

TRANSPORT ASSESSMENT

FORMER BATTLE HOSPITAL SITE, READING

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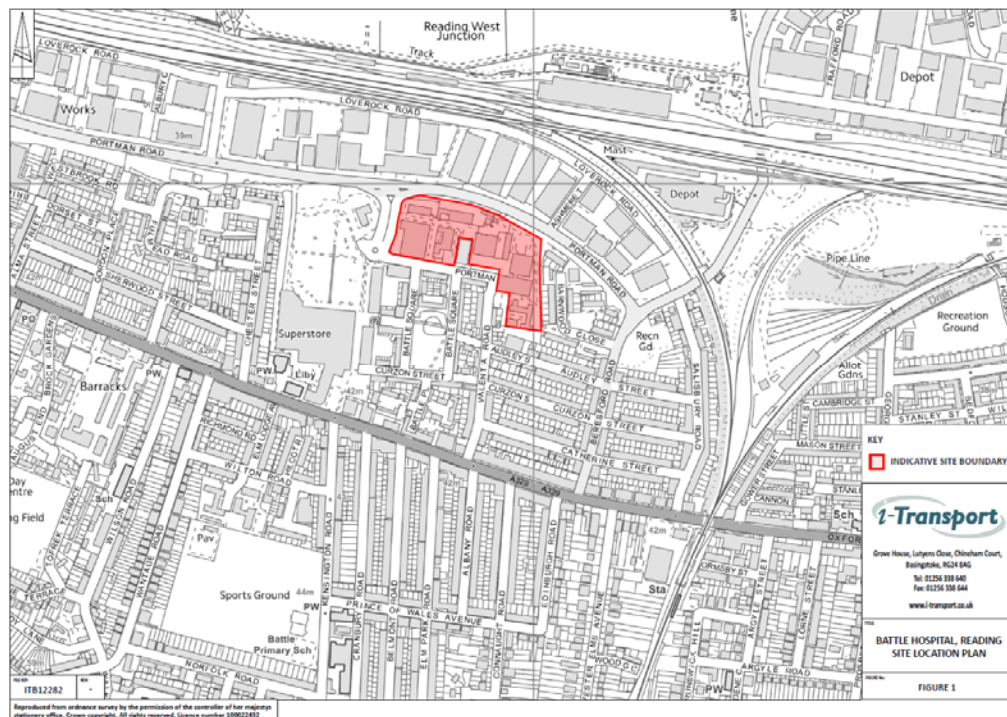
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SECTION 1 INTRODUCTION

1.1 Background

- 1.1.1 i-Transport has been appointed by Bellway Homes Thames Valley to provide highways and transport advice to support a full planning application at the former Battle Hospital. The land forms the next phase of the Battle Hospital re-development and is being considered for residential development of some 215 new homes.
- 1.1.2 The site is located to the west of Reading Town Centre and to the north-west of Reading West railway station and forms part of the former Battle Hospital site. The majority of the Battle Hospital site has already been developed for housing and a Tesco Superstore.
- 1.1.3 This remaining parcel of land includes a number of hospital and service buildings which are surplus to requirements. Of these buildings, the Synergy Health Sterilisation Service (SHSS) building will be retained for the time being. The site location is illustrated on **Figure 1**, which is reproduced as **Image 1**.

Image 1: Site Location



- 1.1.4 The site is identified within the Battle Hospital development SPD as well as the RBC Sites and Detailed Policies Document (adopted October 2012, altered and adopted January 2015), as well as the Pre-Submission Draft Local Plan (November 2017).

- 1.1.5 In line with the requirements of the National Planning Policy Framework (NPPF), this Transport Assessment (TA) has been prepared to consider the transport impacts that may arise from the proposed development, and to consider the proposal against relevant transport and planning policy.
- 1.1.6 The TA has been produced in accordance with guidance contained in the National Planning Practice Guidance (NPPG) (March 2014) and where necessary, other local and national transport planning guidance.
- 1.1.7 Specifically, the TA has been prepared to consider the three critical tests outlined in paragraph 32 of the National Planning Policy Framework which are summarised as:
- Will safe and acceptable access be provided to the site for all people?
 - Will the opportunities for sustainable travel be taken up?
 - Will there be a 'severe' residual cumulative transport impact of the development?
- 1.1.8 In line with policy requirements, a separate Framework Residential Travel Plan (*i-Transport report reference ITB12282-006*) has also been prepared to identify a package of measures designed to encourage sustainable travel to and from the site. The TA should be read alongside the Framework Residential Travel Plan (F RTP).

1.2 Scope of Transport Assessment

- 1.2.1 To inform the scope and methodologies of the TA, a TA Scoping Note (**Appendix A**) was prepared to set out and agree the parameters of the assessment. This was submitted to Reading Borough Council (RBC) as Local Highway Authority.
- 1.2.2 The parameters used in determining the impact of the development therefore follow the agreed parameters. RBC's comment on the scoping and their agreement on these parameters are set out in **Appendix B**.

1.3 Public Consultation

- 1.3.1 A public exhibition was held on 12 December 2017 at the Emmanuel Methodist Church, where local residents and stakeholders were provided with feedback forms to provide their comments. These comments have, in part, been used to inform the transport strategy for the development presented in the TA.

1.3.2 During the public consultation, the following key transport comments were noted and are addressed in this TA:

- Access from Portman Way / Portman Road;
- On-site Parking provision;
- Traffic impacts; and
- Pedestrian / cycle access.

1.4 Report Structure

1.4.1 The remainder of this TA is structured as follows:

- Section 2 provides an overview of relevant national and local transport policies;
- Section 3 summarises the existing transport conditions in the vicinity of the site;
- Section 4 sets out the details of the development proposal;
- Section 5 considers the accessibility of the site by sustainable modes to key local destinations and services;
- Section 6 sets out the methodology for assessing the impact of the proposal;
- Section 7 identifies the traffic impact resulting from the development;
- Section 8 provides a summary and conclusion

SECTION 2 POLICY REVIEW

2.1.1 Key national and local transport planning policies have been reviewed to provide the context for the transport appraisal, including: -

- **National Policy and Guidance**
 - National Planning Policy Framework (March 2012); and
 - National Planning Practice Guidance (NPPG - March 2014).
- **Local Policy and Guidance**
 - Reading Borough Local Development Framework (LDF) Core Strategy (adopted January 2008, updated January 2015);
 - Reading Borough Local Development Framework (LDF) Sites and Detailed Policies Document (adopted October 2012); and
 - Reading Borough Council – Draft Local Plan (up to 2036);

2.2 National Transport Planning Policy and Guidance

National Planning Policy Framework (2012)

2.2.1 The NPPF sets out the Government's planning policies for England. At paragraph 32 the government identifies that all developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessments. It further states that plans and decisions should also take into account whether:

- **"The opportunity for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;**
- **Safe and suitable access to the site can be achieved for all people; and,**
- **Improvements can be undertaken within the transport network that cost-effectively limit the significant impacts of development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of developments are severe."**

2.2.2 Development should therefore provide opportunities for sustainable travel; achieve safe access; and should only be prevented where the residual cumulative impact is **'severe'**. These three key tests are assessed in this Transport Assessment.

National Planning Practice Guidance (NPPG) (2014)

2.2.3 The NPPG provides guidance on promoting sustainable transport (Section 4), and paragraph 32 states that a Transport Assessment or Statement is required to support proposals that generate significant amounts of movement.

2.2.4 In accordance with NPPG, this TA has been produced to accompany the planning application and to assess the scheme against these key transport tests.

2.3 Local Policy and Guidance

2.3.1 RBC's current development plan consists of the following documents: -

- Reading Borough LDF Core Strategy (updated January 2015);
- Reading Borough LDF Sites and Detailed Policies Document (adopted October 2012).

2.3.2 RBC is currently preparing a new Local Plan, which once adopted will replace the existing Core Strategy. It will include a full review of the Borough's planning policies and consider the future growth requirements and site allocations for Reading.

2.3.3 The first stage of preparation for the new Local Plan, the Issues, Options and Recommendations, was published for consultation between 1st May 2017 and 14th June 2017.

2.3.4 The second stage of preparation for the new local plan was the production of the draft Local Plan. This Draft Local Plan was produced as a full draft, after taking into account of all the comments received during the Issues and Options consultation.

2.3.5 The Council consulted on the Pre-Submission Local Plan between 30 November 2017 and 26 January 2018. The Pre-Submission Draft is a revised version of the draft that was consulted on in May and June, and is the version that the Council intend to submit for approval to the Secretary of State. The Local Plan's formal adoption is anticipated for 2018- 2019.

2.3.6 A summary of the relevant documents is set out below.

Reading Borough LDF Core Strategy (updated January 2015)

2.3.7 The Adopted RBC Core Strategy Local Plan was adopted in January 2008 and sets out how planning and development will achieve the Reading 2020 Vision for the town. It sets out the strategic objectives, key planning policies and outlines anticipated development that will take place up to 2020.

2.3.8 The Core Strategy outlines the settlement hierarchy with Oxford Road West being identified as a 'District Centre'. With regard to district centres it is:

'Considered that, whilst only three or four centres qualify as district centres according to the PPS 6 definition, it is appropriate to designate more district centres in order to encourage an increase in the range of facilities'.

2.3.9 Policy CS14 sets out the provision of housing growth 2016-2026 and allocated 521 dwellings per annum in accordance with the spatial strategy set out in the Core Strategy Document.

2.3.10 Of the policies relevant to transport, Policy T1 states:

'Policy T1 indicates a strategy to concentrate on the improvement of transport nodes and the multi-modal spokes that link them, in order to assist the concentration of development in Major Towns, to assist the objective of urban regeneration and to ensure that best use is made of modes of travel other than the car'.

Reading Borough LDF Sites and Detailed Policies Document (adopted October 2012)

2.3.11 The Reading Borough Sites and Detailed Policy Document was adopted in October 2011 (revised January 2015). The purpose of this document is to provide detailed planning policies and identify the specific development sites and designations necessary to deliver the Core Strategy.

Reading Borough Council – Draft Local Plan (up to 2036)

2.3.12 Reading Borough Council are producing a new local plan which will replace the current development plans in place (the Core Strategy, Reading Central Area Action Plan and the Sites and Detailed Policies Document).

2.3.13 The draft Local Plan outlines the growth and change that will take place within the Reading Borough between 2017 and 2036 and provides both Strategic and Local policies for or development.

2.3.14 Of the policies relevant to transport, Policy TR3: Access, Traffic and Highway-related matters states:

“Development will only be permitted where:

- **Accesses and works to the highway comply with the adopted standards of the Transport Authority;**
- **The development would not have a material detrimental impact on the functioning of the transport network;**
- **The proposals would not be detrimental to the safety of users of the transport network, including pedestrians and cyclists;**
- **The proposal would not generate regular movement of heavy goods vehicles (HGVs) on unsuitable roads, or on roads without easy access to the Classified Highway Network; and**
- **For non-residential uses, or new dwellings on classified roads, off-street servicing would be provided. “**

2.3.15 The transport infrastructure required to accommodate the levels of growth proposed in the Reading Borough Area is set out in Policy TR2, as follows: -

- Mass Rapid Transit;
- Park and Ride sites;
- Green Park Station and interchange;
- Cow lane Bridges;
- Crossing of the River Thames;
- National Cycle Network 422; and
- Development of high-quality bus services.

2.4 Summary

- 2.4.1 The NPPF confirms that there is a presumption in favour of sustainable development. Account should be taken of whether the opportunities for sustainable transport modes have been taken up, depending on the nature and location of the site, to ensure the need to travel will be minimised and the use of sustainable transport modes can be maximised. The development should provide safe and suitable access to the site for all people. The assessment should take account of whether improvements can be undertaken within the transport network that cost-effectively limit the significant impacts of the development and that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.
- 2.4.2 The PPG provides guidelines on when transport assessments and travel plans are likely to be required, and their content.

SECTION 3 EXISTING CONDITIONS

3.1.1 This section of the TA describes the existing transport conditions within the vicinity of the site, including opportunities for walking, cycling and public transport, as well as local highway conditions.

3.2 Walking and Cycling

3.2.1 The site benefits from connections to Portman Road, Portman Way and Valentia Road which together provide a permeable network of connections to the local area, and onwards towards the centre of Reading.

3.2.2 Portman Road Link (along the western boundary of the site) has a designated 2m wide footway on the western side of the carriageway and a 3m wide shared footway / cycleway on the eastern side of the carriageway. These facilities provide continuous connections from Tesco and Portman Way (to the south) to Portman Road (to the north) via the toucan crossings present at the signalised junction of Portman Road at the north western corner of the site.

3.2.3 Portman Road, to the north, has a 3m wide shared footway / cycleway on the northern side of the carriageway, which, provides a continuous off-carriageway connection from Tilehurst railway station to the west and Reading town centre to the east.

3.2.4 A 2m wide footway is present on the southern side of the carriageway on Portman Way, providing connections from Tesco to the west and the widener highway network on Oxford Road (via the already built Battle Hospital site).

