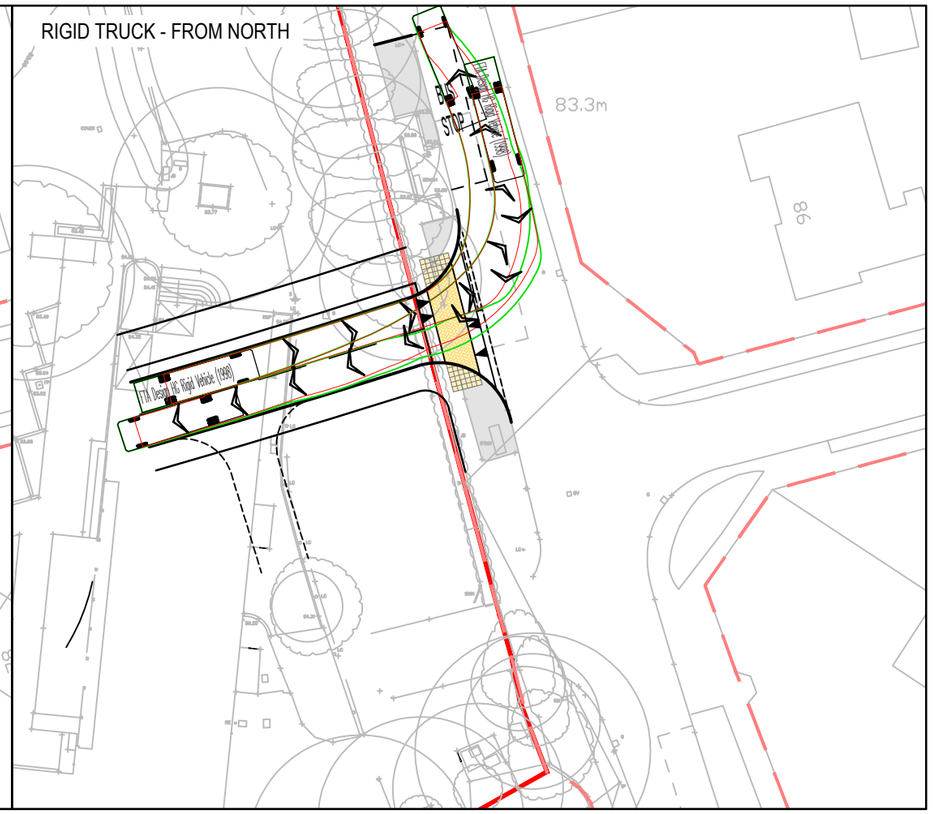






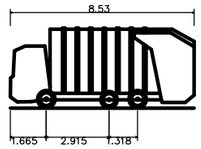


KEY

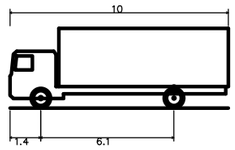
INDICATIVE SITE BOUNDARY

HIGHWAY BOUNDARY

VEHICLE PROFILES



RBC Refuse Vehicle (3 axle) Narrow	
Overall Length	8.530m
Overall Width	2.230m
Overall Body Height	3.709m
Min Body Ground Clearance	0.261m
Track Width	2.200m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	8.950m



FTA Design HG Rigid Vehicle (1998)	
Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	11.000m

