London Borough of Richmond upon Thames and Richmond Housing Partnership (RHP)

Ham Close Masterplan Regeneration Scheme

Initial Transport and Highways Feasibility Report

A096558

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Limitations

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1 Introduction

Overview

1.1 WYG is commissioned by the London Borough of Richmond upon Thames (LBRuT) and the Richmond Housing Partnership (RHP) (together referred to as the 'Client') to provide initial transport and highways consultancy advice, and produce a Transport and Highways Feasibility Report (hereafter referred to as the 'feasibility report') in connection with the potential future regeneration of Ham Close (the 'Close' and 'site'), situated in the London Borough of Richmond upon Thames (the 'Borough').

1.2 The Local Planning Authority is LBRuT Planning and the Local Highways Authority is LBRuT Highways. The Strategic Transport Authority is Transport for London (TfL).

1.3 The purpose of this feasibility report is to identify at a high level the regeneration potential of the site from a transport and highways perspective; and to highlight to the Client the key transport and highways matters that should be considered as part of a future Transport Assessment (TA) to support a potential future planning application for the masterplan redevelopment, as is likely to be required by LBRuT Highways as the Local Highway Authority.

1.4 This report is intended for internal circulation to the Client and design team only at this stage. A separated scoping note would be prepared for discussions with LBRuT Highways and Transport for London (TfL) in the context of a future planning application.

1.5 Given the size of the site and its redevelopment potential, it is expected that a Transport Assessment (TA) Report, rather than a less detailed Transport Statement (TS), will be required to accompany either an outline or detailed planning application for the site's redevelopment. Due to the scale of the potential future redevelopment, it is expected that the TA Report will also need to be accompanied a Framework Travel Plan (FTP) covering both the residential and non-residential land uses.

1.6 The scope and content of any future TA Report and FTP would need to be discussed and agreed with LBRuT Highways at the time, and would also need to respond to specific transport and highways issues that may be raised by TfL should the redevelopment scheme be referable to the Mayor of London and the Greater London Authority (GLA).

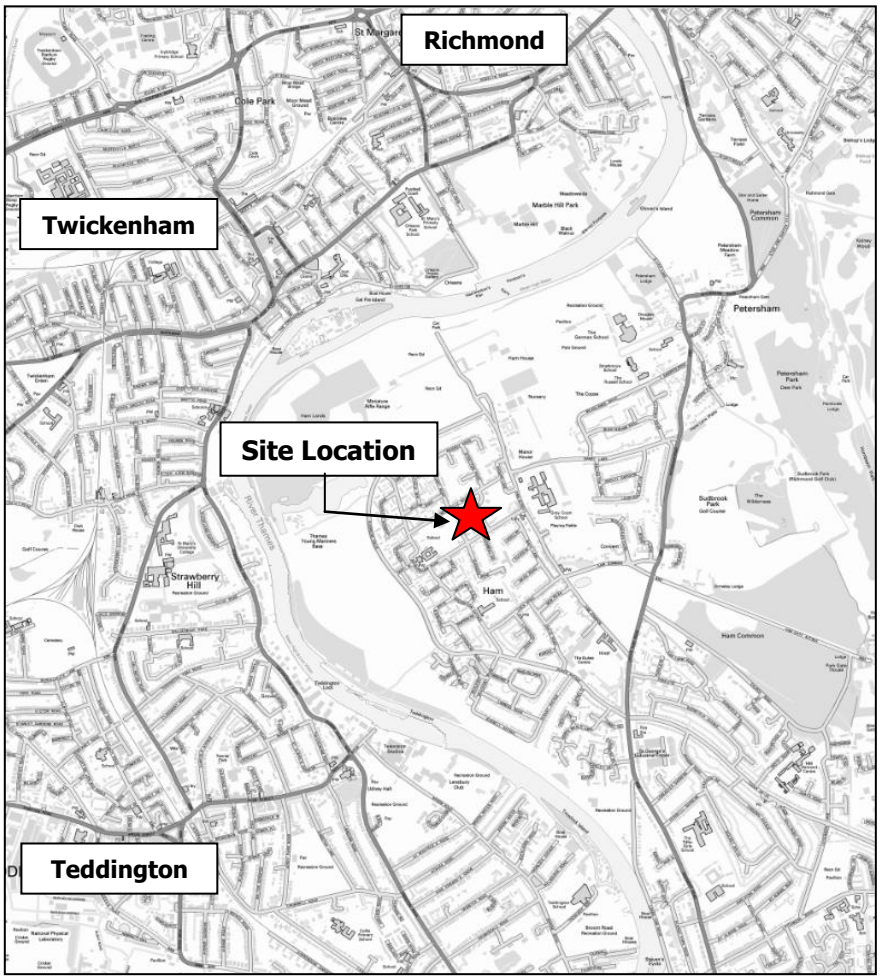
Site Location

1.7 Ham Close is located in south-west London in the London Borough of Richmond upon Thames.

1.8 The site is bounded to the north by Woodville Road, to the south and west by Ashburnham Road, and to the east by Wiggins Lane and Ham Street. The site is located less than 5km south of Richmond town centre, east of Richmond Park.

1.9 A strategic site location plan, showing the site in the context of the wider surrounding area, is provided in **Figure 1.1**.

Figure 1.1 Site Location Plan



Source: Ordnance Survey: 2016

Potential Regeneration Proposals

1.10 WYG understands that the Client is currently considering the redevelopment of the Close, which currently comprises 192 residential units (143 affordable and 49 leasehold flats) for which RHP is the freeholder, Ham Clinic, a dentist and youth centre. The proposed scheme will involve the demolition of all these buildings and the construction of a new community building as well as new residential units. A scheme of less than 400 units unlikely to be financially viable unless sales values growth accelerates, therefore it is likely that the development will be in the region of 400-450 units.

1.11 It is understood that all of the existing residential units will be re-provided and of the additional housing at least a third will be affordable. For modelling purposes this report tests a scheme of 450 residential units to analyse a robust 'worst case' scenario from a transport and highways perspective.

Report Scope

1.12 This report presents the outcome of a Transport and Highways Feasibility Study undertaken to identify at a high level the regeneration potential of the site and the wider area from a traffic, transport and highways perspective; to identify any transport and highways issues and opportunities; and to identify the potential scope of a TA Report, which it is assumed would be required to support a planning application for the potential future development at the site.