3.2.5 Uncontrolled dropped kerb pedestrian crossings and tactile paving are present at local junctions.

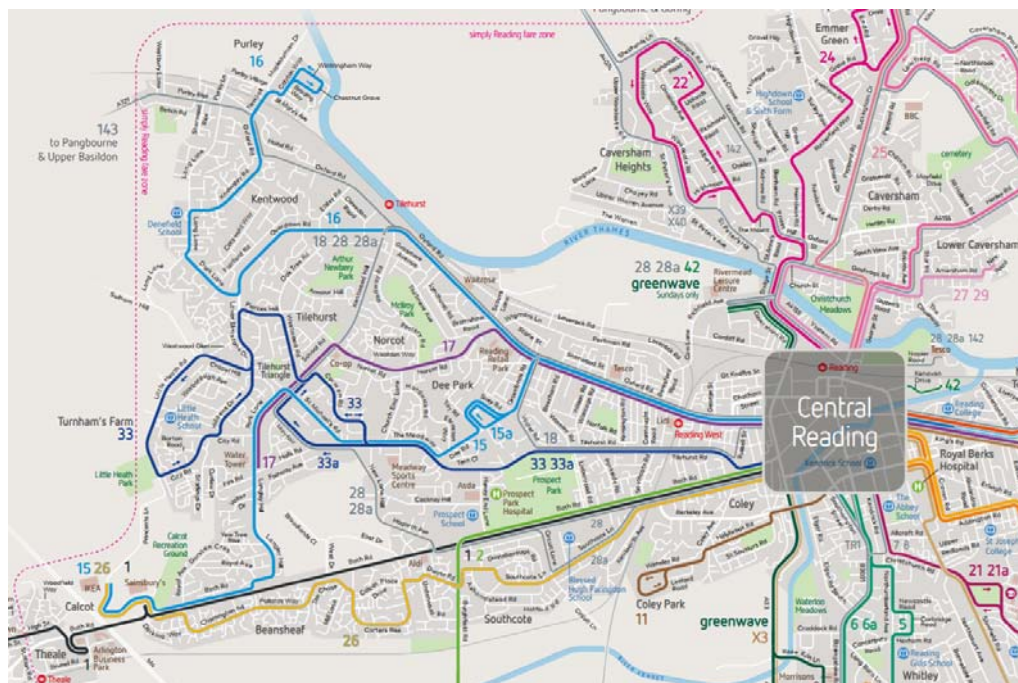
3.2.6 These facilities provide safe and direct connections for pedestrians and cyclists to local employment and retail facilities, Reading Town Centre, and the rail stations at Tilehurst, Reading West and Reading Central.

3.3 Public Transport

Bus

- 3.3.1 The site benefits from access to a number of bus stops, with the closest stops located on Oxford Road, some 400m south of the site which, is a key public transport corridor. These bus stops provide access to bus services 15, 15a, 16 and 17 which, offer a turn up and go service.
- 3.3.2 An extract of the local bus map is shown as **Image 3.1** (and included at **Appendix C**), while **Table 3.2** provides a summary of the routes and their frequencies.

Image 3.1: Bus Route Plan



Source: Reading Buses

Table 3.1: Bus Routes and Frequencies

Service	Route Description	Frequency (minutes)				
		Mon - Fri			Sat	Sun
		Peaks	Daytime	Evening		
15/15a	Calcot - Tilehurst - Dee Park - Central Reading	15	15	30	15	30
16	Purley - Oxford Road - Central Reading	15	15	30	20	30
17	Wokingham Road - Central Reading - Oxford Road - Tilehurst	7	7	15	7	20

Source: Reading Buses

- 3.3.3 It is evident from this that there are substantial opportunities to travel to key destinations within Reading by bus, with there being some 16 buses an hour provided throughout Reading.

Rail

- 3.3.4 The closest railway station to the site is Reading West railway station, located some 750m to the south-east of the site. The station is operated by Great Western Railways and provides regular services to Basingstoke, Newbury and London Waterloo. Basingstoke is a 20-minute journey, with the travel time to Newbury being circa. 25mins and approximately 35mins and 45mins to London Waterloo and London Paddington respectively (changing at Reading main railway station).

- 3.3.5 **Table 3.2** summarises the local destinations and frequencies.

Table 3.2: Rail services from Reading West Railway Station

Destination	Typical Frequency (trains per hour)		Average Journey Duration
	Peak	Off-Peak	
Reading	4	3	4m
Basingstoke	2	2	22m
London Paddington	4	2 - 4	35m
Newbury	3	2	40m
London Waterloo	5	5	1h20m

Source: National Rail Enquiries

3.4 Local Highway Network

- 3.4.1 The site is bounded to the north and west by Portman Road, residential housing to the east and Portman Way to the south. To the southwest of the site, Portman Way forms a roundabout junction with Portman Road (referred to as the Portman Road Link), which in turn forms a signalised junction with Portman Road to the northwest.
- 3.4.2 Portman Road forms a roundabout junction with Cow Lane to the east which, in turn provides a connection northbound through Cow Lane bridges (which are currently being improved) and southbound, via Beresford Road, to Oxford Road. To the west, Portman Road becomes Wigmore Lane and forms a roundabout junction with Oxford Road and Norcot Road.
- 3.4.3 Portman Way is a single lane, two-way carriageway with varying width (between 6.4m and 5.8m) and is subject to a 30mph speed limit along the site frontage.

3.4.4 To the west, Portman Road Link is a dual lane two-way carriageway, some 7m in width, and forms a roundabout junction with Portman Way to the south and a signalised junction with Portman Road to the north.

3.4.5 To the north, Portman Road is a single lane two-way carriageway some 7.3m in width and is subject to a 40mph speed limit along the site frontage.

Existing Traffic Volumes

3.4.6 To identify existing traffic patterns and volumes on the local highway network, a series of traffic surveys were carried out, as set out and agreed with RBC. These comprised:

- Automatic Traffic Counter Radar Survey at the proposed site access on 22nd February 2017;
- Manual Classified Count survey undertaken on 4th July 2017 during the peak periods, at the following junctions:
 - Junction 1 – Wigmore Lane / Oxford Road / Norcot Road Roundabout;
 - Junction 2 – Portman Road / Portman Road (Link) Signal Junction;
 - Junction 3 – Portman Way / Tesco Stores Roundabout; and
 - Junction 4 – Portman Road / Cow Lane / Beresford Road Roundabout.

3.4.7 The traffic survey data has been analysed to identify the network morning and evening peak hours; a copy of the survey data can be provided upon request. The morning and evening peak hours have been calculated as 08:15-09:15 and 17:30-18:30 respectively.

3.4.8 The observed morning and evening peak hour flows are shown on **Figures TF1** and **TF2** respectively.

Existing Traffic Speeds on Portman Way

3.4.9 Automatic Traffic Count (ATC) surveys were placed on Portman Way from 22 February 2017 for a one-week period to measure vehicle volumes and speeds on the approaches to the proposed site access.

3.4.10 The recorded 85th percentile dry weather speeds are set out in **Table 3.3** below. The survey data can be provided upon request.

Table 3.3: Speed survey results and visibility requirements

Location	Direction	85th percentile dry ¹ weather (mph)	Visibility requirement based on MfS criteria (m)
ATC 1 (#7992-west of access)	Eastbound	21	26
	Westbound	21	26
ATC 2 (#7993-east of access)	Eastbound	25	33
	Westbound	25	33

Source: ATC's / Consultant's Calculations

3.4.11 The speed survey found that 85th percentile dry weather vehicle speeds on approach to the proposed access were 21mph eastbound (based on measurements at ATC 1, located to the west of the access) and 25mph westbound (based on measurements at ATC 2, located to the east of the access).

3.5 Personal Injury Accident (PIA) Data

3.5.1 Personal Injury Accident (PIA) data has been obtained from RBC for the most recent five-year period at the time of writing for which data is available, 1st of October 2012 to 30th September 2017.

3.5.2 The data covers a comprehensive study area comprised of, Portman Road, Portman Way, Cow Lane and Wigmore Lane. The study area covered is shown on **Image 3.2** below and was discussed and agreed with RBC at the pre-application scoping stage.

Image 3.2: PIA Data Collection Area



Source: Google Maps

¹ In accordance with the Design Manual for Roads and Bridges TA22/81 (Volume 5 Section 1 Chapter 3 paragraph 3.4), a wet weather reduction of 2.5mph should be applied to observed 85th percentile dry weather speeds. However, in order to be robust, this reduction has not been applied.

3.5.3 A copy of the PIA data and a plan showing the locations of the recorded PIA's is attached at **Appendix D**.

3.5.4 A total of 37 accidents have been recorded within the study area during the period assessed. Of the recorded PIA's, 5 were serious with the remaining 32 slight in nature. A summary of the recorded PIAs within the study area is provided below.

Former Battle Hospital Site

3.5.5 One slight accident was recorded on Valentia Road during the period analysed. This accident occurred when a vehicle travelling north collided with a cyclist.

Portman Road

3.5.6 A total of 13 accidents were recorded on Portman Road during the assessed period.

Portman Road / Little John's Lane Junction

3.5.7 A total of six accidents (five slight and one serious) have been recorded at this junction in the period assessed as follows:

- Two slight accidents occurred when vehicles travelling east to west collided with vehicles waiting to turn onto Littlejohn's Lane;
- One slight accident occurred when a vehicle travelling east to west entered the path of an oncoming vehicle resulting in a head on collision;
- One slight accident occurred when a vehicle travelling west on Portman Road collided with a pedestrian crossing the road on Littlejohn's Lane;
- One slight accident occurred when a vehicle travelling west on Portman Road swerved and collided with the kerb; and
- One serious accident occurred when a vehicle turning east to north onto Littlejohn's Lane collided with a cyclist travelling west on the cycleway.

Portman Road / 200m from Bridgewater Close Junction

3.5.8 One slight accident was recorded at this area of Portman Road during the assessed period in which a vehicle travelling east collided with a vehicle travelling west along Portman Road.

Portman Road / Ashmere Terrace Junction

- 3.5.9 One slight accident was recorded during the period assessed when a vehicle travelling southeast on Portman Road overtook stationary traffic waiting to turn into Ashmere Terrace was struck by an oncoming vehicle.

Portman Road / Tesco Delivery Access

- 3.5.10 One slight accident occurred when a motorcycle travelling east on Portman Road collided into the rear of a stationary vehicle awaiting another vehicle to turn into the Tesco stores delivery access road.

Portman Road / Tesco Stores Junction (Signals)

- 3.5.11 Two slight accidents have been recorded during the period assessed as follows:
- One slight accident occurred when a vehicle travelling west failed to stop for traffic signals and collided with a vehicle turning west to south.
 - One slight accident occurred when a vehicle travelling from south to east failed to stop for the traffic signals and collided with a waiting vehicle.

Portman Road / Wigmore Lane Junction

- 3.5.12 Two slight accidents have been recorded during the period assessed as follows:
- One slight accident occurred when a cyclist travelling east collided with a vehicle travelling north.
 - One slight accident occurred when a vehicle travelling northeast was struck by a motorcycle overtaking stationary traffic travelling in the opposite direction.

A329 Oxford Road / Norcot Road / Wigmore Lane Roundabout

- 3.5.13 A total of 18 accidents were recorded at this roundabout during the assessed period. Of these 16 were slight and 2 were serious.
- Three slight accidents have occurred where vehicles have collided with cyclists travelling either on the pedestrian crossing or on navigating the roundabout.

- One serious accident occurred when a vehicle travelling northeast entering the roundabout collided with a cyclist turning southwest to southeast onto Oxford Road around the roundabout.
- 9 slight accidents have occurred at this roundabout as a result of rear end collisions.
- One serious accident has occurred at this roundabout as a result of a rear end collision where a vehicle travelling northwest was hit in the rear by another vehicle whilst waiting in stationary traffic to enter the roundabout.
- Two slight accidents occurred where vehicles travelling northwest to southeast on the roundabout have been struck by vehicles travelling northeast to southwest entering the roundabout.
- Two slight accidents have occurred where vehicles have collided with pedestrians at the pedestrian crossing, having failed to stop.

A329 Oxford Road Shell Garage Entrance

- 3.5.14 One slight accident was recorded at this junction during the period assessed in which a vehicle turning into the garage struck a cyclist.

A329 Oxford Road / Reading Retail Park Entrance

- 3.5.15 One slight accident was recorded at this junction during the period assessed in which a vehicle travelling northwest collided with a bus pulling away from a bus stop.

A329 Oxford Road / Scour's Lane Junction

- 3.5.16 Two slight accidents were recorded at this junction during the period assessed as follows:
- One slight accident occurred when a cyclist turning right southeast to north was struck by an oncoming vehicle travelling southeast.
 - One slight accident occurred when a vehicle turning left north to southeast was struck by an approaching vehicle travelling in the opposite direction.

3.6 Summary

- 3.6.1 Whilst any accident is regrettable, the overall number and cause of accidents does not suggest a specific issue at any particular location (e.g. there is not a pattern that suggest a problem with a particular turning manoeuvre). It is important to note that the roads in the immediate vicinity of the site, including Portman Way, have a good highway safety record. Furthermore, there are planned improvements identified at the A329 Oxford Road / Norcot Road / Wigmore Lane Roundabout which will improve conditions for pedestrians and cyclists

SECTION 4 DEVELOPMENT PROPOSAL

4.1.1 Full planning consent is being sought for some 215 new residential dwellings. This section of the TA will set out the proposed development, including access, parking, landscaping and open space.