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READING GOLF CLUB
SITE ACCESS LAYOUT
VEHICLE TRACKING ANALYSIS

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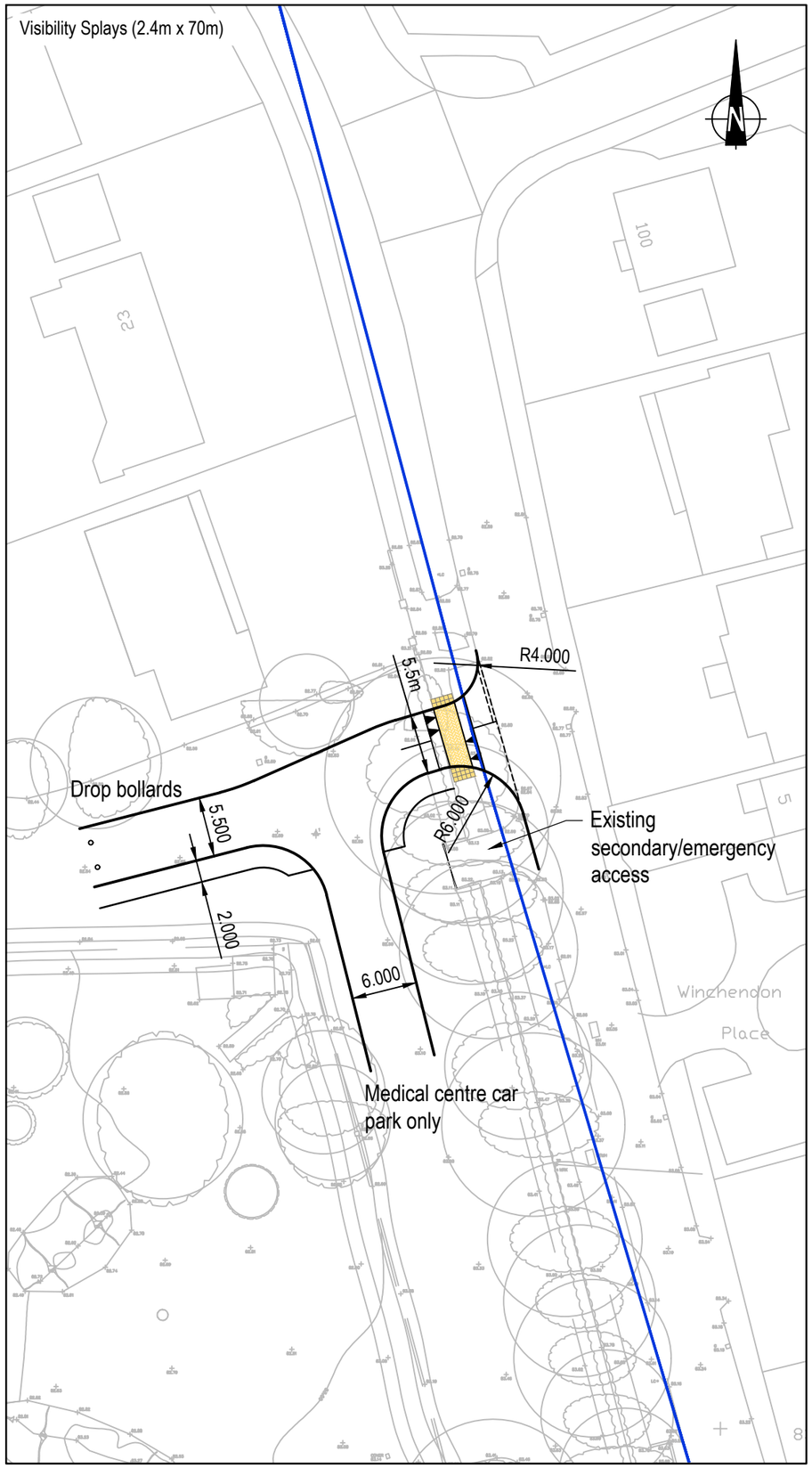