Report Structure

1.13 The scope of the study and this feasibility report covers the following aspects and issues:

- Overview of the existing site and surrounding area;
- Assessment of Junction Surveys, including queue length surveys at a total of four junctions;
- Quantum of multi modal trips generated by the proposed regeneration;
- Assessment of car parking occupancy;
- Assessment of personal collision injury data; and
- Summary, conclusions and next steps.

1.14 The purpose of this feasibility report is to provide initial advice to the Client with a view to taking the regeneration scheme forward to planning.

1.15 Technical appendices (A to F) are included at the end of the report for reference.

2 Existing Transport Conditions

Introduction

2.1 This chapter of the report sets out the existing or 'baseline', transport conditions currently prevailing at the site and within the immediate surrounding area. It describes existing conditions, including access to public transport, cycling and walking facilities.

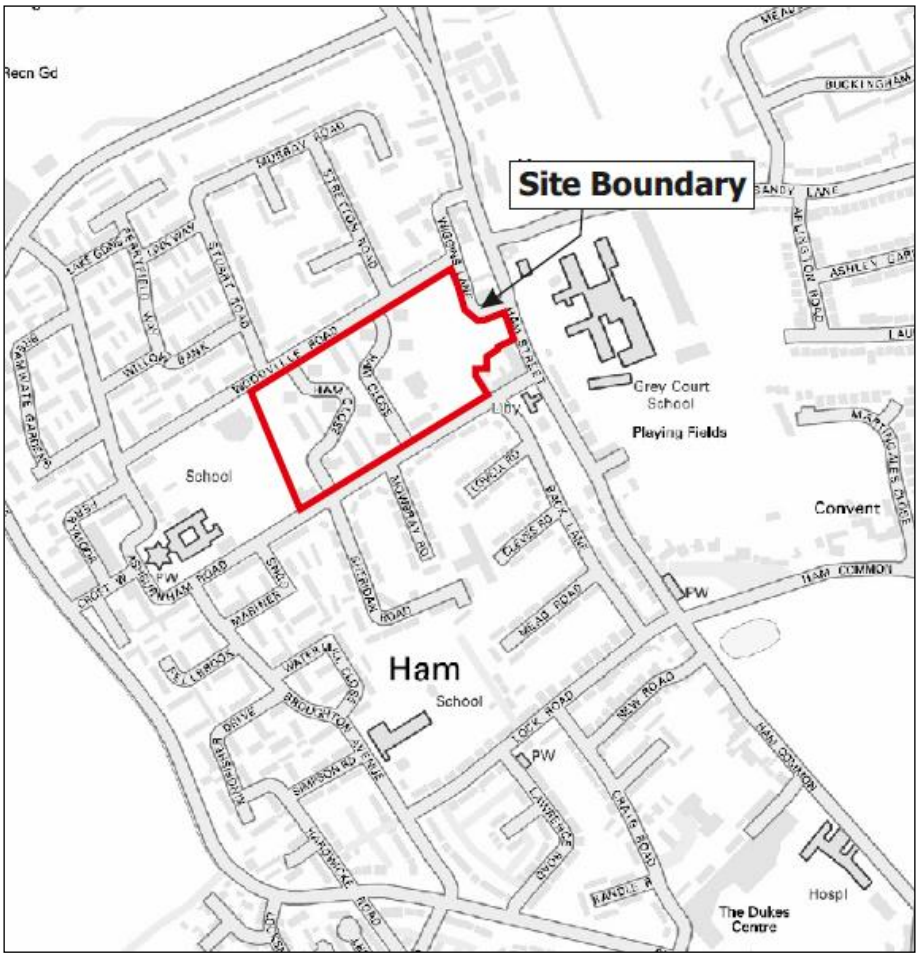
2.2 It is important that baseline conditions are accurately established so that the context of any potential future development at the site, and its potential impacts on the surrounding transport and highways networks, can be fully understood.

2.3 Baseline studies have been informed by a detailed desk-top based research exercise carried out between May and June 2016, a WYG site visit carried out on Wednesday 25 May 2016, and a series of traffic and parking surveys carried out by a specialist survey company, working on behalf of WYG, in May 2016.

2.4 A strategic site location plan, which shows the site in the context of the wider surrounding area is provided in Figure 1.1 in Chapter 1 of this report.

2.5 To show how the site lies within its immediate surrounding area, a detailed plan of the site is provided in **Figure 2.1** below.

Figure 2.1 Detailed Site Location Plan



Source: Ordnance Survey: 2016

Local Highway Network

Ham Close

2.6 Ham Close is a small residential street running in two parallel sections, in a north-south direction across the site. Ham Close allows for two-way traffic movement; no road markings are present throughout.

Woodville Road

2.7 Woodville Road runs in a general east to west direction, and forms the northern boundary of the site. Woodville Road is a two-directional, single carriageway road. Pedestrian footways are present on both sides of Woodville Road.

Ashburnham Road

2.8 The eastern section of Ashburnham Road runs in a general north to south direction whilst the western half runs in a general east to west direction, and forms the southern and western boundaries of the site. Ashburnham Road is a two-directional, single carriageway road. On-street parking is allowed and unrestricted, with the exception of the south-western corners where double yellow lines are present. Immediately outside St Richard's Church of England (C of E) Primary School, to the west of the site single yellow lines and 'School Keep Clear' yellow zig-zag markings are present.

Ham Street

2.9 Ham Street is a two-directional single carriageway road running in a general north to south direction. Ham Street connects Woodville Road and Ashburnham Road with the wider Ham area. Parking is allowed on-street for the majority of Ham Street, however there are some restricted areas, with double yellow lines present, due to the nature and width of these sections of Ham Street.

2.10 Footways are present on both sides of Ham Street, ranging from approximately 1.5m to 4m in width, together with dropped kerbs and pedestrian courtesy crossings. An un-controlled pedestrian junction is located adjacent to the Ashburnham Road/ Ham Street junction.

A307

2.11 The A307 runs through south-west London and north-west Surrey, and in the vicinity of the site is a non-primary 'A' road managed by LBRuT Highways. The A307, known as Petersham Road in the vicinity of the site, connects Ham with the greater Richmond area and provides link to Greater London. Whilst the A307 in the vicinity of the site is a local 'A' road managed by LBRuT Highways, it is also a TfL strategic road.