4.2 Development Mix

4.2.1 The development will consist of a mix of dwellings types, as summarised in **Table 4.1**.

Table 4.1: Development Mix

Dwelling Type	Number of units
One-bedroom Apartments	45
Two-bedroom Apartments	105
Three-bedroom Apartments	14
Two-bedroom Coach Houses	2
Three-bedroom Houses	49
<u>Total</u>	<u>215</u>

Source: DHA Architects

4.3 Masterplan and Layout

4.3.1 The site layout masterplan has been prepared which demonstrates how the development is expected to come forward. A copy of the masterplan is attached at **Appendix E**, an extract of which is shown at **Image 4.1**.

Image 4.1: Extract of Development Masterplan



Source: DHA

4.3.2 The site layout has been designed in accordance with contemporary design guidance, namely the DfT's *'Manual for Streets'* (MfS), as set out below:

- **Primary Street** – 6m wide carriageway with a 3.0m shared use footway / cycleway on the western side of the road and a 2.0m footway on the eastern side of the road;
- **East - West Street** – 5.5m carriageway with 2.0m footways adjacent;
- **Shared surface street** – minimum 4.8m wide street in eastern section of the site, where provision for pedestrians is on-carriageway; and
- **Private Driveways / Mews / Courtyard Squares** – narrower shared surface areas (4.1m – 4.8m) where refuse vehicles do not need to enter.

4.3.3 An area of the existing Battle Hospital Site is to be retained by the current occupier, Synergy Health. This parcel of land, which is currently accessed from Portman Road via the temporary Portman Road access, will in the future be accessed via the new development access onto Portman Way. All road widths have been designed to allow for the access to the Synergy Health building to be retained.

4.4 Site Access Strategy

4.4.1 The NPPF at paragraph 32 requires that decisions should take account of whether:

“Safe and suitable access to the site can be achieved for all people”

4.4.2 To deliver safe and suitable access, the following access strategy is proposed:

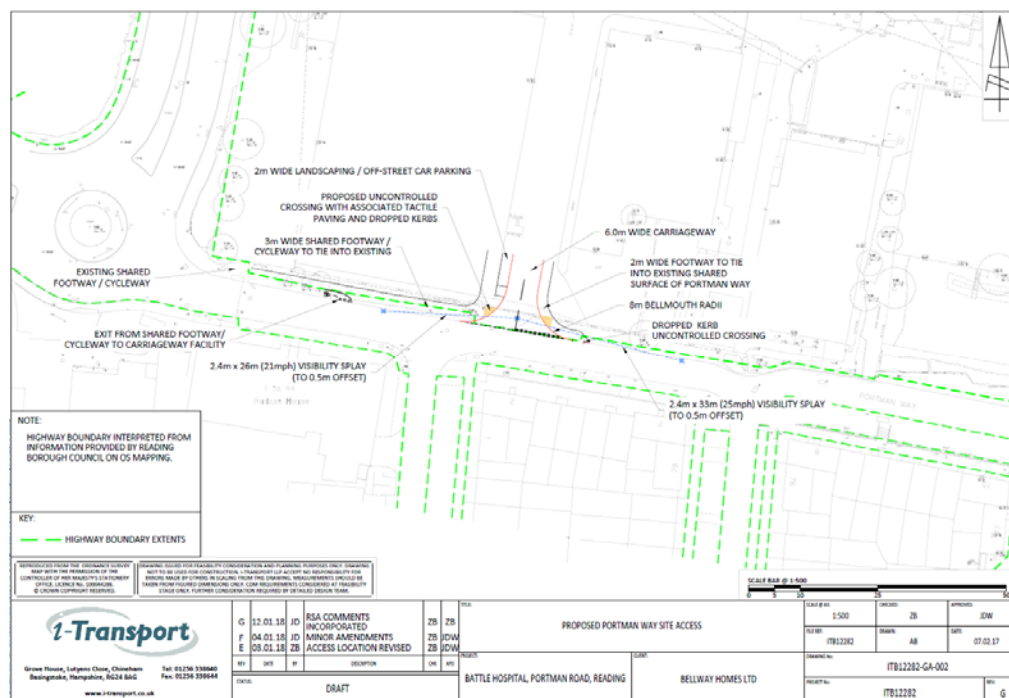
- Vehicular access to Portman Way from a simple priority junction;
- The existing temporary access from Portman Road to be closed;
- Emergency vehicular access to Valentia Way (internal to phase 1) from the existing nurse’s accommodation access;
- Pedestrian and cycle access is provided in four locations: -
 - i) To Portman Way at the site access;
 - ii) To Valentia Way (internal to Phase 1) via the emergency access;
 - iii) To the existing infrastructure at the signalised junction of Portman Road / Portman Way link (north western corner of the site); and
 - iv) To a new shared footway / cycleway on the north eastern corner of the site (adjacent to Portman Road).

4.4.3 The site is therefore very well connected through pedestrian / cycle linkages on all corners of the site and the existing network of footways and cycleways in the local area.

4.5 Vehicular Access to Portman Way

4.5.1 A single vehicular access will be provided to the site from Portman Way in the form of a simple priority junction. The principle access is shown on **Drawing ITB12282-GA-002 Rev G**, which is reproduced at **Image 4.2**. This arrangement has been agreed in principle with RBC who considered the access through the pre-application process.

Image 4.2: Site Access Extract



Source: i-Transport

4.5.2 **Table 3.3** presents the recorded speeds on Portman Way, captured from the week-long ATC survey. The recorded speeds are below 37.5mph, and so use of the '*Manual for Streets*' (MfS) Guidance is appropriate. Table 3.3 provides a calculation of the visibility requirements at the proposed access in line with the MfS guidance. **Drawing ITB12282-GA-002 Rev G** demonstrates that the required visibility splays of 2.4m x 33m (to the left) and 2.4m x 26m (to the right) can be provided in accordance with the recorded vehicle speeds. In reality, visibility in excess of those shown can be achieved.

4.5.3 The access road is proposed to be 6m in width to enable two large vehicles to pass comfortably, with localised widening on the bends. Swept path analysis of the proposed site access has been undertaken to demonstrate that a large refuse vehicle can adequately manoeuvre into and out of the site access. This also demonstrates that the junction will safely accommodate vehicles associated with the future residential use of the site, and that, during the construction period, large vehicles will be able to access the site safely.

4.5.4 As the existing Synergy Health building will initially be retained, the access and road widths have been designed to accommodate the occasional large vehicles which may visit the Synergy unit site for servicing.

- 4.5.5 An independent Stage One Road Safety Audit (RSA) has been undertaken of the proposed vehicular and pedestrian site access arrangements and the proposed highway improvement works. This has been carried out in accordance with the Design Manual for Roads and Bridges (DMRB) Highways Directive 19/15.
- 4.5.6 No serious, nor insurmountable issues were identified by the auditor. All comments received by the auditor have been satisfactorily dealt with through minor amendments to the arrangements; or by identifying that additional information will be (more appropriately) provided at the detailed design stage.
- 4.5.7 A copy of the Stage 1 Road Safety Audit and associated Designer's Response is contained in **Appendix F**.

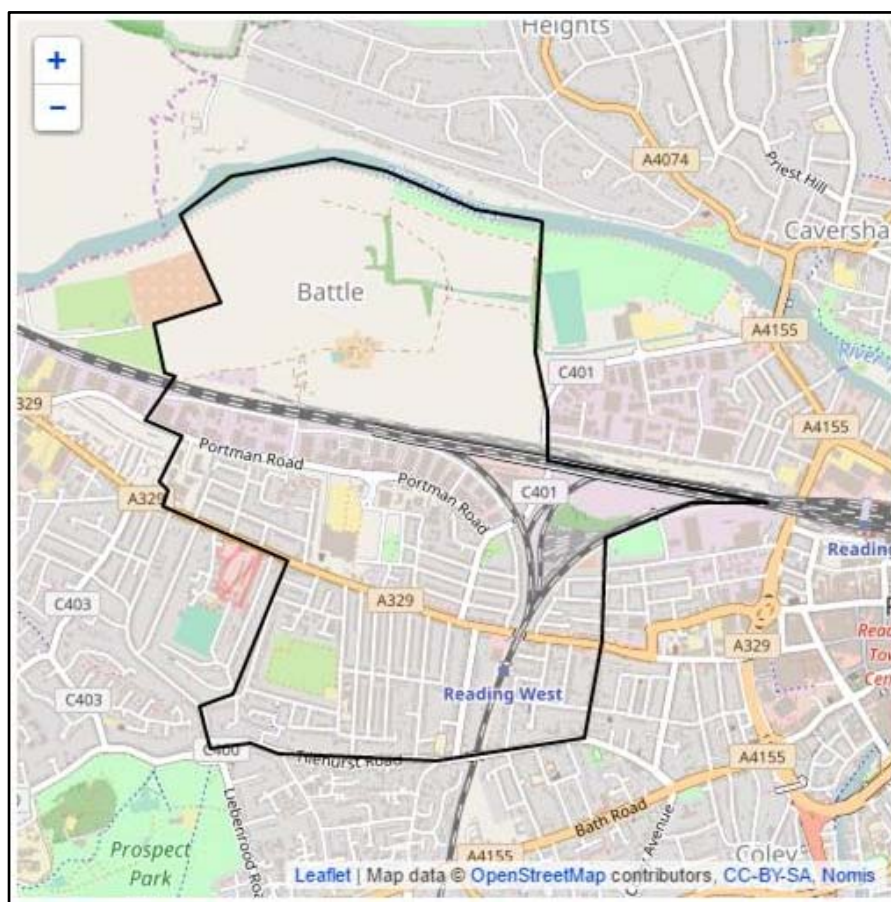
4.6 Parking Provision

- 4.6.1 This TA supports a full application and as such parking provision has been considered in detail.
- 4.6.2 As discussed with RBC, a bespoke parking demand assessment has been undertaken which utilises 2011 census data for the local area to determine likely parking demand.

Current car ownership levels

- 4.6.3 To understand car ownership locally a review has been undertaken for the Battle Ward (Ref: E05002320), within which the site sits, as shown on **Image 4.3**. This Ward includes the Battle Hospital site.

Image 4.3: Battle Ward



4.6.4 **Table 4.2** summarises local car ownership within the Battle Ward, based on Census 2011 data provided by the Office of National Statistics.

Table 4.2: Car ownership in Battle Ward

Car or van availability (Battle Ward)	Number of Households	Percentage (%)
All categories: Car or van availability	4,480	100.0
No cars or vans in household	1,623	36.2
1 car or van in household	2,142	47.8
2 cars or vans in household	597	13.3
3 cars or vans in household	97	2.2
4 or more cars or vans in household	21	0.5

Source: Table KS404EW (ONS)

4.6.5 The 2011 Census data for the Battle Ward identifies that a relatively high proportion of existing residents (36.2%) currently do not own a car and that some 47.8% only own one car. It is of note that only 16% of households own two or more cars. The average car ownership for the Battle Ward it is some 0.8 vehicles per household.

- 4.6.6 As a comparison, the car ownership levels for Reading (BUASD area) as taken from the 2011 Census have been summarised in **Table 4.3**.

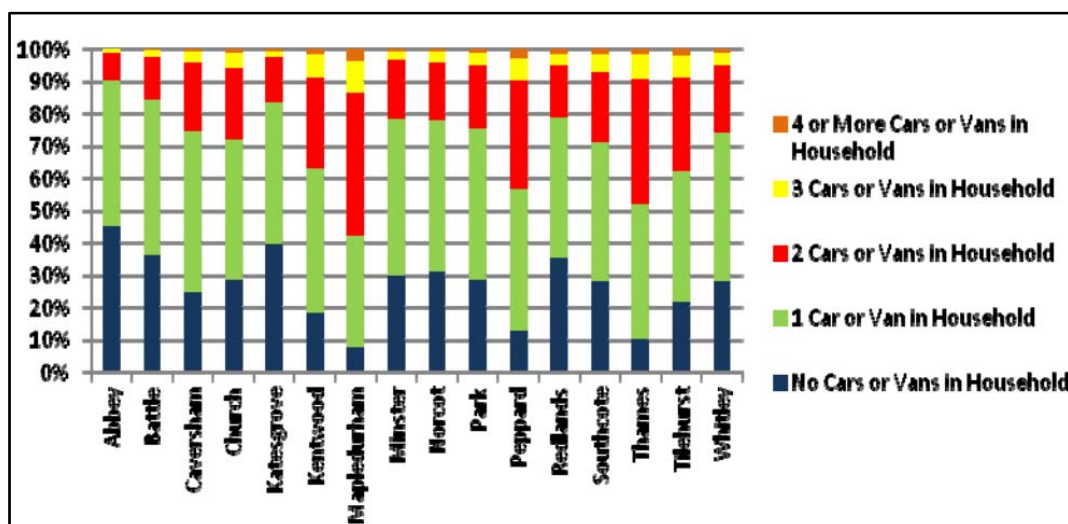
Table 4.3: Car ownership in Reading

Car or van availability (Reading BUASD)	Number of Households	Percentage (%)
All categories: Car or van availability	86,982	100%
No cars or vans in household	20,000	23%
1 car or van in household	37,841	44%
2 cars or vans in household	22,654	26%
3 cars or vans in household	4,816	6%
4 or more cars or vans in household	1,671	2%

Source: ONS (Reading BUASD area)

- 4.6.7 It is evident from the two tables that the average car ownership for the wider Reading area is some 1.2 vehicles per household, while for the Battle Ward it is some 0.8 vehicles per household. These findings are supported by the Reading 2011 Census factsheet summarises key Census statistics across Reading. From this it can be seen that the Ward of Battle has some of the lowest car ownership in Reading; refer **Image 4.4**.