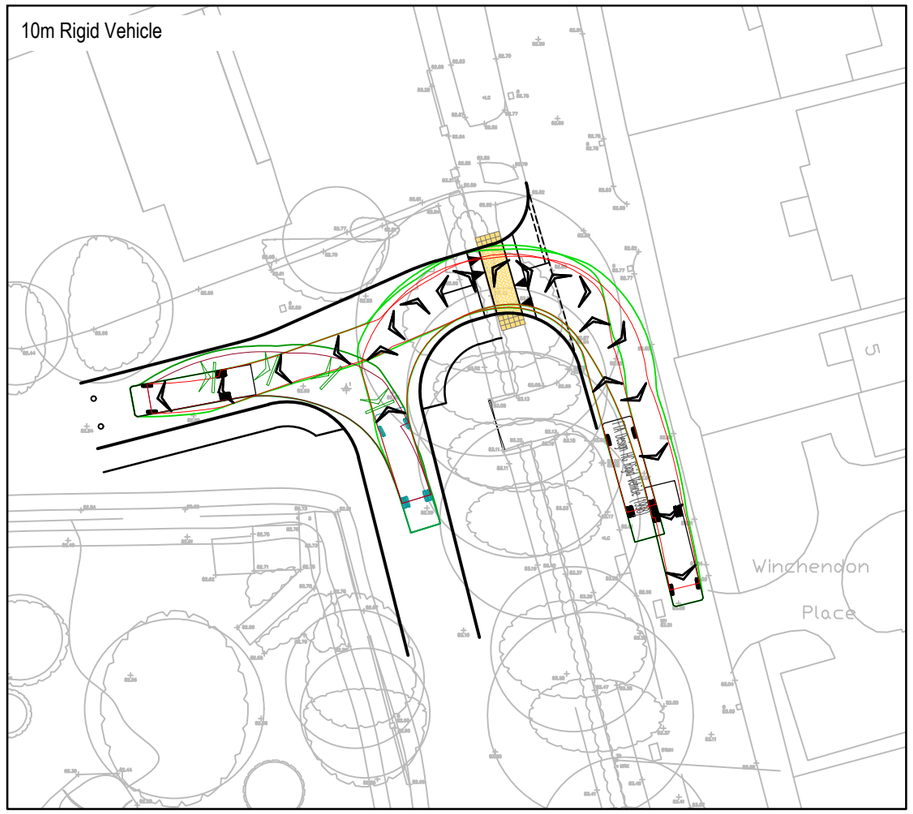

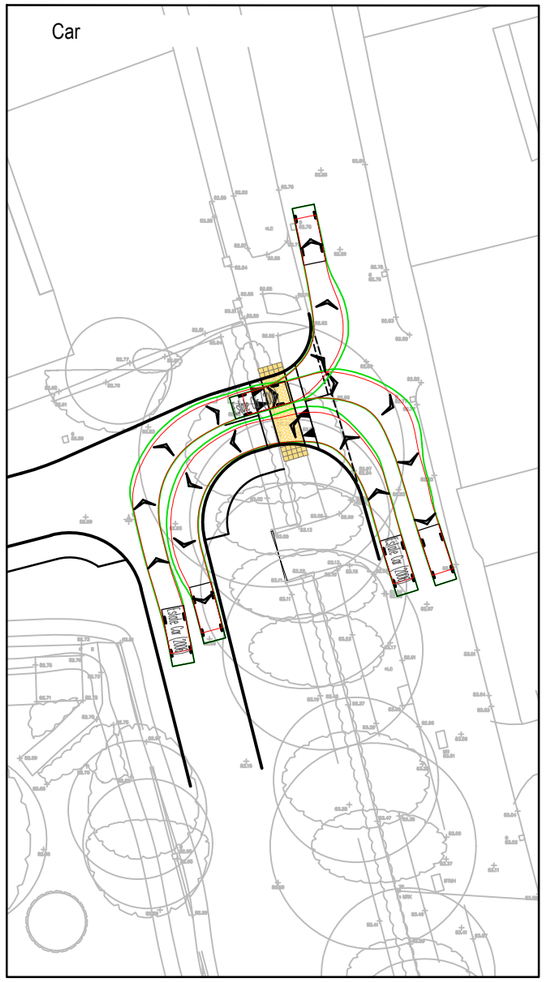