2.12 The A307 is a single carriageway two-directional road. For the majority of the A307, pedestrian footways are present along both sides.

Public Transport Accessibility Level (PTAL)

2.13 Public Transport Accessibility Levels (PTALs) are a theoretical measure of the accessibility of given point to the public transport network, taking into account walk access time and service availability. The method is essentially a way of measuring the density of the public transport network at a particular point. The PTAL is categorised in six levels, from 1a to 6b, where 1a represents a 'Very Poor' level of accessibility and 6b indicates an 'Excellent' level of accessibility.

2.14 The site has a PTAL rating of 1b, indicating a 'Poor' level of public transport accessibility.

2.15 This site specific PTAL value has been obtained from the Transport for London (TfL) Planning Information Database (http://www.webptals.org.uk), and the PTAL report is included at **Appendix A** for information.

2.16 It is considered that the PTAL rating of the site could be improved by an increase in frequency of bus services serving the site and an increase in the number of buses that serve Ham Close; these are further examined in Chapter 8 of this report.

Public Transport Services

Bus Services

2.17 The site is served by a number of local bus services, connecting to Richmond (including Richmond Station), Kingston, Wimbledon and Morden.

2.18 Bus service number 371 has bus stops located in close proximity to the site. The closest bus stop is located on Ashburnham Road less than 100m east of the south-eastern access to the site, providing both eastbound and westbound services. Alternative bus stops are located on Sandy Lane and Broughton Avenue.

2.19 The 371 service runs from central Richmond to Kingston upon Thames via Richmond station. The first southbound service begins at 05:41, with the final service at 01:27, peak services run approximately every 5-9 minutes.

2.20 An alternative bus service, the K5, has bus stops located on Beaufort Road and Duke Avenue, less than 1km south of the site. The K5 bus provides services, approximately one per hour, to Kingston Station, Wimbledon and Morden.

2.21 Further to discussions with LBRuT Highways, it is understood that TfL is currently considering an extension to the K5 bus services, that currently stops in Duke Avenue south of Ham Close. It is understood that TfL is considering extending the route to Ham Close, although it is further understood that a dedicated turnaround facility would need to be provided within the site for this to be achieved. Should this be agreed in the regeneration proposals, it has the potential to increase the PTAL rating of the site by improving access to public transport.

Mainline Rail Services

2.22 Richmond Station, North Sheen Station, Kingston Station and Teddington Station are the closest mainline railway stations to the site. All four stations are located within approximately 4.5km of the site, with Richmond and North Sheen Stations to the north, Kingston Station to the south and Teddington Station to the south-west via an existing pedestrian footbridge linking Ham and Teddington over the River Thames.

2.23 Teddington Station is located approximately 2.7km to the south-west although, as noted above, this is via an existing river footbridge. Travelling via the most direct route via road, the distance between the site and the station increases to approximately 7.5km.

2.24 St Margaret's Station and Norbiton Station are both also located within approximately 5km of the site. All the aforementioned stations provide services to London Waterloo and Shepperton, with Richmond Station providing additional services to Reading and Windsor and Eton Riverside. All surrounding mainline rail services are operated by South West Trains Train Operating Company (TOC)

2.25 Richmond, Kingston, St Margaret's, Teddington and Norbiton stations all have on-site cycle parking, whilst Richmond and Norbiton stations also have pay and display car parks, for which season tickets are available for commuters. This will allow for residents of the site to use the mainland railways services as part of multi-modal journeys.

2.26 Bus service number 371 also provides access to Kingston, Norbiton, Richmond and North Sheen railway stations and runs approximately every 5-9 minutes.

Crossrail 2

2.27 Crossrail 2 is a proposed new railway line linking South West, Central and North East London with surrounding suburban areas. At present, it is understood that Crossrail 2 would incorporate Teddington, Kingston and Norbiton stations although it is recognised that the final route has yet to be confirmed. Due to the distance between the site and these stations, it is not expected that Crossrail 2 would increase the PTAL of the site. However, it is recognised that, should Crossrail 2 serve the Borough and surrounding areas overall accessibility will increase, with more frequent and, potentially faster, connections to Central London and beyond. Capacity would also be increased through the provision of new trains and more frequent services.

London Underground and London Overground Services

2.28 London Underground and London Overground services are accessible from Richmond Station, which is located on Kew Road, approximately 4.5km north of the site. Richmond Station is on the London Underground District Line, and is in Travelcard Zone 4.

2.29 The District Line provides direct access to the West End, City and East London. The District Line also serves Victoria Station where national rail connections can be made. London Overground services from Richmond provide access to stations on the North London and West London lines, including Willesden Junction, Gospel Oak and Stratford, for connections to other parts of Outer London.