Image 4.4: Car ownership by household by ward



Source: Reading Key Census Statistics

- 4.6.8 Following discussions with RBC, further analysis of the six local output areas which cover the original Battle site (areas E00082651, E00082652, and E00082654), and areas to the west (broadly Alma Street to Chester Street (areas E00174501, E00174504, and E00174506) has been undertaken, as shown on **Table 4.4**.

Table 4.4: Car ownership by household by ward

	Wards												Totals	
	E00082651		E00082652		E00082654		E00174504		E00174501		E00174506			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All categories: Car or van	140	100	138	100	138	100	128	100	130	100	64	100	738	100
No cars or vans	30	21.4	42	30.4	53	38.4	32	25	45	34.6	13	20.3	214	28.9
1 car or van	78	55.7	75	54.3	59	42.8	71	55.5	68	52.3	42	65.6	393	53.3
2 cars or vans	24	17.1	17	12.3	21	15.2	24	18.8	14	10.8	9	14.1	109	14.8
3 cars or vans	8	5.7	3	2.2	4	2.9	1	0.8	3	2.3	0	0	19	2.6
4 or more cars or vans	0	0	1	0.7	1	0.7	0	0	0	0	0	0	2	0.3
sum of all cars or vans	150	-	122	-	117	-	122	-	105	-	60	-	676	-

Source: Census 2011

4.6.9 The combined average over these six areas identifies an average car ownership figure of 0.92 cars per dwelling. This is slightly higher than the average within the Battle Ward as a whole. The difference is likely to be due to the high level of parking restrictions in some parts of the Battle Ward which, contributes to reduced car ownership, as residents will be aware of the limited opportunities for parking in the area. This does however highlight that a combination of reduced parking availability and the proximity of the area to local facilities and public transport means that residents have less reliance on the private car.

4.6.10 Taking these as two district areas i.e. combining the three output areas covering the original Battle site (areas E00082651, E00082652, and E00082654), and areas to the west (broadly Alma Street to Chester Street (areas E00174501, E00174504, and E00174506), it can be seen from **Table 4.5** that the average car ownership varies between 0.94 and 0.89. This is likely to be due to the difference in type of dwelling (Alma Street to Chester Street is predominantly housing) and tenure type, where it is likely that the original Battle site has a higher percentage of flats social / shared ownership.

Table 4.5: Typical parking demand for houses in Battle Ward

Battle Site Wards			Western Wards		
Ward No.	Sum of all cars or vans	All categories: Car or van	Ward No.	Sum of all cars or vans	All categories: Car or van
E00082651	150	140	E00174504	122	128
E00082652	122	138	E00174501	105	130
E00082654	117	138	E00174506	60	64
Total	389	416	Total	287	322
Ratio	0.94		Ratio	0.89	

Consultants Estimates

4.6.11 Further to the 2011 Census household parking data identified in **Table 4.5**, a further assessment of the 2011 Census data has been undertaken looking at how car ownership within the Battle Ward relates to dwelling size, type and tenure.

4.6.12 **Table 4.6** summarises the typical parking demand for houses, both privately owned and affordable.

Table 4.6: Typical parking demand for houses in Battle Ward

Houses	Number of Rooms	Beds (Houses)	Typical Demand (No allocated provision)
Owned & Private rented or living rent free	3	1 bed	0.98
	4	2 bed	0.98
	5	3 bed	1.26
Other Social Rented	3	1 bed	0.46
	4	2 bed	0.46
	5	3 bed	0.67

Consultants Estimates

4.6.13 The analysis identifies that where a single parking space is allocated to a 3 bed house an additional 0.9 spaces and 0.4 spaces per dwelling should be provided for each private and affordable dwelling respectively.

4.6.14 **Table 4.7** summarises the typical demand for apartments, both privately owned and affordable, when no allocated spaces are provided.

Table 4.7: Typical parking demand for apartments in Battle Ward

Apartments	Number of Rooms	Beds (Houses)	Typical Demand (No allocated provision)
Owned & Private rented or living rent free	2	1 bed	0.79
	3	1 bed	0.98
	4	2 bed	0.98
	5	3 bed	1.26
Other Social Rented	3	1 bed	0.46
	4	2 bed	0.46
	5	3 bed	0.67

Consultants Estimates

4.6.15 Where a single parking space is allocated to an apartment an additional 0.2 to 0.6 spaces per apartment should be provided, depending on the tenure and size of the unit.

4.6.16 On the basis of the above, the following parking provision has been identified:

- All parking for apartments to be unallocated;
- 1 bed apartments to have a ratio of at least 0.8 spaces per dwelling;

- 2 and 3 bed apartments to have a ratio of at least 1.0 spaces per dwelling; and
- All 3 bed houses to have at least 1.9 spaces per dwelling (with at least one allocated parking space and 0.9 unallocated spaces per dwelling).

4.6.17 As shown on the master plan, parking will be provided:

- Within an undercroft basement for the flat blocks;
- Within the curtilage of individual dwellings;
- In parking courts; and
- Within dedicated parking bays along the street frontage.

4.6.18 The dimensions of parking spaces and garages are to be provided in accordance with the guidance set out in RBC's Residential Car & Cycle Parking Standards.

4.6.19 All of the parking for the apartments will be unallocated to provide for efficient use, while there will be a number of on-street visitor parking provided in dedicated lay-bys.

4.6.20 Cycle parking will be provided in accordance with the minimum cycle parking standards presented in RBC' LDF Revised Parking Standards and design SPD (adopted October 2011), re-produced below: -

- 1/2 Bed Flat – 0.5 spaces per flat;
- 3+ Bed Flat – 1 space per flat;
- 1 bed house – 1 space per dwelling; and
- 2+ bed house – 2 spaces per dwelling.

4.6.21 Cycle parking for the proposed houses will be provided in garages, or in sheds in back gardens and, for apartments, cycle parking will be provided in covered and secured communal areas.

4.7 Refuse Collection Arrangements

4.7.1 Drawing **ITB12282-GA-006 Rev A** demonstrates that a refuse vehicle can enter, circulate around the site and exit in forward gear. The refuse vehicle used in the swept path analysis is based on the specification provided in RBC's 'Waste Management Guidelines for Property Developers, Architects, Planners and Contractors' document.

4.7.2 The refuse carry distances for the development comply with Section 2.3 for households and Section 3.6 for purpose built flats. Specifically: -

- All of the dwellings with two wheeled bins are within 30m of a waste collection point and the refuse vehicle can get to within 15m of the collection points; and
- All of the apartments with Eurobins are within 15m of an area accessible by the refuse collection vehicle.

4.8 Emergency Vehicle Access

4.8.1 An emergency vehicle will be able to enter and egress the proposed development in forward gear and manoeuvre as required within the development, as shown on **Drawing ITB12282-GA-007 Rev A**. Access to within a maximum of 45m of the furthest point of every dwelling will be provided for a fire tender, or fire hydrants and / or dry risers are provided where this isn't possible.

4.8.2 Provision to fight fires has therefore been provided in accordance with the Building Regulations Approved Documents and MfS. DHA drawing 031610-BEL-TV-02 (also attached in **Appendix E**) presents the locations of the fire hydrants and / or dry risers.

4.8.3 As requested, at the pre-application scoping stage with RBC highways, a suitable designated emergency vehicle access from Valentia Road (to the south-west) has been provided. This is in the form of a 3.7m wide shared use footway / cycleway / controlled emergency access.

SECTION 5 PROMOTING SUSTAINABLE TRANSPORT

5.1 Introduction

5.1.1 Paragraph 32 of the NPPF sets out that development proposals should ensure that:

“Opportunities for sustainable transport modes have been taken up depending on the nature and location of the site to reduce the need for major transport infrastructure”

5.1.2 This section of the report considers the accessibility of the site to key services and facilities by non-car modes of transport and identifies how future residents of the site will be encouraged to use these alternative modes of travel through the delivery of a Sustainable Transport Strategy.

5.2 Journey Purpose

5.2.1 In considering accessibility and promoting sustainable travel it is important to consider the reason why future residents of the proposed development will make journeys. The Department for Transport’s (DfT) National Travel Survey identifies the proportion of all trips by purpose as set out in **Table 5.1**.

Table 5.1: Proportion of Trips per Year by Journey Purpose

Journey Purpose	Proportion of Trips
Commuting	16%
Personal business and other escort	19%
Shopping	19%
Visiting friends	15%
Education (including escort)	12%
Business	3%
Other Leisure	16%

Source: National Travel Survey Statistics 2015 (Table NTS0401)

5.2.2 It is evident that travel demand is well spread between a number of journey purposes including leisure, shopping, commuting / business and education / escort education trips which account for around two thirds of all journeys.

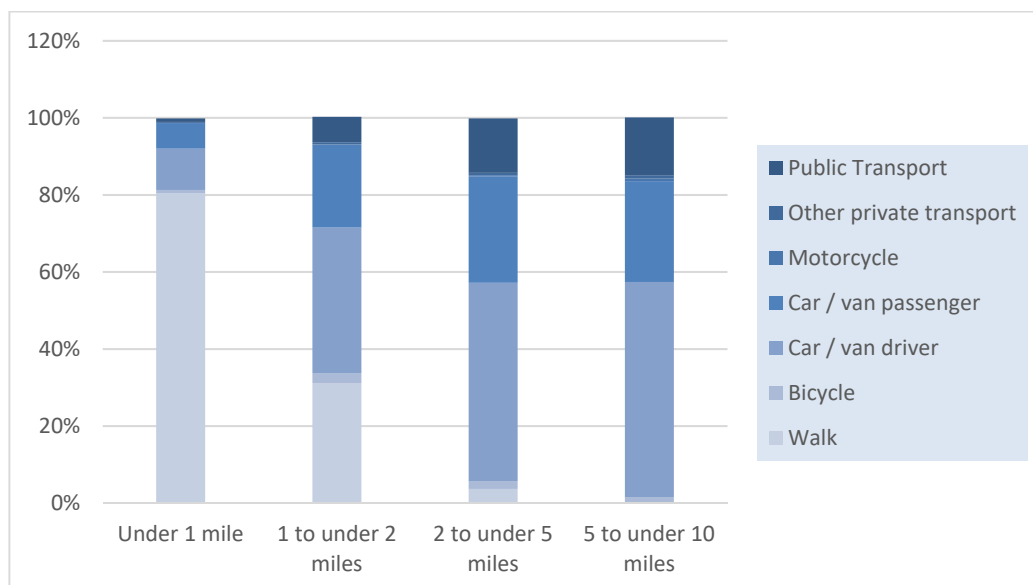
5.3 Propensity to Travel by Non-Car Modes

5.3.1 In order to consider the potential for trips to be made by walking, cycling and public transport, consideration is given to the distances that people are likely to travel.

Walking Distances

- 5.3.2 Paragraph 4.4.1 of the Manual for Streets identifies that ***“Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes’ (up to about 800 m) walking distance of residential areas”.***
- 5.3.3 MfS continues to note ***“this is not an upper limit and PPG13 states that walking offers the greatest potential to replace short car trips, particularly those under 2km.”***
- 5.3.4 The National Travel Survey (NTS) 2016 identifies the mode share journeys of different lengths. This is repeated in **Image 5.1** and demonstrates that the vast majority (80%) of trips of up to one mile (1.6km) are undertaken on foot for journeys. This is corroborated by the CIHT guidance *‘Planning for Walking’*. The NTS data also shows that 33% of journeys between 1 and 2 miles will be on foot, i.e. a significant proportion of people are prepared to walk for journeys of up to 2 miles (3.2km).

Image 5.1: Mode Share of Trips by Main Mode for Different Trip Lengths: England



Source: NTS 2016 (NTS0308)

- 5.3.5 DMRB TD91/05 ‘Provision for Non-Motorised Users’, identifies that walking is a ‘normal’ mode of transport for journeys undertaken within a range of two miles:

“Walking is used to access a wide variety of destinations including educational facilities, shops, and places of work, normally within a range of up to 2 miles. Walking and rambling can also be undertaken as a leisure activity, often over longer distances”. (Para 2.3)

5.3.6 Against all of this background, the following walking distances are identified:

- Up to **800m** – A comfortable walking distance;
- Up to **2,000m** – A reasonable walking distance i.e. the distance that “offers the greatest potential to replace short car trips”, and where the majority of trips are undertaken on foot; and
- Up to **3,200m** – A maximum regular walking distance i.e. the distance within which a significant proportion (circa one-third) of journeys will be on foot.