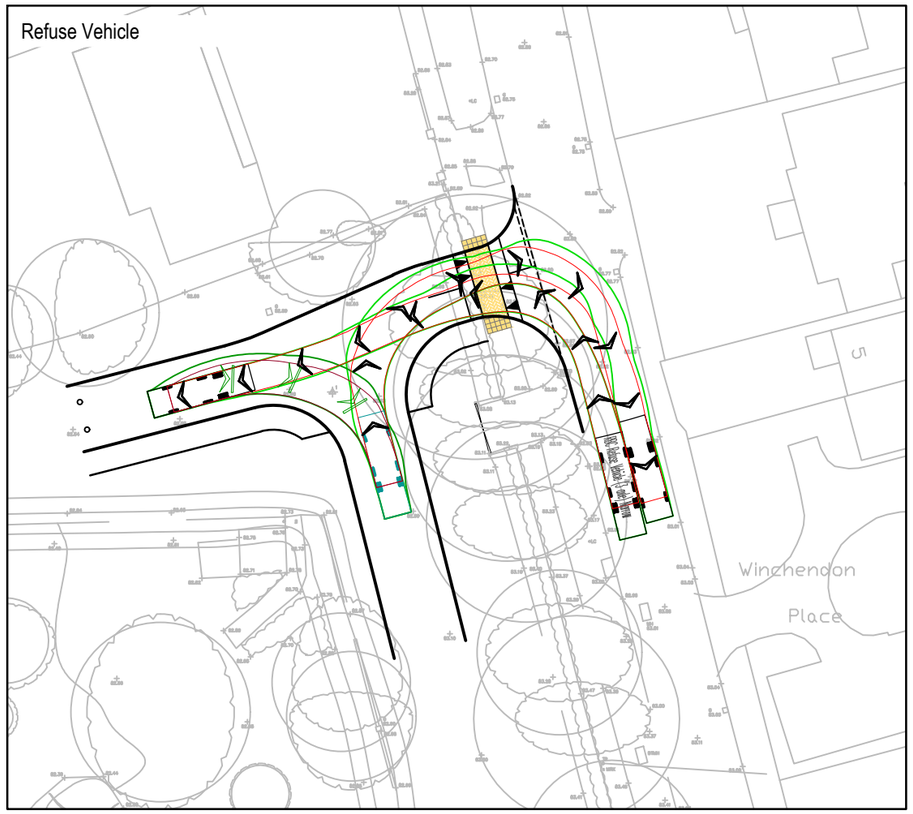

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