Pedestrian Networks and Facilities

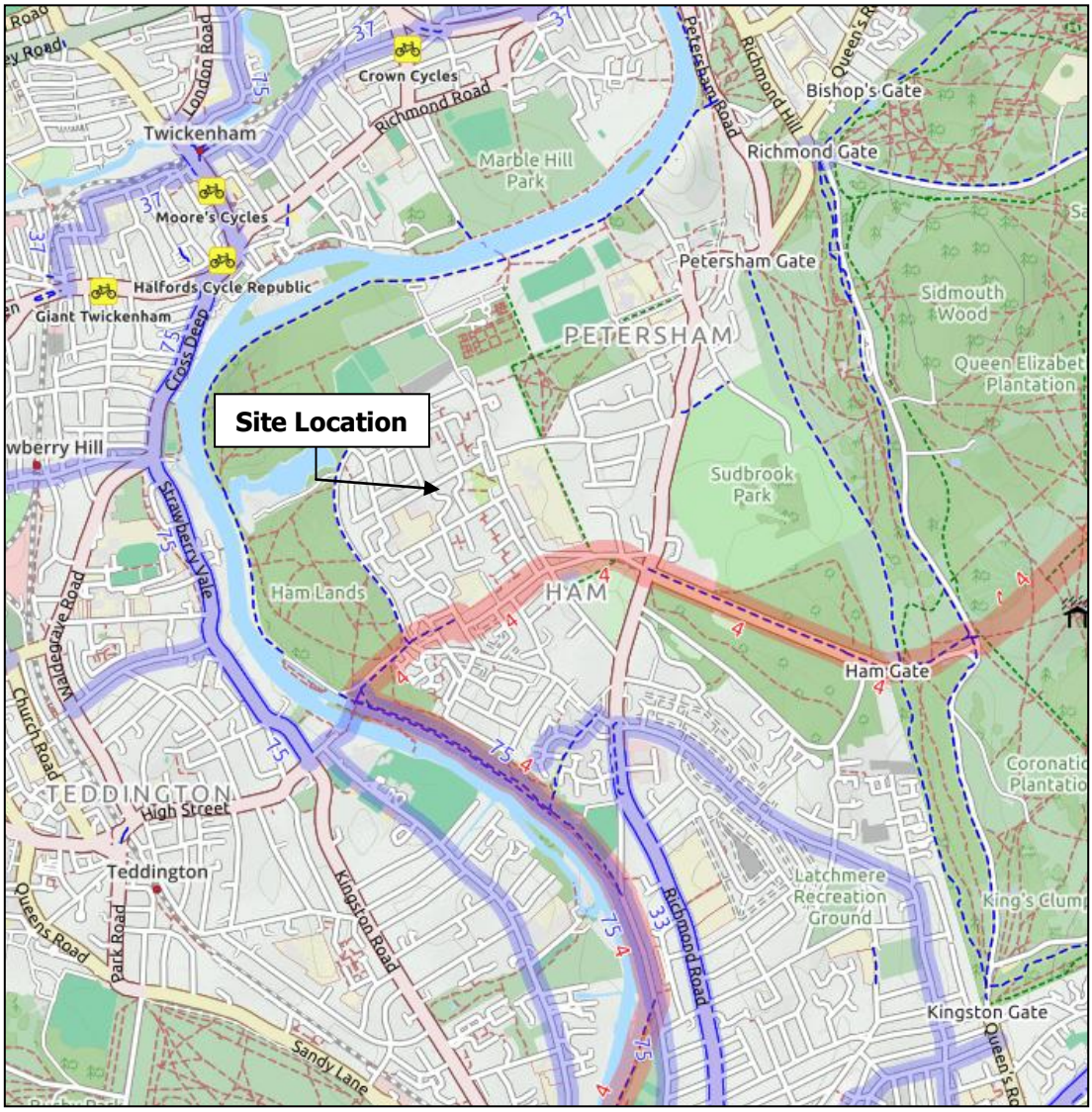
2.30 All of the roads within the local network have pedestrian footways, connecting the site to the local area for pedestrians. Ashburnham Road and Woodville Road have good quality pedestrian footways located on both sides, approximately 1.5 to 2m wide. Riverside Drive has a shared cycle and pedestrian path whilst the green space to the east, Richmond Park and routes along the River Thames provide numerous footpaths for recreation or transportation use.

Cycling Networks and Facilities

2.31 Similar to walking, the Chartered Institution of Highways & Transportation (CIHT) suggests that cycling is a suitable alternative to replace car trips for journeys of under 5km. Commutable destinations within this distance include Kingston upon Thames (3.4km), Richmond town centre (3.9km), Teddington (2.3km) and Twickenham (3.5km).

2.32 **Figure 2.2** shows the cycle networks within the vicinity of the site.

Figure 2.2 Local Cycle Network



Source: © OpenStreetMap, 2016

2.33 As shown in Figure 2.2 above, the National Cycle Network (NCN) Route 4 (shown in red) runs in close proximity to the site. NCN Route 4 is a major cycle route across south-east England and includes Ham, Richmond, Reading and Greater London.

2.34 London Cycle Network (LCN) 75 and 33 both pass within close proximity to the site and connect the site with Richmond, Twickenham, Teddington and a range of destinations in the local area.

2.35 The dashed blue line in Figure 2.2 shows off-road shared pedestrian and cycle space that is not part of regional or national network, but still provides an attractive cycle space.

2.36 In light of the above, it is considered that the site has the potential to encourage multimodal commuting, **Table 2.1** shows the distance and average journey time by bicycle to Kingston, Richmond and Teddington stations from the site.

Table 2.1 Average Journey Time to nearest Railway Station by Bicycle

Destination	Distance (km)	Average Journey Time (min)
Kingston Station	3.4	13
Richmond Station (London Underground, Overground and Mainline Railway)	4.5	15
Teddington Station	2.7	10

2.37 Table 2.1 shows mainline railway, London Underground and London Overground services can be reached within 15 minutes from the site by bicycle. As previously noted all stations have on-site cycle parking.

Access to Services

DfT Core Accessibility Indicators

2.38 The DfT publishes Core Accessibility Indicators as ways of measuring accessibility from a site by walking, cycling, public transport and car to various types of services, namely employment centres; primary, secondary and further education; healthcare including GP surgeries and hospitals; and retail including food stores and town centres. Recommended, and maximum acceptable, travel times are given for each type of services.

2.39 The eight DfT key services and facilities are:

- Employment centres;
- Primary schools;
- Secondary schools;
- Further education institutions (e.g. colleges, universities);
- GP surgeries;
- Hospitals,
- Food stores / supermarkets; and
- Town centres.

Methodology

Site Selection

2.40 In order to establish the locations of various destinations a desk-top based research exercise, using Google Maps and Google Street View, has been carried out, together with information gathered during the WYG site audit.

2.41 Whilst every effort has been made to ensure that this data is up to date, there is still the possibility that some services have been opened or closed that are not captured. However, this has been considered to be a typical scenario.

Walking Journey Times

2.42 To calculate the walking times to the destinations a network based on OpenStreetMap data was updated to ensure it included designated Public Rights of Way (PROW) in the area. Journeys were taken from the site origin and routes were taken from there as straight lines to the main site accesses and any other points where the site boundary intersected existing PROWs. The distance travelled to each destination was converted to a time using the walking speed of 4.8km/h.

Cycling and Public Transport Journey Times

2.43 The cycle and public transport journey times were generated using Google Maps. The origin was taken as the point on the main road where the site accesses are proposed to be located.