5.4 Cycling Distances

5.4.1 The Design Manual for Roads and Bridges (DMRB) TA 91/05 'Provision for Non-Motorised Users' paragraph 2.11 states:

“Cycling is used for accessing a variety of different destinations, including educational facilities, shops and places of work, up to a range of around 5 miles. Cycling is also undertaken as a leisure activity, often over much longer distances. As well as being a mode of transport in its own right, cycling frequently forms part of a journey in combination with cars and public transport.”

5.4.2 Guidance within CIHT “Planning for Cycling” also states that:

“The majority of cycling trips are for short distances, with 80% being less than five miles and with 40% being less than two miles. However, the majority of trips by all modes are also short distances (67% are less than five miles, and 38% are less than two miles); therefore, the bicycle is a potential mode for many of these trips (DfT, 2014a)...”

5.4.3 Paragraph 1.5 in the Department for Transport's (DfT) Local Transport Note 2/08 'Cycle Infrastructure Design' (October 2008) states that:

“Urban networks are primarily for local journeys. In common with other modes, many utility cycle journeys are under three miles (4.8km) (ECF, 1998), although for commuter journeys, a trip distance of over 5 miles (8km) is not uncommon.”

5.4.4 Data provided within the National Travel Survey demonstrates that the average distance per journey by bike is approximately 4.4km, with the current average length of an employment and leisure cycle trip some 5.2km.

5.4.5 On this basis, the following cycling distances are identified:

- Up to 3,200m - an attractive and short cycle trip;
- Up to 5,000m - a 'reasonable' everyday cycle distance; and
- Up to 8,000m - the 'maximum' cycling distance for regular (non-leisure) trips.

5.5 Local Facilities and Services

5.5.1 The key local destinations for future residents of the proposed development within the context of the above noted local walking and cycling catchments are illustrated on **Figure 2** and are listed in **Table 5.2**, which includes facilities for education, leisure, retail, employment and health.

Table 5.2: Key Local Destinations

Facility Type	Key Destination	Walking Distance (m)	Walk	Cycle
Retail	Tesco Extra	100	✓✓✓	✓✓✓
	Oxford Road Shopping Parade	400	✓✓✓	✓✓✓
	Lidl	800	✓✓✓	✓✓✓
	Reading Retail Park	1600	✓✓	✓✓✓
	Vastern Court Retail Park	1800	✓✓	✓✓✓
	Waitrose	1900	✓✓	✓✓✓
	Reading Town Centre	2000	✓✓	✓✓✓
	The Oracle Shopping Centre	2300	✓	✓✓
Health	Oxford Road Pharmacy	600	✓✓✓	✓✓✓
	Western Elms Surgery	650	✓✓✓	✓✓✓
	Inspire Dental Reading	1200	✓✓	✓✓✓
Employment	Portman Road Industrial Estate	100	✓✓✓	✓✓✓
	Richfield Avenue Industrial Estate	1000	✓✓	✓✓✓
	Reading Retail Park	1600	✓✓✓	✓✓✓
	Reading Town Centre	2000	✓✓	✓✓✓
Education	The Honey Bee Pre-School	400	✓✓✓	✓✓✓
	Battle Primary Academy	800	✓✓✓	✓✓✓
	Wilson Primary School	950	✓	✓✓
	Oxford Road Primary School	1100	✓✓	✓✓✓
	The Wren School	1800	✓✓	✓✓✓
	Ranikhet Academy	2100	✓	✓✓
	Prospect School	2700	✓	✓✓
Leisure	Oxford Road Community Garden	800	✓✓✓	✓✓✓
	Kensington Park	800	✓✓✓	✓✓✓
	Central Swimming Pool	1200	✓✓	✓✓✓
	Prospect Park	1500	✓✓	✓✓✓
	Rivermead Leisure Centre	1500	✓✓	✓✓✓
	River Ibis Leisure Centre	1900	✓✓	✓✓✓
	Bus Stops	650	✓✓✓	✓✓✓
Travel	Reading West Railway Station	750	✓✓✓	✓✓✓
	Reading Railway Station	2300	✓	✓✓

Source: Consultant (all distances are estimated walk distances measured from the centre of the site on Google Maps)

Notes: Walk Distances – ✓✓✓ less than 800m ✓✓ between 800m and 2km, ✓ between 2km and 3.2km
Cycle Distances – ✓✓✓ less than 2km ✓✓ between 2km and 5km, ✓ between 5km and 8km

5.5.2 **Figure 2** and **Table 5.2** demonstrate that there are a wide range of everyday facilities within a comfortable and attractive walking distance of the site, including primary education, convenience retail, personal business services, a range of leisure facilities and employment opportunities.

5.5.3 All of the services and facilities outlined in **Table 5.2** are within the maximum walking distance of 3.2km, and all fall within a reasonable cycling distance.

5.6 Summary

- 5.6.1 The site is accessible to a wide range of everyday facilities on foot and by cycle, and a network of footways and cycleways have been designed into the site, with multiple points of access to ensure permeability.
- 5.6.2 High frequency bus services can be accessed from the Oxford Road corridor to the south of the site providing access to Services 15/15a, 16 and 17. These together provide high-standard bus access to key destinations including the centre of Reading, Tilehurst, Calcot and the rail network.
- 5.6.3 The site is located within an acceptable walking distance and reasonable cycle distance to Reading West railway station, which is located some 750m to the south-east of the site. This provides a realistic opportunity for residents to access destinations further afield for both employment and leisure trips.
- 5.6.4 A number of opportunities exist (and have been taken up) to provide additional pedestrian connections to the existing footway infrastructure, thus enhancing the permeability of the site and encouraging the use of sustainable travel modes.

5.7 Sustainable Transport Strategy

- 5.7.1 It is demonstrated that the site benefits from its close proximity to a range of local everyday services and facilities that cater for the vast majority of journey purposes.
- 5.7.2 The site is located within a comfortable and attractive walking distance of these facilities, all of which are well within a comfortable cycle distance too.
- 5.7.3 High frequency bus services are also accessible to the site. Overall there are a number of realistic and viable transport choices available to future residents of the site.
- 5.7.4 To ensure these opportunities are taken up, a '*Sustainable Transport Strategy*' has been developed. The Strategy comprises:
- Delivering sustainable access connections from the site to the local walking and cycling network;
 - Delivering improvements to the walking and cycling network to address gaps in provision;

- Providing pedestrian and cycle routes along the boundary of the site and through the site; and
- Delivering a realistic package of measures within a Framework Travel Plan designed to encourage residents to consider sustainable travel choices as part of their overall travel pattern.

5.7.5 The strategy will be delivered through a Residential Travel Plan. This is set out in the F RTP that supports the application (*report ref: ITB12282-006 R*).

5.7.6 The overarching aims of the Strategy are:

- To improve accessibility to the site by non-car modes of transport and thereby encourage the use of other travel modes;
- To reduce the number of car journeys to the site; and
- Ensure that car ownership levels on site are similar to those in the local area.

5.7.7 The key target of the Residential Travel Plan is:

“To reduce the number of vehicle trips to and from the site over a 12-hour weekday by 10% from the baseline position by year five.”

5.7.8 To achieve the aims and objectives, a package of ‘Hard’ and ‘Soft’ measures designed to encourage residents to consider sustainable travel opportunities are promoted through the F RTP.

5.7.9 A combination of ‘hard’ (infrastructure led) and ‘soft’ (promotion and incentive based) measures are identified to promote and incentivise sustainable travel choices where it is realistic to do so. The F RTP identifies a delivery and management strategy for these measures and commits to future monitoring of the success of the travel plan.

Hard Measures

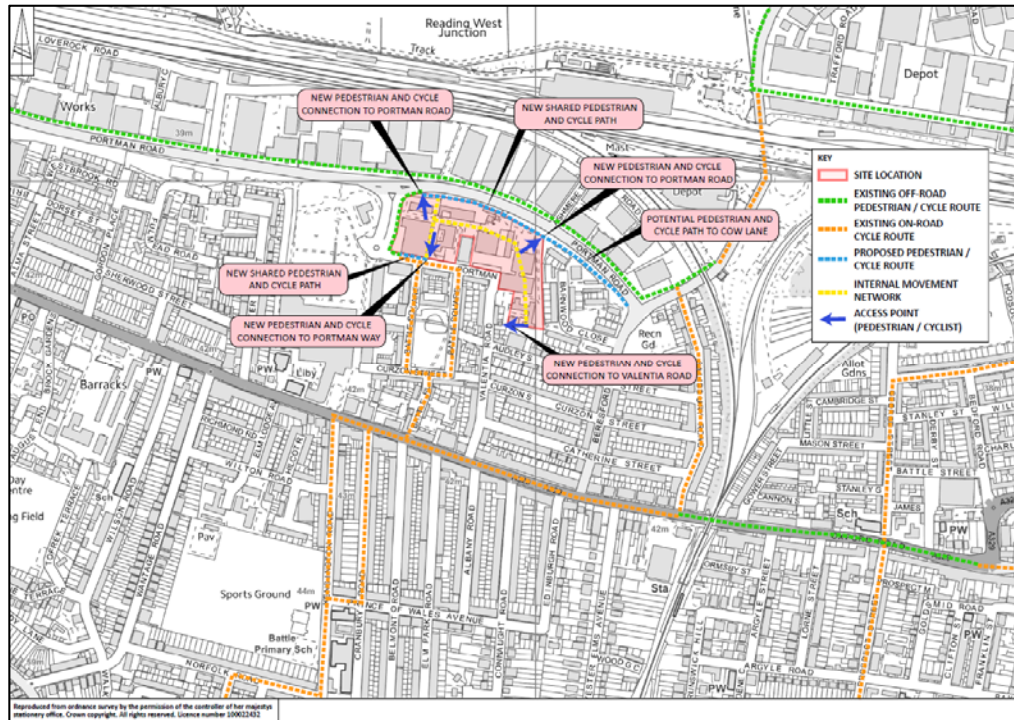
5.7.10 In order to further encourage walking and cycling, and to maximise opportunities for sustainable travel, a number of connections to the existing infrastructure, and potential improvements, have been identified. These are shown graphically on **Image 5.2** and comprise: -

- A new 3m wide north – south pedestrian / cycle connection within the site from Portman Road to Portman Way. This will tie into the existing infrastructure at the at signalised junction of Portman Road / Portman Way (north western corner of the site);
- A new pedestrian / cycle connection within the site adjacent to Portman Road. This will also tie into the existing infrastructure at the at signalised junction of Portman Road / Portman Way. The route will be predominantly 3m in width, with a short section reduced to 2m in width. This reduction is necessary to deliver the land scaping which has been requested during the pre-application discussions;
- An extension of the existing 3m wide shared footway / cycleway from the internal Portman Way Tesco roundabout (at the south-western corner of the site) to the proposed site access; and
- A new pedestrian / cycle connection to Valentia Way (via the emergency access).

5.7.11 The applicant is also willing to provide a reasonable financial contribution towards the continuation of the footway / cycleway from the north eastern corner of the site, on the southern side of Portman Road, through to the Cow Lane mini roundabout, thus replicating the cycle provision currently provided on the northern side of Portman Road.

5.7.12 It is understood a number of improvements are being considered to the Portman Road / Cow Lane / Beresford Road roundabout (as set out in Section 8.3), which include the provision of a footway on the southern side of Portman Road in the vicinity of the junction. It is therefore considered that a financial contribution is the best approach to delivering these improvements. An indicative arrangement is shown on **Drawing ITB12282-GA-005 Rev A.**

Image 5.2: Improved Sustainable Transport Connections



Source: - i-Transport

Soft Measures

5.7.13 The Framework Residential Travel Plan identifies the following measures;

- Provision of a 'Travel Welcome Pack', to provide information of travel opportunities and to promote travel;
- Creation of a community travel website, to provide travel information;
- Creation of a steering group consisting of local residents;
- Community noticeboards to identify travel opportunities and incentives;
- Promotion of local car-share schemes;
- Promotion of local car clubs (Co-wheels); and
- Establishment of a Bicycle User Group (BUG).

5.7.14 The F RTP identifies a delivery and management strategy for these measures and commits to future monitoring of the success of the travel plan. In combination with the hard measures identified earlier, these will ensure opportunities to travel sustainably are taken up.

5.7.15 An Action Plan is provided in **Table 5.3** which summarises the comprehensive package of measures proposed to be delivered to encourage sustainable access to and from the site. Further detail is provided within the F RTP that accompanies the application.