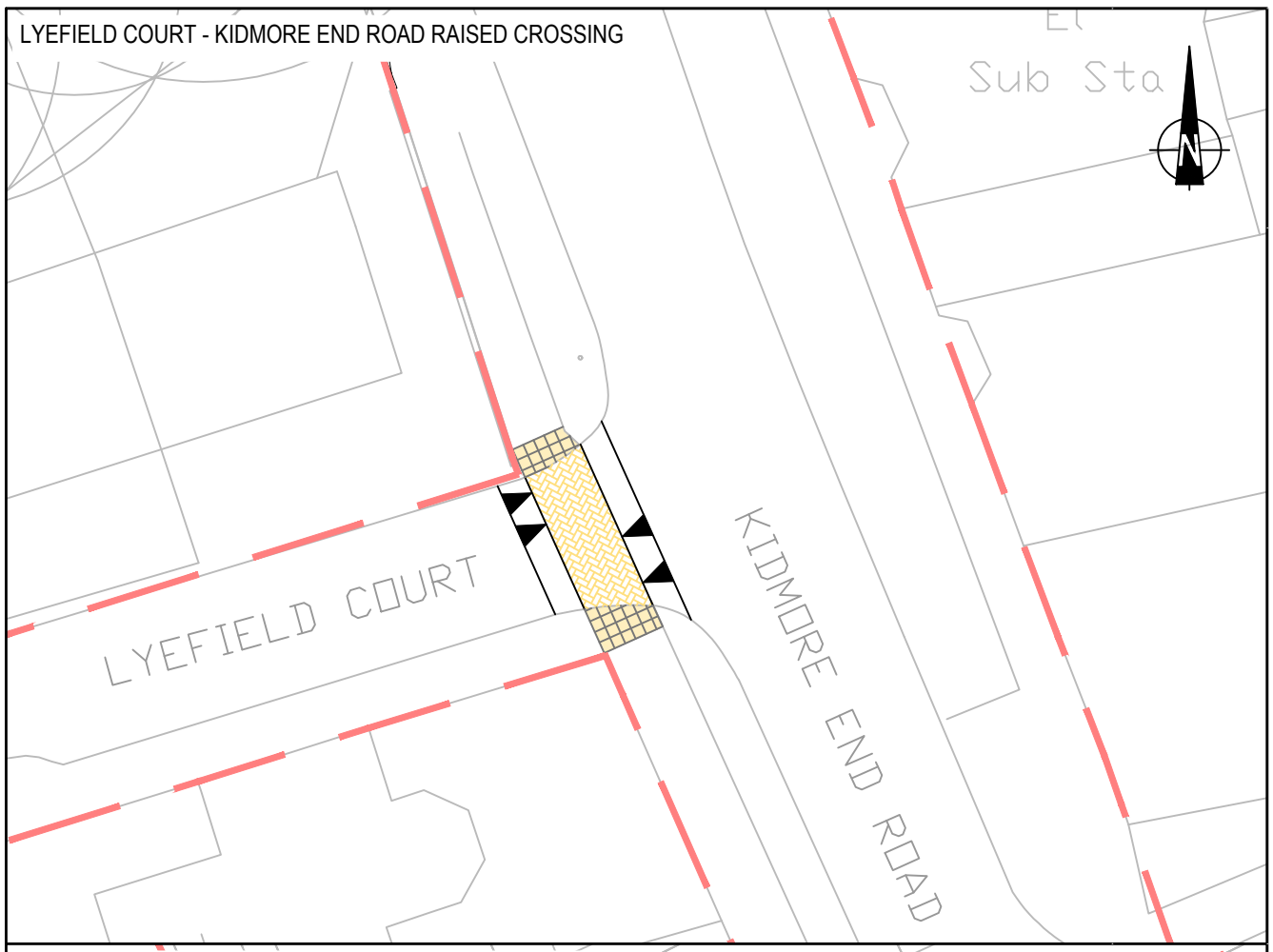
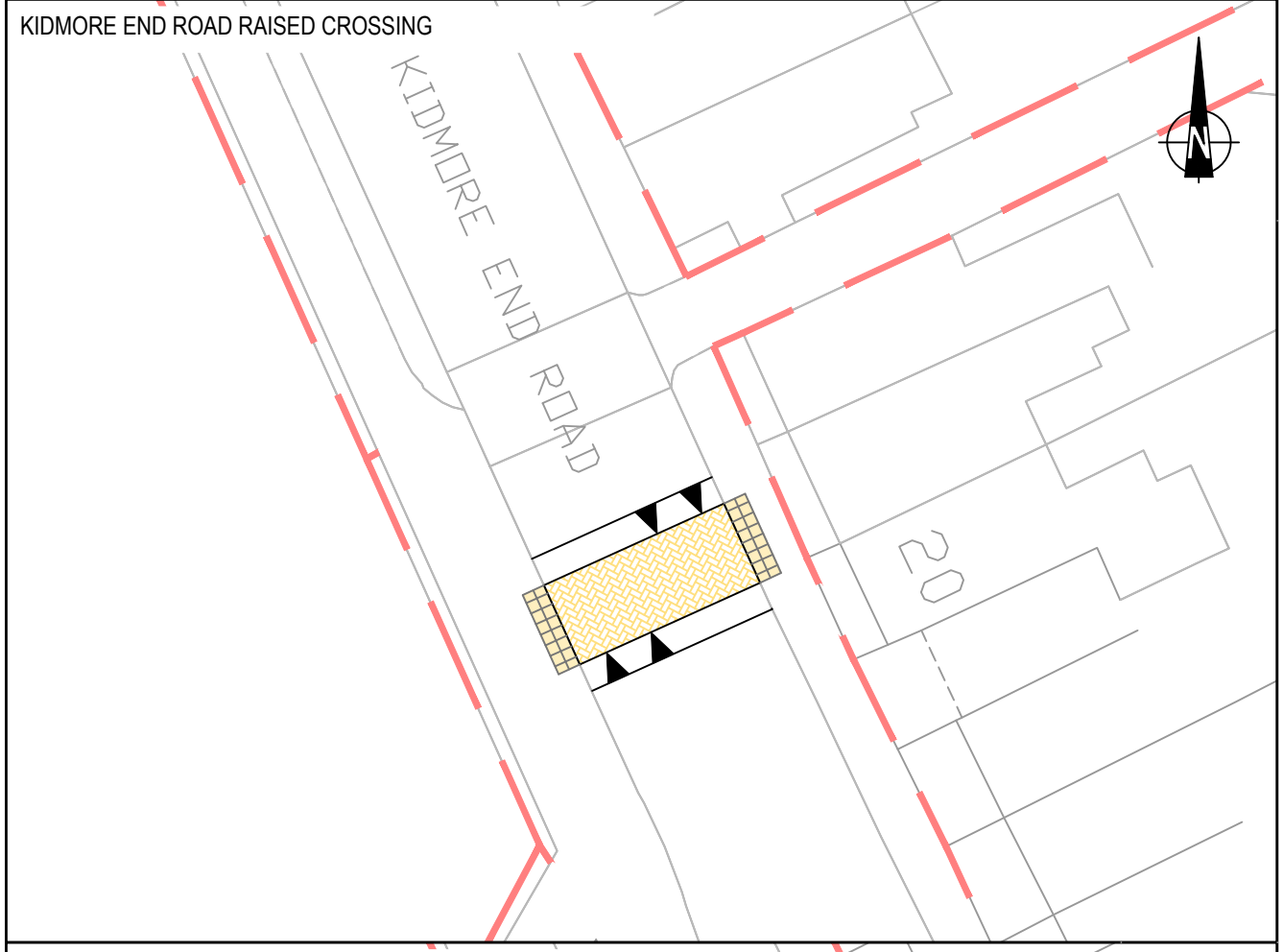