Furthermore, an additional journey time of 6 minutes for walking (to public transport) and 2.5 minutes for cycling were added to account for this link to the journey times generated by Google Maps. The input to transport direct was the eastings / northings of each of the destination points. The default option of the cycle journey planner (on the Google Maps Journey Planner) prioritises the use of cycle paths, cycle lanes, quiet streets and routes recommended for cycling, and where possible avoids steep hills. The cycle journey results on Transport Direct take into account the input cycle speed, 12km/h (in accordance with DfT), the gradient of the paths and roads and appropriate speeds for those paths and roads.

2.44 The public transport routes that were selected had up to two changes and allowed the use of both bus and rail.

DfT Core Accessibility Summary Results

Summary of Results

2.45 The travel time indicators measure the time taken for users to reach the nearest service. The DfT recommended and maximum acceptable journey times are set out in **2.45** below. Also shown in this table is the number of centres identified to be within both the recommended and maximum acceptable journey times.

Table 2.2 DfT Core Accessibility Summary Results

Service	DfT Travel Time Indicator (min)		Number of Centres Identified	
	Recommended Travel Time	Maximum Travel Time	Within the Recommended Travel Time	Within the Recommended and Maximum Travel Time
Employment	20	40	5+	20+
Primary School	15	30	10+	25+
Secondary School	20	40	3	10
Further Education	30	60	3	3
GP Surgeries	15	30	5+	5+
Hospitals	30	60	4	5+
Food Stores	15	30	10+	20+
Town Centres	15	30	4	5+

Public Transport

2.46 **Table 2.3** provides a summary of the service centres located within the recommended and maximum travel time when travelling by public transport.

Table 2.3 Service Centres Reached by Public Transport

Service	Number of Centres Identified	
	Within the Recommended Travel Time	Within the Recommended and Maximum Travel Time
Employment	3	5+
Primary School	4	25+
Secondary School	3	5+
Further Education	3	3
GP Surgeries	3	5
Hospitals	3	5+
Food Stores	5	20+
Town Centres	1	5+

Cycling

2.47 **Table 2.4** below comprises a summary of the service centres that can be reached by cycle within the recommended and maximum travel time.

Table 2.4 Service Centres Reached by Cycle

Service	Number of Centres Identified	
	Within the Recommended Travel Time	Within the Recommended and Maximum Travel Time
Employment	5+	20+
Primary School	10+	30+
Secondary School	3	10
Further Education	2	3
GP Surgeries	5+	5+
Hospitals	4	5+
Food Stores	10+	20+
Town Centres	4	5+

Walking

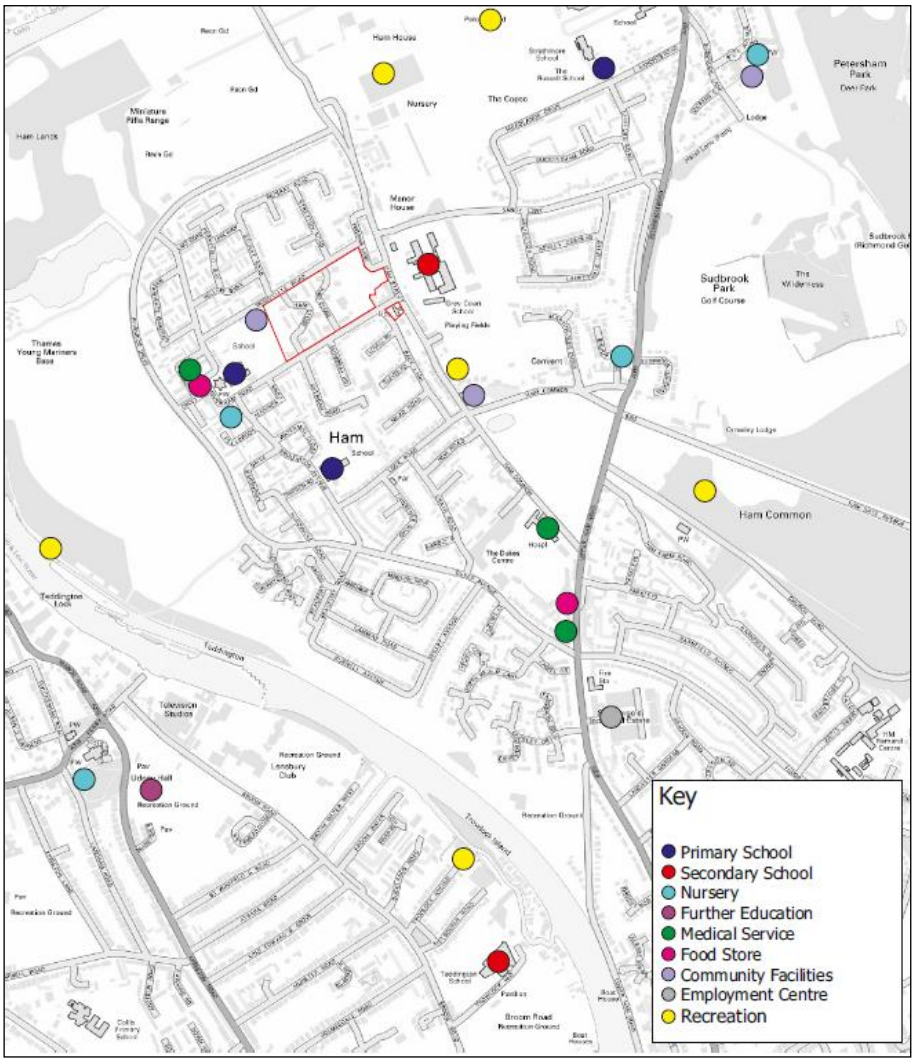
2.48 **Table 2.5** below comprises a summary of the service centres that can be reached on foot within the recommended and maximum travel time.

Table 2.5 Service Centres Reached by Walking

Service	Number of Centres Identified	
	Within the Recommended Travel Time	Within the Recommended and Maximum Travel Time
Employment	1	5+
Primary School	3	5+
Secondary School	1	2
Further Education	0	2
GP Surgeries	3	5
Hospitals	1	2
Food Stores	4	5+
Town Centres	1	2

2.49 **Figure 2.3** shows a sample of the local service centres that are accessible by walking.