Table 5.3: Sustainable Transport Strategy

Objective	Measure	Timescale
Initial-Objective	Develop and maintain community web-site	Phased with Development
	Prepare and distribute Travel Welcome Packs	Prior to Occupation
	Prepare and distribute local Car Club promotional material	Prior to Occupation
	Provide community notice board	Phased with Development
Reduce the Need to Travel	Deliver connections to broadband network	Phased with Development
Promotion of Walking and cycling	Provision of walking and cycling maps	Prior to Occupation
	Pedestrian / cycleway connection to Portman Way, Portman Road, Valentia Way	Phased with Development
	Provision of a new footway / cycleway adjacent to Portman Way	Phased with Development
	Provision of a new footway / cycleway adjacent to Portman Road	Phased with Development
	Provision of tactile paving along key walking routes	Phased with Development
	Delivery of MfS layout – interconnecting streets, shared streets and home zones	Phased with Development
	Provision of cycle storage within each unit	Phased with Development
	Set up a Bicycle User Group (BUG)	Six months after Occupation
Promotion of Public Transport	Negotiation of reduced bus tickets	On occupation
Encourage Car Sharing	Promotion of car sharing schemes through https://liftshare.com/uk/journeys/from/reading-united-kingdom and https://www.blablacar.co.uk/ride-sharing/reading/	Prior to Occupation
Management		
Appoint a Travel Plan Coordinator		One month prior to Occupation – retained for minimum of five years from occupation
Training of sales team about the Travel Plan		Training as part of induction process.
Production of Sales Stage Travel Packs		To be developed before 1 st occupation.
Steering Group		Meeting every 6 months during the first year and annually thereafter
Monitoring		
Traffic Surveys at site access		Year one, three and five
Travel Questionnaires		One year after fist occupation and then biennially until the end of the travel plan period
Monitoring Report		Biennially until the end of the travel plan period

5.8 Summary

- 5.8.1 The site is well located to take advantage of a good range of local services and facilities, which future residents of the proposed development will visit on a regular basis. This includes local convenience stores, pharmacy, post office, health centre and community facilities on Oxford Road and employment opportunities on Portman Road. In addition, local schools (primary and secondary), and leisure facilities are within a reasonable walking distance from the proposed site.
- 5.8.2 Future residents of the proposed development will have the opportunity to access a range of everyday destinations by a choice of different travel modes and as such will be less reliant on the private car.
- 5.8.3 Walking is a realistic mode of travel to and from the site and the development will facilitate safe and easy cycling within the site and connecting to surrounding routes. The access strategy provides a permeable and connected development with four points of walking / cycle access to reduce travel distance. A significant proportion of travel from the site can be expected to be made on foot / by bike to reach local facilities and regional facilities within Reading.
- 5.8.4 Frequent and regular bus services operate a turn up and go service on Oxford Road some 400m south of the site. These services provide opportunities to travel to Reading, Calcot and Tilehurst, as well as linking the site to the rail network.
- 5.8.5 A Sustainable Transport Strategy has been developed which will be delivered through the Residential Travel Plan. This identifies opportunities for the effective promotion and delivery of sustainable transport initiatives e.g. walking, cycling, public transport to reduce the demand for travel by less sustainable modes. The reduced reliance on the private car will in turn lead to a reduced need to own a vehicle, or a second vehicle. The reduced parking demand already observed across the Battle Ward shows that existing residents already have a high propensity to use alternatives to the private car.

- 5.8.6 Future residents therefore have the opportunity to access a range of destinations by a choice of sustainable transport modes. The proposed development is located where the need to travel will be minimised and, through the Residential Travel Plan, the use of sustainable transport modes can be maximised.
- 5.8.7 In line with the NPPF requirements, it is therefore demonstrated that the opportunities for sustainable travel can be and have been taken up.

SECTION 6 TRAFFIC IMPACT – METHODOLOGY

6.1 Introduction

- 6.1.1 This section of the Transport Assessment details the methodology used to assess the potential traffic impact of the development. This methodology has been agreed with RBC through the pre-application Scoping Process.

6.2 Baseline Conditions

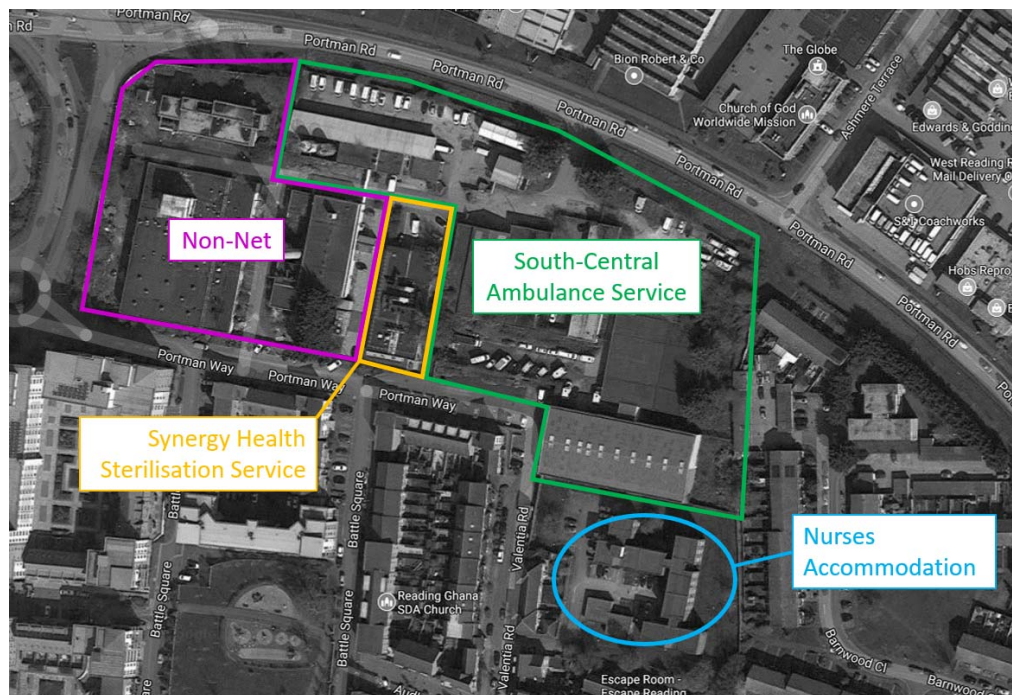
- 6.2.1 Peak period manual classified turning counts were undertaken on 4th July 2017 at the junctions identified in Section 3. The observed morning and evening peak hour traffic flows are shown on **Figures TF1 and TF2** respectively.

6.3 Traffic Generation

Existing Trip Generation

- 6.3.1 The site is currently made up of a number of occupied and non-occupied buildings; comprised of store rooms, vehicle maintenance & storage, Ambulance service, Synergy sterilisation unit and Nurse's accommodation (totalling some 7,983sqm).
- 6.3.2 Of these buildings, the South-Central Ambulance Service, Synergy Health Sterilisation Service and the Nurses Accommodation are subject to extant planning permission.
- 6.3.3 With this in mind, it is proposed to undertake a net impact comparison of the change in traffic volumes between the permitted and proposed land uses. However, as set out in Section 1, the Synergy Health Sterilisation Service is to be retained and as such, the net traffic impact comparison will not include traffic associated with this building. **Image 6.1** below, demonstrates the approximate locations of the buildings on-site.

Image 6.1: Land Use Locations



Source: Consultant / Google

- 6.3.4 It is understood a number of buildings that form part of the site (shown bounded purple) have not been occupied for an extended period of time. As such, no traffic generation rates have been applied to these buildings for the purpose of the net traffic generation comparison exercise. However, it should be noted that these do have an extant planning permission, and this should be taken into account when considering the predicted impacts of the development proposal.
- 6.3.5 The South-Central Ambulance Service (SCAS) and Synergy Health Sterilisation Service (SHSS) are currently in operation on-site. In order to determine the existing traffic generation associated with these services a manual classified turning count (MCC) was undertaken, on Tuesday 4th July 2017, at the existing vehicular access onto Portman Road.
- 6.3.6 A summary of the survey results is presented in **Table 6.1**; a full copy of the survey data can be provided upon request.

Table 6.1: Observed Traffic Volumes – Portman Road Access

	Time		In	Out	Two-Way
AM	07:30	08:30	13	6	19
	07:45	08:45	9	8	17
	08:00	09:00	9	7	16
	08:15	09:15	10	10	20
	08:30	09:30	12	9	21
PM	16:00	17:00	5	13	18
	16:15	17:15	5	12	17
	16:30	17:30	2	12	14
	16:45	17:45	3	7	10
	17:00	18:00	4	6	10
	17:15	18:15	2	3	5
	17:30	18:30	4	2	6

Source: Traffic Survey

- 6.3.7 As can be seen, the existing SCAS and SHSS services currently generate up to 21 two-way vehicle movements during the busiest morning hour period, with 18 two-way vehicle movements observed entering / exiting in the busiest evening hour.
- 6.3.8 As set out earlier, the SHSS building / unit is to be retained, therefore the traffic associated with this building will continue to be generated. As such, traffic generated by this use class will not be deducted as part of the net traffic comparison exercise. The trips will however be reassigned from the Portman Road access to the new Portman Way access, and thus will access the wider highway network from the traffic signal junction. The closure of the Portman Road access will reduce conflicting movements onto a classified road (Portman Road) and is in line with the policy requirements of the site.
- 6.3.9 In order to determine the traffic associated with the SHSS service, a TRICS trip generation calculation has been undertaken for the circa. 726sqm building. It is understood the SHSS building is subject to B1 use planning permission. While it is clear a direct comparison to the SHSS is unlikely to be obtainable from the TRICS database, the Industrial Unit use class is considered to be the closest match on the TRICS database to that of the SHSS.
- 6.3.10 The calculated trip rates and likely trip generation are set out in **Table 6.2** below; with a copy of the TRICS output data sheets contained in **Appendix G**.

Table 6.2: Synergy Health Sterilisation Service Vehicle Trips

	AM Peak			PM Peak		
	In	Out	Two-Way	In	Out	Two-Way
Trip Rate (per 100sqm)	0.465	0.155	0.62	0	0.745	0.745
Trips	4	1	5	0	6	6

Source: TRICS

6.3.11 **Table 6.2** shows that the SHSS building could be expected to generate 5 two-way vehicle movements during the morning peak hour and 6 two-way vehicle movements during the evening peak hour.

Extant Use Traffic Generation

6.3.12 At the south western corner, the site is subject to an extant permission for some 2,334sqm of C3 Nurses Accommodation. This accommodation is currently un-occupied. As such, in order to determine potential traffic generation, a review of the TRICS trip generation database has been undertaken to determine the likely trip generation from this parcel of the site.

6.3.13 The calculated trip rates and likely trip generation, based on the number of parking spaces of which there are 23, are set out in **Table 6.3**. A copy of the full TRICS output can be found in **Appendix G**.

Table 6.3: Nurses Accommodation Vehicle Trips

	AM Peak			PM Peak		
	In	Out	Two-Way	In	Out	Two-Way
Trip Rate (per parking space)	0.08	0.12	0.2	0.12	0.04	0.16
Trips	2	3	5	3	1	4

Source: TRICS

6.3.14 As can be seen, the Nurses Accommodation could be expected to generate some 5 two-way vehicle movements during the morning peak hour and 4 two-way vehicle movements during the evening peak hour.

6.3.15 Using the information contained in **Table 6.1**, **Table 6.2** and **Table 6.3**, the net traffic reduction proposed to be used as part of the development traffic impact assessment has been calculated and is presented in **Table 6.4**.

Table 6.4: Net Traffic Impact

Time	AM Peak			PM Peak		
	In	Out	Two-Way	In	Out	Two-Way
Existing Traffic Generation (A)	10	10	20	4	2	6
Nurses Accommodation (B)	2	3	5	3	1	4
Total site trips (A + B)	12	13	25	7	3	10
Synergy (C) retained trips	4	1	5	0	6	6
Total Net Reduction (A + B - C)	-8	-12	-20	-7	+3	-4

Source: Consultants Calculations

6.3.16 While the trip generation identifies that there would be an additional three trips in the evening peak hour, this is on the basis of assuming a generic rate for the SHSS building and the variation in the timing of peak hour demand. This small reduction is therefore unlikely to occur while the current occupier is in place.

Residential Trip Generation

6.3.17 The TRICS database (version 7.4) was used to calculate the potential traffic generation of the proposed development, using the following parameters:

- Region – all of England (except Greater London);
- Time period – surveys for the last 10-year period (start date: 01/01/2009);
- Location relevance – surveys in ‘Town Centre’, ‘Edge of Town Centre’ and ‘edge of town’ locations;
- Date relevance – surveys undertaken during a weekday.

6.3.18 Given the proportions of flats and houses proposed, trip rates have been calculated for both ‘Private Housing’ and ‘Flats Privately Owned’. This approach does not account for affordable units which generally have a lower trip rate. Should affordable housing be provided on this site then the anticipated trip rates for the site will have been over estimated.

6.3.19 The vehicle trip rates for Flats Privately Owned and Private Housing are summarised in **Table 6.5**. A full copy of the TRICS data is provided within **Appendix G**.

Table 6.5: Vehicle Trip Rates

	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Private (per flat)	0.039	0.107	0.146	0.114	0.066	0.180
Private (per house)	0.118	0.335	0.453	0.273	0.181	0.454

Source: TRICS

6.3.20 While these rates are considered to be robust given the proximity of the site to local facilities, the centre of Reading and public transport opportunities, RBC requested that further analysis be undertaken in respect to the trip rate for the development, given that some of the TRICS sites are identified as being 'town centre' locations.

6.3.21 Town Centre category of TRICS was included as it was considered that the Battle Hospital site shares many characteristics with town centre locations, such as good access to day to day facilities, on the doorstep of a large superstore, employment opportunities, proximity to rail stations and being on a quality bus corridor. All of these facilities mean that there are genuine opportunities for residents to use modes of travel which do not involve the use of a private car. This is backed up by the car ownership statistics which have been reviewed in detail.

6.3.22 Notwithstanding this, given the first phase of the Battle hospital redevelopment is accessed by vehicles from a single point, it is possible to derive a typical trip rate for the existing first phase of the Battle hospital development (which is accessed from Portman Way) using the traffic counts undertaken in July 2017.