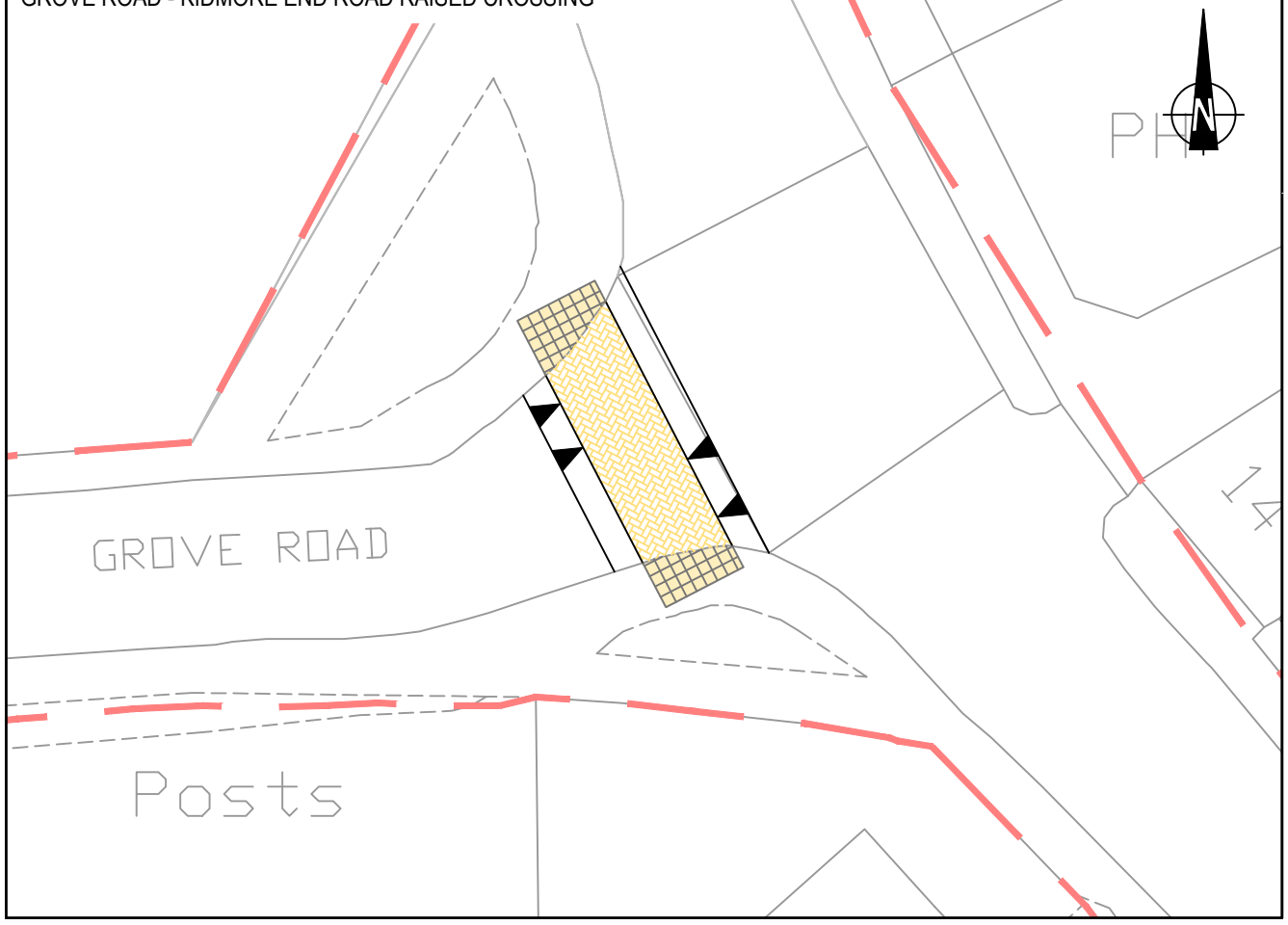
LYEFIELD COURT - KIDMORE END ROAD RAISED CROSSING