Figure 2.3 Services Accessible by Walking



Access to Services Summary

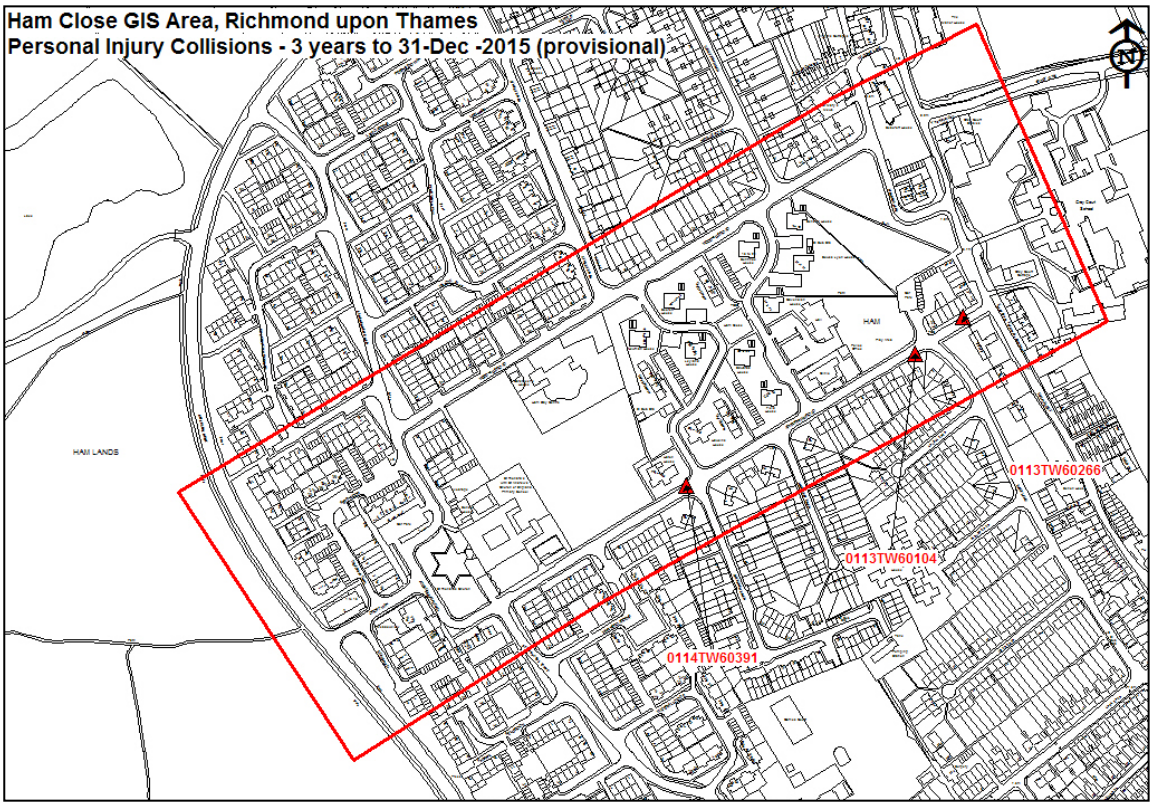
2.50 Figure 2.3 demonstrate that the site is located within an accessible location and can provide access for residents to a variety of local amenities. Due to the availability of on-street parking within the borough, it is considered likely that many will choose the car over other transport modes, therefore access to facilities by non-car modes have the greatest potential for improvement. This is further examined in **Chapter 7** of this report.

Road Safety Review

2.51 Personal Injury Collision (PIC) statistical data for the most recently available period (from 31 December 2012 to 31 December 2015) has been obtained from TfL. The road safety analysis focuses on the road network in the immediate vicinity of the site at the links and junctions considered most sensitive to pedestrian flows generated by the site. The collision data study area is shown on the collision plot in **Figure 2.4**. It includes Ham Close, Woodville Road, Ashburnham Road and sections of Ham Street and Riverside Drive.

2.52 The triangles indicate marked on the plot indicate the locations of the collisions. The full collision plot and printouts detailing the causation factors attributing to each incident obtained from TfL are provided **Appendix B** for reference.

Figure 2.4 Collision Data Study Area Plot



Source: TfL Surface Planning (May 2016)

2.53 The data provided reports a total of three separate collisions within the study period, the three collisions resulted in a total of four casualties. All four causalities had 'slight' injuries, no 'serious' or 'fatal' occurred during the most recent three year period. A chronological summary of collisions over the assessment period is presented in **Table 2.6.**

Table 2.6 Collision Data Summary

Period	Severity				
	Slight	Serious	Fatal	Total	%
12/2012-12/2013	2	0	0	**2**	**67%**
12/2013-12/2014	1	0	0	**1**	**33%**
12/2014-12/2015	0	0	0	**0**	**0%**
Total	**3**	**0**	**0**	**3**	**100%**

Source: TfL Surface Planning (March 2016)

2.54 All three of the collisions took place on Ashburnham Road, however analysis of the causation factors reveal that one accident resulted from tripping whilst boarding a bus, whilst 'failed to look properly' is stated as the main causation factor for other two accidents. Therefore, it can be concluded that the collisions are not a result of the existing highway network.

2.55 In addition, the number of collisions resulting in personal injury has decreased year to year with no collisions resulting in personal injury between December 2014 and December 2015.

Other Developments

2.56 Further to discussion with LBRuT Highways it is understood that the following proposed or committed developments are due to be delivered in the area within the timeframe that the Ham Close regeneration will take place (e.g. within the next 8 years).

- Expansion to Grey Court School;
- Expansion to the Russell School and co-location with Strathmore School;
- Potential future application for the former Strathmore School site, to the rear of the Russell School site, to become residential; and
- The German School new primary school and sports hall.

2.57 Grey Court School is located off Ham Street less than 250m to the east of the site. Planning permission was granted in June 2015 for the construction of two new buildings; a two-storey teaching building with two-bed independent living skills flat and single hydrotherapy building. The Transport Statement (TS) states that the development is expected to generate an additional 8 daily car trips and 6 daily minibus trips.

2.58 The Russell School located approximately 1.2km east of the site, off Meadlands Drive. Planning permission was granted in July 2015 for the co-location of Strathmore and Russell Schools onto a single site in purpose built facilities with associated car parking and landscaping. The TS submitted as part of the application (also prepared by WYG) estimates that an additional 18 daily car trips will be associated with this development. Traffic distribution data is not available, however it is assumed that users that live away from the immediate surrounding area would use the A307 to access this development.