6.3.23 **Table 6.6** presents the results of this analysis, based on the July 2017 survey and a total of 434 dwellings (185 houses and 249 flats).

Table 6.6: - Existing Battle Hospital Trip Generation

	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Observed Flows	48	83	131	93	40	133
Trip Rate	0.111	0.191	0.302	0.214	0.092	0.306

Source: Consultants Calculations

- 6.3.24 As can be seen, the original Battle Hospital site generates some 131 and 133 two-way morning and evening peak hour vehicle trips respectively, providing a trip rate of 0.302 in the morning peak hour and 0.306 in the evening peak hour, i.e. the rate is very similar to the average of the private flats and houses rates).
- 6.3.25 Of the 434 dwellings on the original site, some 43% are houses, with the remaining 57% being flats. It is generally accepted that houses generate more vehicle trips when compared to flats (given houses generally comprise a higher number of bedrooms / habitable rooms and generally higher occupancy rates, which, subsequently results in a higher proportion of vehicle movements).
- 6.3.26 Therefore, given the proposed site comprises of a higher mix of flats than houses, with only 23% of proposed units being houses, there is likely to be a lower vehicle trip generation overall, i.e. the observed trip rate is robust when considering its use for the proposed scheme.
- 6.3.27 Therefore, rather than use the trip rates calculated by TRICS, it is proposed to use the observed data from the traffic survey. This leads to an increased trip generation for the proposal compared to the generation set out in the Scoping Note. The proposed vehicle trip rates and resultant trip generation is set out in **Table 6.7**.

Table 6.7: - Proposed Residential Trip Generation

	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Observed rates	0.111	0.191	0.302	0.214	0.092	0.306
Predicted	24	41	65	46	20	66

- 6.3.28 These rates are considered to be robust and provide a realistic approach to determining traffic generation from the site, as the proposed site will have very similar characteristics to the earlier phase of the development.

Total trip generation

- 6.3.29 **Table 6.8**, summarises the net traffic generation for the proposed development, and the retained Synergy building.

Table 6.8: - Proposed Residential Trip Generation

Time	AM Peak			PM Peak		
	In	Out	Two-Way	In	Out	Two-Way
Total Net Reduction (A + B - C)	-8	-12	-20	-7	+3	-4
Synergy (C) retained trips	4	1	5	0	6	6
Residential Trips	24	41	65	46	20	66
Total Trips	20	30	50	39	29	68

6.4 Traffic Distribution and Assignment

Journey Purpose

- 6.4.1 Data derived from the National Travel Survey (NTS) 2015 (DfT) outlines the proportion of peak hour trips made by car, split into journey purpose (**Table 6.9**).

Table 6.9: Proportion of Peak Hour Trips by Journey Purpose (Car Driver Only)

Trip Purpose	AM Peak (0800-0900)	PM Peak (1700-1800)
Commuting/Business	40%	45%
All Other Journey Purposes	60%	55%
Total	100%	100%

Source: Car driver trip start time by trip purpose (Monday to Friday only): National Travel Survey, DfT, 2015

- 6.4.2 For the purposes of the assessments, the analysis has been undertaken on the basis that 45% of vehicular trips are for employment journeys and the remaining 55% will be for all other purposes for both the morning and evening peak hour periods.

Trip Distribution

- 6.4.3 To provide an accurate assessment of the likely distribution of traffic from the site, separate methodologies have been applied to consider the destinations of commuting and business trips to other trip purposes:

- For commuting and business trips, the National Census Journey to Work statistics (for car drivers) for the Reading 007 Super Output Area – Middle Layer has been used. This identifies the location of existing resident's employment locations and so identify existing commuting patterns; and
- For other journey purpose trips a P/T^2 gravity model has been undertaken using the population of key urban areas (from the 2011 census) within a 40-minute drive from the site (estimated from Google Maps Directions facility).

6.4.4 The two sets of data are then combined to generate a single set of distribution parameters to inform the development trip assignment. The key local destinations are shown in **Table 6.10**.

Table 6.10: Distribution of Car Driver Trips (All Purpose)

Destination	Employment Trips %	Non-Commuter Trips %	All trips Combined %
Abingdon	0.7%	-	0.72%
Ascot	0.0%	0.23%	0.23%
Basingstoke	0.8%	-	0.80%
Beaconsfield and Iver Heath	0.2%	-	0.20%
Blackwater and Minley	0.1%	-	0.10%
Bracknell	2.3%	1.41%	3.71%
Camberley	0.3%	-	0.30%
Cobham	0.0%	0.13%	0.13%
Farnborough	0.2%	-	0.20%
Fleet	0.2%	0.29%	0.49%
Guildford	0.2%	-	0.20%
Henley-on-Thames	0.0%	1.93%	1.93%
Hook	0.2%	0.14%	0.34%
London	1.8%	-	1.80%
Newbury/ Thatcham	7.3%	-	7.30%
Other East	0.5%	-	0.50%
Other North	0.7%	-	0.70%
Other South	0.4%	-	0.40%
Other West	0.4%	-	0.40%
Oxford	3.0%	-	3.00%
Reading	16.4%	46.42%	62.82%
Slough	1.1%	1.74%	2.84%
Swindon	0.4%	-	0.40%
Maidenhead	1.1%	0.69%	1.79%
Woking	0.1%	-	0.10%
Wokingham	6.0%	2.04%	8.04%
Wycombe	0.6%	-	0.60%
Total	45.0%	55.0%	100.0%

Source: 2011 Census / Consultant Gravity Model (some rounding applied)

- 6.4.5 This analysis identifies that some 62.8% of car trips are likely to be contained within the Reading area, while 8% would be to / from Wokingham, 7% to / from Newbury and Thatcham, and the remainder being spread around the local towns and villages.

Assignment

- 6.4.6 The expected traffic that would be generated by the development is then distributed onto the local network to the destinations identified in **Table 6.10**.
- 6.4.7 To determine the routing of vehicle trips to these destinations, trips were assigned to the road network based on the quickest route from the site to the destination location using the Google Maps 'Directions' Facility. Within the Directions facility, a start time for journeys of 08:00 was utilised to reflect peak period traffic conditions. In some cases, a single route option was identified by the assessment, however for the majority of destinations the assessment identified multiple routes. In these cases, development trips were distributed to the possible routes based upon the journey times identified, with the quickest route assigned a larger number of trips.
- 6.4.8 The full distribution and assignment model is included in **Appendix H**.

6.5 Traffic Growth

Background traffic growth

- 6.5.1 In line with the Highways England (HE) advice in 'Circular 02/2013' (which is reiterated in the recent HE document 'Planning for the Future') assessments to consider the traffic impact of development should be carried out at the expected opening year (assuming full occupation). This identifies: whether there is sufficient capacity in the network to accommodate development traffic; and, if necessary, where mitigation may be required to address any 'severe' impacts arising in the opening year assessment.
- 6.5.2 The TA therefore assesses the local highway network in 2021, which is the expected year of opening (assuming full occupation).

- 6.5.3 The TEMPRO and National Transport Model (NTM) database has been interrogated in order to determine applicable growth rates for the background traffic to be factored up from the baseline year (2017) to the opening year of 2021. A growth factor of 1.07 has been determined for the morning peak hour and 1.06 for the evening peak hour for the Reading 007 Super Output Area – Middle Layer.
- 6.5.4 On this basis, operational assessments have been undertaken for the morning and evening peak hours for the following scenarios: -
- 2017 Base Year – **Figures TF1 and TF2;**
 - 2021 ‘Without Development’ – **Figures TF3 and TF4;** and
 - 2021 ‘With Development’ - **Figures TF5 and TF6.**

SECTION 7 TRAFFIC IMPACT ASSESSMENT

7.1 Introduction

7.1.1 This section of the TA details results of the traffic impact assessment of the development proposal and identifies any mitigation which may be necessary.

7.2 Detailed Junction Assessment

7.2.1 Operational analysis has been undertaken to determine the performance of the surrounding highway network and its ability to accommodate the additional traffic from the proposed development. As agreed with RBC, operational analysis has been undertaken at the following junctions:

- Junction 1 – Wigmore Lane / Oxford Road / Norcot Road Roundabout;
- Junction 2 – Portman Way / Portman Road Signal Junction and Tesco Roundabout;
- Junction 3 – Portman Road / Cow Lane / Beresford Road Mini Roundabout; and
- Junction 4 – Portman Way / Site Access Priority Junction.

7.2.2 Assessments have been undertaken using the weekday morning and evening peak hour traffic flows (08:15 to 09:15 and 17:30 to 18:30) combined with the peak hour traffic generation of the development (08:00 to 09:00 and 17:00 to 18:00). The assessment results are therefore a worst case. The priority junctions and roundabouts have been tested using the TRL Software Junctions 9, whereas traffic signal controlled junctions have been assessed using LINSIG3. The Portman Road signal junction and Portman Way link / roundabout junction have been modelled as a linked junction.

7.2.3 The principal outputs derived from the traffic models are the Ratio of Flow to Capacity (RFC)² (for roundabouts and priority junctions), the Degree of Saturation (DOS) (for traffic signals) and queue length (for all types of junction).

² An RFC of 1 means that the traffic demand equals the available capacity. An RFC of less than 1 means that the junction is operating below capacity. An RFC of 0.85 is often used as a threshold – less than this and the junction will be generally 'free flowing'.

7.2.4 With regards to traffic signals, a DOS of 100% indicates that the traffic demand has approached the theoretical capacity.

7.2.5 A copy of the full junction modelling outputs is provided at **Appendix I** with the results of the assessments presented in the following sections.

Junction 1 – Wigmore Lane / Oxford Road/ Norcot Road Roundabout

7.2.6 To assess the capacity of the existing Wigmore Lane / Oxford Road / Norcot Road Roundabout, Junctions 9 has been used. The results of the assessment are summarised in **Table 7.1**.

Table 7.1: Wigmore Lane / Oxford Road / Norcot Road Roundabout

	Morning Peak Hour		Evening Peak Hour	
	RFC	Queue (veh)	RFC	Queue (veh)
2017 Base				
Wigmore Lane (Portman Road)	0.42	1	0.73	3
Oxford Road (East)	0.55	1	0.66	2
Norcot Road	0.75	3	0.73	3
Oxford Road (West)	0.81	4	0.61	2
2021 Future Year				
Wigmore Lane (Portman Road)	0.46	1	0.81	4
Oxford Road (East)	0.60	2	0.72	2
Norcot Road	0.84	5	0.82	4
Oxford Road (West)	0.89	7	0.66	2
2021 Future Year + Development				
Wigmore Lane (Portman Road)	0.47	1	0.81	4
Oxford Road (East)	0.60	2	0.72	2
Norcot Road	0.84	5	0.83	4
Oxford Road (West)	0.89	7	0.66	2

Source: Junctions 9

7.2.7 The operational analysis identifies that the junction is starting to operate at stress, with some queueing and that this is worsened in the future scenario, without any development. In the future year with the addition of the development, there is no material change to the operation of the junction, with it expected to operate at stress, but within its theoretical capacity. The results predict an RFC of 0.89 and maximum queue of 7 vehicles on Oxford Road (W) in the morning peak and an RFC of 0.83 and maximum queue of 4 vehicles on the Norcot Road arm of the roundabout in the evening peak.

7.2.8 In summary, the development is expected to result in negligible increases in the RFC's of the junction and no increase in the number of queueing vehicles.

Junction 2 - Portman Way / Portman Road traffic signals and Tesco Roundabout

7.2.9 To assess the capacity of the existing signals and internal roundabout junction, a LINSIG3 model has been constructed. Given the proximity of the Portman Way / Portman Road traffic signals and the Tesco roundabout and the potential for queueing at one junction to obstruct other junction, these two junctions have been considered in combination. The results of the assessment are summarised in **Table 7.2**.