KIDMORE END ROAD RAISED CROSSING



GROVE ROAD - KIDMORE END ROAD RAISED CROSSING



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HIGHWAY BOUNDARY

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PROPOSED RAISED CROSSINGS

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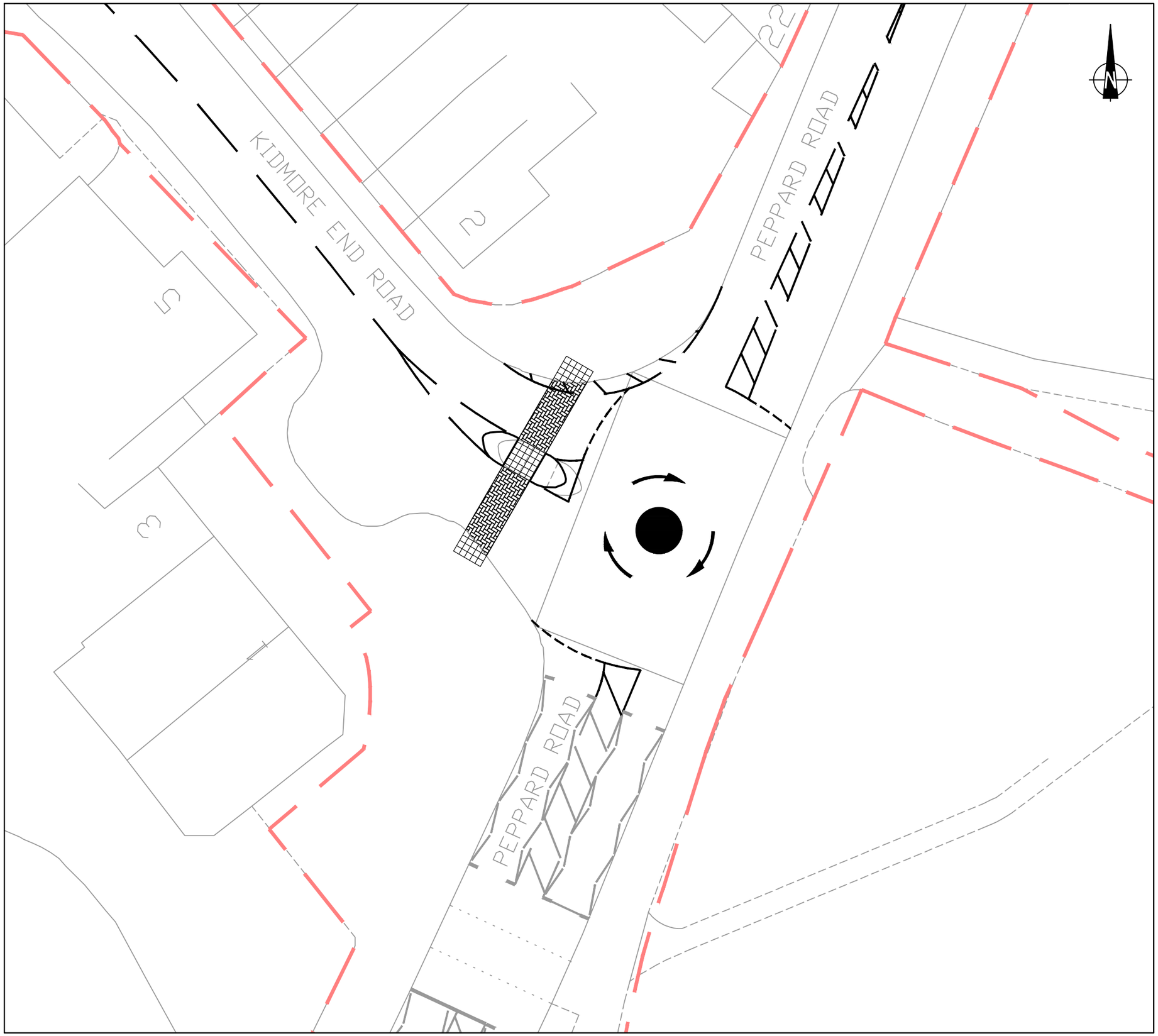

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READING GOLF CLUB
KIDMORE END ROAD / PEPPARD ROAD
MINI ROUNDABOUT OPTION

Client

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Appendix A Illustrative Masterplan