2.59 The German School located approximately 1.9km north-east of the site. Planning permission was granted in May 2011 for a two storey primary school building to supplement the existing German School, it has now been constructed. This development was not expected to generate additional vehicle trips as users were already accessing the school.

2.60 Traffic distribution data is not available for all of these developments however the combination of new development will produce additional traffic on the local highway network, including the A307 Petersham Road. Excluding the potential future application for rear of Russell School to become residential, and excluding delivery and servicing trips, the developments above will add approximately 32 car or mini-bus daily trips to the local highway network.

3 Traffic and Parking Surveys

3.1 This chapter provides a review of current traffic levels in the immediate vicinity of the site, together with a quantitative assessment of vehicles entering and exiting the site, to gain an understanding, in terms of transport, of the regeneration potential of the site.

Car Parking Surveys

3.2 The site is not located within a Controlled Parking Zone (CPZ), and as a result the majority of on-street and car park parking within the vicinity of the site is unrestricted.

3.3 To establish the existing parking occupancy in the areas within, and immediately surrounding, the site, a specialist third party survey company, Nationwide Data Collection (NDC) were commissioned to carry out a detailed parking survey.

3.4 The extent and scope of the parking survey was agreed with LBRuT Highways and was conducted broadly in accordance with the Richmond Parking Survey Methodology.

3.5 The extent of the parking survey study area included all streets within and along the perimeter of the site and all car parks located in the site. The surveys were undertaken on two neutral term-time weekdays and were undertaken at 00:30-05:30, 07:30, 12:30 and 19:30 hours to ensure a robust assessment of the existing parking conditions throughout a typical weekday situation.

3.6 The number of parking spaces in the survey area were identified as part of the parking inventory measurements. All vehicle crossovers were measured on-site and eliminated from the survey area, and all kerb space was split into increments of 5m with any space short of 5m eliminated from the surveys as defined by the guidance document.

On-Street Parking

3.7 For the on-street surveys the following locations have been considered;

- Bus stops;
- Disabled;
- Unrestricted/drop kerb;
- Double yellow;
- Unrestricted/ no lines;
- 'School Keep Clear' yellow zig-zag markings;
- Single Yellow; and
- White zig-zag lines markings (e.g. at crossings).

3.8 A summary of the on street car parking availability and occupancy is provided in **Table 3.1.**

Table 3.1 On-Street Parking Survey Summary

Site/Restriction	Number of Available Spaces	Tuesday		Wednesday	
		Total Vehicles Parked	Maximum Occupancy	Total Vehicles Parked	Occupancy
Bus Stop/ Bus Bay	10	0	0%	1	10%
Disabled	2	0	0%	0	0%
Unrestricted/ Drop Kerb	10	2	20%	1	10%
Double Yellow	65	0	0%	0	0%
Unrestricted/ Ni Lines	243	94	39%	92	38%
School Keep Clear	15	0	0%	0	0%
Single Yellow	7	0	0%	0	0%
Zig-zag Lines	9	0	0%	0	0%

3.9 As shown above it is clear that the on-street parking including and surrounding Ham Close is underutilised, with a maximum occupancy of approximately 39% of unrestricted spaces, recorded at 12.30pm. At most, four OGVs were parked within the survey area at the time of the survey.

Car Parks

3.10 In order to provide a robust assessment of the existing parking situation and conditions, only unrestricted parking bays in the car parks have been considered as part of this assessment.

3.11 **Table 3.2** outlines a summary of the parking availability and occupancy of the car parks located within Ham Close.

Table 3.2 Off-Street Parking Summary

Site/Restriction	Number of Available Spaces	Tuesday		Wednesday	
		Total Vehicles Parked	Maximum Occupancy	Total Vehicles Parked	Occupancy
Unrestricted/ No lines	187	72	40.6%	79	45.5%
Disabled	1	0	0%	0	0%

3.12 The off-street car parks recorded a maximum occupancy level of approximately 46%, which was recorded between 00:30 and 05:30.

Displacement of Cars Parked in Garages

3.13 There are a total of 47 garages located in Ham Close. For the robustness of this assessment it is assumed that all of the garages are, at present, used for car parking. In reality it is likely that the 47 garages do not represent 47 cars that will be displaced onto the local streets, as many will be used for storage, especially considering 30 of the garages are not leased by residents of the Close but are instead leased to others living away from the site.

3.14 The maximum parking occupancy levels recorded in the survey were in unrestricted areas in which 243 spaces are available. A maximum of 94 vehicles were recorded on the unrestricted sections giving a maximum occupancy of approximately 39%. Should all of the vehicles from the garages be displaced on-street, and all 47 happen to be parked at the same time as the 94 parked vehicles recorded in the survey on the unrestricted areas, a maximum occupancy of 58% would result.

3.15 This scenario is considered unlikely, yet there would still be high levels of on-street parking available.

Car Ownership Levels

3.16 A review of the 2011 Census Data has provided the average car ownership level for Richmond upon Thames; this is presented in **Table 3.3**.

Table 3.3 Car Ownership in Richmond upon Thames

Number of Cars in Household	Total Number
0	19,751
1	40,079
2	16,289
3	2,926
4 or more	790
Average Car Ownership	**1.1**

3.17 Using the worst case model of 450 residential units, an additional 258 households can be expected as part of the regeneration. In turn, this means that there is the potential for an additional 273 cars associated with the redevelopment proposals.

3.18 At the time of writing the proposed redevelopment masterplan is not finalised, yet it is known that car parking will be included in the site masterplan, most likely in the form of basement parking.

3.19 However, excluding the parking to be included with the regeneration, a total of 361 on-street car parking spaces are available in the immediate surrounding area. During the parking survey the highest recorded level of vehicle parking across the entire survey area was 94 vehicles in an unrestricted parking area and two vehicles parked in an unrestricted/dropped kerb section. It is therefore concluded that there is car parking capacity available on-street for the regeneration proposals, before the site's inclusive car parking is taken into consideration.

Car Parking Summary

3.20 As shown in **Table 3.1** and **Table 3.2** the maximum occupancy levels of on-street and car parks are 39% and 46% respectively. A car parking occupancy level of between 80-90% is generally considered to be the point at which on-street parking is 'at stress'. Taking into account current on-street car parking occupancy levels and potential additional on-street parking generated by the proposed redevelopment, even as a 'worst case' it is not expected that surrounding residential streets would be 'at stress'. Full outputs of the parking survey surveys are provided in **Appendix C**.