Table 7.2: Portman way / Portman Road / Tesco Junctions

	Morning Peak Hour		Evening Peak Hour	
	DOS	Mean Max Queue	DOS	Mean Max Queue
2017 Observed				
Junction 1 – Portman Road Signals				
Portman Road (W) – Ahead	64.40%	5.8	31.00%	2.7
Portman Road (W) – Right	27.50%	1.3	41.90%	2
Portman Road (E) – Left Ahead	60.60%	4.1	70.60%	7
Portman Way – Link Left	10.90%	0.7	29.60%	2.3
Portman Way – Link Right	26.50%	1.2	31.10%	1.6
Portman Road (E) - Exit	60.50%	1.4	35.60%	1.8
Portman Way – Link Exit	16.00%	0.3	20.30%	0.7
Junction 2 – Portman Way / Tesco Roundabout				
Portman Way – Link (N) Ahead	19.40%	0	8.30%	1
Portman Way (E) – Ahead	7.10%	0	27.70%	0
Tesco	10.30%	0.1	21.60%	0.1
2021 'Without Development'				
Junction 1 – Portman Road Signals				
Portman Road (W) – Ahead	68.80%	6.6	32.90%	2.8
Portman Road (W) – Right	29.70%	1.5	44.70%	2.2
Portman Road (E) – Left Ahead	64.80%	4.4	74.90%	7.7
Portman Way – Link Left	11.70%	0.8	31.50%	2.5
Portman Way – Link Right	28.20%	1.2	33.00%	1.7
Portman Road (E) - Exit	64.60%	1.5	37.80%	1.9
Portman Way – Link Exit	17.30%	0.3	21.60%	0.7
Junction 2 – Portman Way / Tesco Roundabout				
Portman Way – Link (N) Ahead	20.80%	0.6	8.80%	1.2
Portman Way (E) – Ahead	7.7	0	29.40%	0
Tesco	11.10%	0.1	23.00%	0.1

	Morning Peak Hour		Evening Peak Hour	
	DOS	Mean Max Queue	DOS	Mean Max Queue
2021 'With Development'				
Junction 1 – Portman Road Signals				
Portman Road (W) – Ahead	68.50%	6.5	32.90%	2.8
Portman Road (W) – Right	19.80%	0.9	29.90%	1.4
Portman Road (E) – Left Ahead	64.60%	4.4	75.70%	7.7
Portman Way – Link Left	12.10%	0.8	32.30%	2.6
Portman Way – Link Right	34.90%	1.6	41.10%	2.1
Portman Road (E) - Exit	66.50%	2.4	39.80%	3
Portman Way – Link Exit	16.40%	0.5	17.70%	0.7
Junction 2 – Portman Way / Tesco Roundabout				
Portman Way – Link (N) Ahead	20.80%	1.8	29.40%	1.8
Portman Way (E) – Ahead	10.30%	0.1	6.90%	0
Tesco	11.20%	0.1	23.30%	0.2

Source: LINSIG 3

- 7.2.10 The operational analysis demonstrates that the existing junction arrangement will operate well within its theoretical capacity in the design years both with and without the additional traffic from the proposed development.

Junction 3 - Portman Road/ Cow Lane/ Beresford Road Roundabout

- 7.2.11 To assess the capacity of the existing Portman Road / Cow Lane / Beresford Road Roundabout Junctions 9 has been used. The results of the assessment are summarised in **Table 7.3**.

Table 7.3: Portman Road / Cow Lane / Beresford Road Roundabout

	Morning Peak Hour		Evening Peak Hour	
	RFC	Queue (veh)	RFC	Queue (veh)
2017 Base				
Cow Lane	0.6	1	0.91	7
Beresford Road	0.54	1	0.71	2
Portman Road	0.95	10	0.58	1
2021 Future Year				
Cow Lane	0.64	2	0.97	13
Beresford Road	0.59	1	0.77	3
Portman Road	1.02	17	0.62	2
2021 Future Year + Development				
Cow Lane	0.66	2	0.99	17
Beresford Road	0.61	2	0.82	4
Portman Road	1.04	21	0.64	2

Source: Junctions 9

- 7.2.12 The operation of the Portman Road / Cow Lane / Beresford Road junction has been historically impacted by the operation of the Cow Lane bridges, which created a pinch point on the local network, causing blocking back through the junction, i.e. existing queuing at this location is not necessarily as a result of capacity constraints at the mini roundabout itself. The final phase of removing the Cow bridges is currently under construction and as such these knock-on delays should be eradicated.
- 7.2.13 The operational assessment identifies that in isolation, the junction is currently operating 'at stress'. In the future year with growth scenario the junction is expected to exceed its theoretical capacity with an RFC of 1.02 and maximum queue of 17 vehicles on Portman Road in the morning peak. In the evening peak, the Cow Lane arm is expected to operate at stress with an RFC of 0.97 and a queue of 13 vehicles.
- 7.2.14 Turning to the impact of the development, it can be seen that in the 2021 opening year (with all development traffic included), the additional traffic from the development increases the ratio of flow to capacity at the junction by a maximum of 0.02 (and 4 vehicles) in the morning peak hour and 0.05 (and 4 vehicles) in the evening peak hour.
- 7.2.15 As illustrated in **Table 7.3**, whilst it is acknowledged that this junction would suffer from some peak period congestion, the development will result in very modest increases in queueing traffic.
- 7.2.16 On this basis, it is not considered that the development will have a 'severe impact' on the operation of the junction.

Junction 4 – Portman Way / Site Access Priority Junction

- 7.2.17 In order to assess the capacity of the proposed Portman Way / Site Access junction, a Junctions 9 traffic model has been produced. The junction analysis results are summarised in **Table 7.4** below.

Table 7.4: Portman Way / Site Access Priority Junction

	Morning Peak Hour		Evening Peak Hour	
	RFC	Queue (veh)	RFC	Queue (veh)
2021 Future Year + Development				
Site Access	0.02	0	0.02	0
Portman Way	0	0	0	0

Source: Junctions 9

7.2.18 The operational analysis demonstrates that the proposed site access junction will operate well within capacity in both the morning and evening peak hours, with no expected delays or queueing in either peak period.

7.3 Potential Future Improvements

7.3.1 As part of the removal of the Cow Lane bridges, RBC have undertaken an 'Oxford Road Corridor Study' which has reviewed the operation of the local highway network and identified potential improvements that could be made to help reduce delays and increase capacity of junctions within the vicinity of the site.

7.3.2 As part of this study, concept junction improvements have been identified at both the Wigmore Lane (Portman Road) / Oxford Road / Norcot Road roundabout and the Portman Road / Cow Lane / Beresford Road roundabout. The roundabout improvement schemes are shown on PBA drawings 20291/002/008 rev E and 20291/002/006 rev D respectively (attached as **Appendix J**).

7.3.3 Notwithstanding the results of the analysis set out in section 7.2 above (which demonstrates the development will have a negligible impact on the operation of the local highway network), operational assessments of the junction improvement schemes have been undertaken. The results of the operational analysis for the Wigmore Lane (Portman Road) / Oxford Road / Norcot Road are summarised in **Table 7.5**.

Table 7.5: Portman Road / Oxford Road / Norcot Road Roundabout

	Morning Peak Hour		Evening Peak Hour	
	RFC	Queue (veh)	RFC	Queue (veh)
2021 Future Year + Development				
Wigmore Lane (Portman Road)	0.37	1	0.64	2
Oxford Road (East)	0.48	1	0.56	1
Norcot Road	0.57	1	0.54	1
Oxford Road (West)	0.89	7	0.66	2

Source: Junctions 9

7.3.4 As can be seen, the amendments to the junction, improve its operation, with the junction expected to operate within capacity with a maximum RFC of 0.89 and queue of 7 vehicles in the morning peak hour and a maximum RFC of 0.66 and queue of 2 vehicles in the evening peak hour.

- 7.3.5 The results for the potential junction improvement for the Portman Road / Cow Lane / Beresford Road roundabout are summarised in **Table 7.6**.

Table 7.6: Portman Road / Cow Lane / Beresford Road Roundabout

	Morning Peak Hour		Evening Peak Hour	
	RFC	Queue (veh)	RFC	Queue (veh)
2021 Future Year + Development				
Cow Lane	0.65	2	0.98	15
Beresford Road	0.67	2	0.98	10
Portman Road	0.88	6	0.54	1

Source: Junctions 9

- 7.3.6 As can be seen, the amendments to the junction improve its overall operation, with the junction operating within capacity with a maximum RFC of 0.88 and queue of 6 vehicles in the morning peak hour and a maximum RFC of 0.98 and queue of 15 vehicles in the evening peak hour.

7.4 Summary

- 7.4.1 The proposal is likely to generate a net of 50 two way movements in the morning peak hour and 68 two way movements in the evening peak hour, i.e. less than or close to one additional movement per minute in the peak hour.
- 7.4.2 This level of traffic generation has no material impact on the operation of the local junctions, and the residual impact from the development is far from 'severe'.

SECTION 8 SUMMARY AND CONCLUSION

8.1 Summary

8.1.1 This Transport Assessment has been prepared to consider the potential transport impacts that would arise from a development of some 215 residential dwellings on land previously used for the former Battle Hospital and the South-Central Ambulance Service depot.

8.1.2 The development proposal comprises 215 new homes, of which 164 would be flats and 52 would be houses. The existing Synergy site is to be retained, but with a revised access.

8.1.3 Parking provision is to be provided below the RBC parking standards, but in line with observed parking demand across the Battle Ward, and specific locations within the Ward area.

8.1.4 This Transport Assessment tests the development proposals against key policy requirements, particularly paragraph 32 of the NPPF, which requires that development sites: -

- Provide safe and acceptable access for all modes;
- Ensure that opportunities for travel by sustainable travel modes have been taken up; and
- Do not result in a 'severe' residual cumulative impact.

8.1.5 In undertaking this assessment, the issues raised by local residents have been considered. These issues principally relate to the location and design of the site access, the local traffic impacts, and parking provision.

8.1.6 The TA demonstrates that the proposal fully meets these policy tests, as well as local policy requirements.

Site Access

8.1.7 Vehicular access is proposed via a realigned priority junction onto Portman Way, as requested by RBC. The existing 'temporary' junction onto Portman Road will be stopped up.

- 8.1.8 Taking the access from Portman Way and the closure of the 'temporary' junction onto Portman Road offers a safety benefit, by reducing the number of access points onto a classified road (Portman Road).
- 8.1.9 The proposed site access junction will provide adequate capacity and the design fully takes on board the comments made by an Independent Stage 1 Road safety Audit.
- 8.1.10 The internal site layout will include a street network that will be permeable and will provide a slow speed environment with pedestrians and cyclists at the top of the user hierarchy. The site is connected to the existing network of pedestrian and cycle routes, in all four corners of the site. Furthermore, it will deliver a new footway / cycleway from the Tesco signal junction along the length of the site frontage. There is then the opportunity to extend this footway / cycleway further east, and to join it with planned improvements at the Cow Lane mini roundabout.
- 8.1.11 On this basis, safe and acceptable access will be provided for all users.

Accessibility

- 8.1.12 The site is in a highly sustainable location in transport terms. There is a good range of facilities and services locally on Oxford Road and Portman Road as well as within Reading itself. New residents will have realistic opportunities to access these facilities and services by walking and cycling and the development offers existing residents greater opportunity to make journeys locally and without the need to use their cars. As such, it is expected that car ownership and parking demand will be in line with that experienced within the Battle Ward, where the average car ownership is some 0.8 cars per dwelling.
- 8.1.13 The site will connect with the existing pedestrian and cycle network, as well as the existing network of routes through the first phase of the Battle hospital redevelopment site. In addition, a number of improvements and new connections to pedestrian and cycle network are to be provided, such as the provision of new shared footway / cycleway routes within the site and a new footway / cycleway along the northern boundary of the site.
- 8.1.14 The development proposal will therefore 'take up' the opportunities for walking and cycling through: -

- Internal site layout and access design that places pedestrians and cyclists at the top of the hierarchy of users, e.g. through a permeable layout with slow speed streets; and
- A comprehensive Residential Travel Plan that will encourage and facilitate walking and cycling journeys.

8.1.15 The site benefits from access to a number of bus stops, with the closest stops located on Oxford Road, some 400m south of the site which, is a key public transport corridor. These bus stops provide access to bus services 15, 15a, 16 and 17 which, offer a turn up and go service.

8.1.16 The site is located some 750m from Reading west railway station, which provides regular services to Basingstoke, Newbury and London.

8.1.17 The Residential Travel Plan will include measures to encourage and facilitate bus use, e.g. through the provision of information and subsidised bus season tickets when residents first move in.

8.1.18 Against this background, the opportunities for sustainable travel will be taken up appropriately and comprehensively.

Traffic Impacts

8.1.19 A full and robust capacity analysis assessment has been undertaken to determine the operation of the surrounding highway network and its ability to accommodate the additional traffic from the proposed development.

8.1.20 The assessment shows that the development will have a negligible impact on the operation of the local highway network. The modest number of additional trips generated by the site can be adequately accommodated on local junctions without the need for improvements.

8.1.21 While the development may have some impacts, there will certainly not be a 'severe' residual impact.

8.2 Conclusion

8.2.1 On this basis, it is concluded that: -

- The site layout and access arrangements comply with the relevant design guidance providing safe access for all users and the development proposals comply with relevant national and local transport policy;
- The site is ideally placed next to existing local services and facilities and as such the site is well connected to encourage the take up of sustainable modes of travel; and
- A full and robust assessment of the likely traffic impacts of the development has been carried out which has considered the operation of local network junctions. The assessment demonstrates that the development site is likely to result in only small local traffic impacts and that these impacts fall far short of a 'severe' test set by the NPPF.

8.2.2 Overall, the proposal is considered acceptable in transport and highways terms.

FIGURES

DRAWINGS

APPENDIX A

TRANSPORT ASSESSMENT SCOPING NOTE

APPENDIX B

TRANSPORT ASSESSMENT SCOPING CORRESPONDENCE

APPENDIX C

LOCAL BUS MAP

APPENDIX D

PERSONAL INJURY ACCIDENT DATA

APPENDIX E

MASTERPLAN

APPENDIX F

RSA AND DESIGNERS RESPONSE

APPENDIX G

TRICS OUTPUT DATA

APPENDIX H

DISTRIBUTION AND ASSIGNMENT MODEL

APPENDIX I

OPERATIONAL ANALYSIS OUTPUT

APPENDIX J

CONCEPT IMPROVEMENT SCHEMES