Junction Surveys

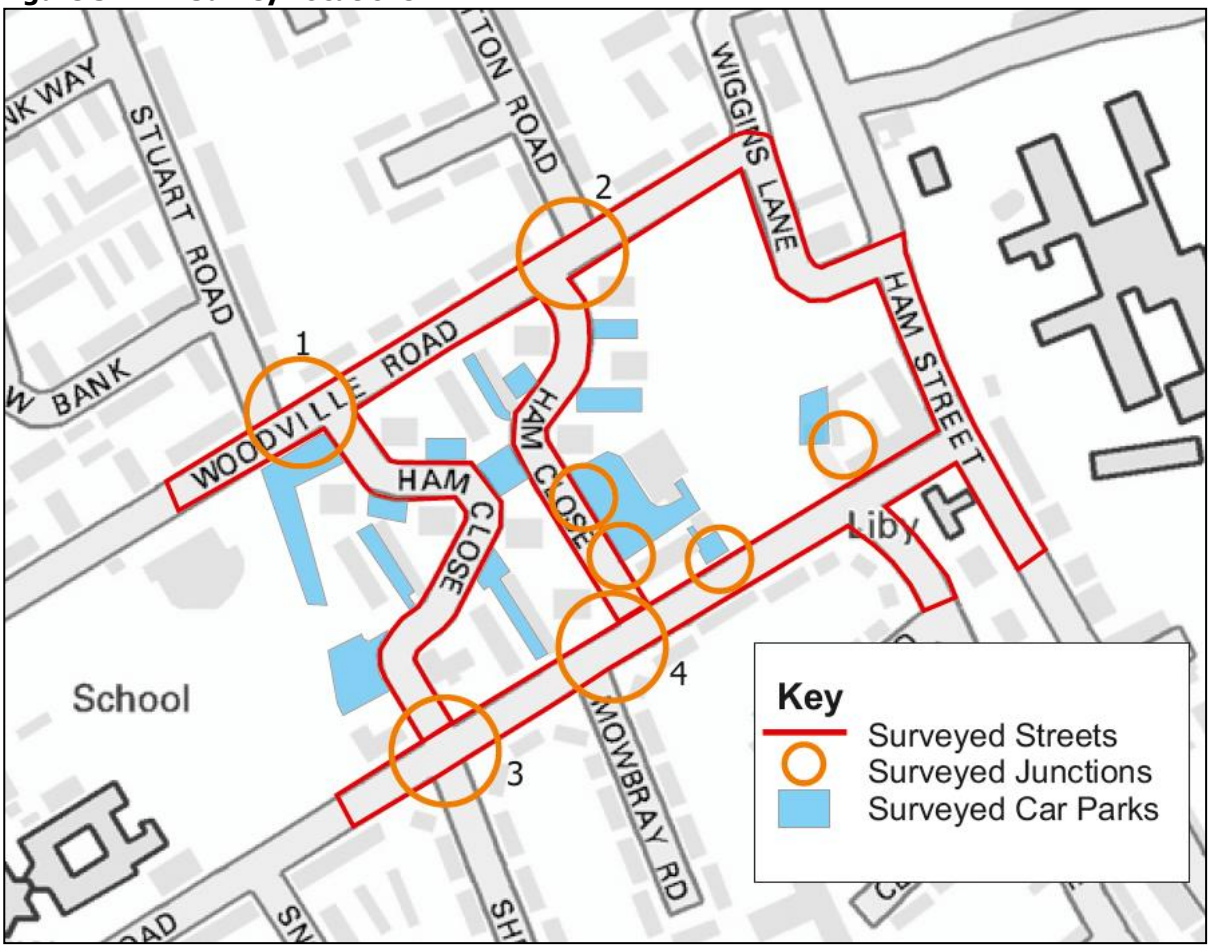
3.21 The following survey results have been included in **Appendix D** for information.

3.22 In order to establish traffic movements on the highway network traffic surveys have been undertaken at the following junctions;

- Stuart Road/ Woodville Road/ Ham Close (1)
- Stretton Road/ Woodville Road/ Ham Close (2)
- Sheridan Road/ Ashburnham Road/ Ham Close (3)
- Mowbray Road/ Ashburnham Road/ Ham Close (4)
- East Ham Close with residential car park entrances (two junctions)
- Access junction to Ham Clinic and Dental Surgery
- Access junction to south east garages and car parking area

3.23 The location of the surveyed car parks can be seen in **Figure 3.1.**

Figure 3.1 Survey Locations



3.24 Classified Turning Counts (CTCs) including queue length surveys were undertaken at junctions 1,2,3 and 4 between 07:00-10:00, 11:30-12:30 and 16:00–19:00 on Wednesday 11th May by Nationwide Data Collection (NDC). CTCs excluding queue length surveys were undertaken at all other surveys.

3.25 Automatic Traffic Counts (ATCs) were laid on the two Ham Close roads passing through Ham Close from Friday 6th May to Sunday 15th May, again by NDC. These recorded the two-way traffic flows and speeds through the close.

3.26 Analysis of the traffic surveys reveals that the peak hour on the local highway network for the Weekday AM peak is between the hours of 08:00-09:00 with the Weekday PM peak being during the hours of 15:00-16:00.

3.27 The peak hours reflect the site's proximity to local schools. 08:00-09:00 is a typical AM network peak as it captures people travelling from home to work or school. 15:00-16:00 is a typical network peak in a school area. Generally 17:00-19:00 is a PM network peak capturing commuters returning home from work, these hours are higher than general for the site, but as school hours cause the most street stress in the Ham area, 15:00-16:00 has been chosen to represent the PM peak.

CTCS Ham Close Summary

3.28 The CTC summary for junctions 1-4 represents the number of vehicles entering and exiting the site. As this section is focused solely on vehicles associated with Ham Close, vehicles travelling along Woodville Road and Ashburnham Road and not using the junctions as access/ egress to the site have been discounted. A summary of this is provided in **Table 3.4.**

Table 3.4 CTC Summary

Junction	Hour	Number of Vehicle using the Site		Maximum Queue (m)
		Arrivals	Departures	
1	AM PEAK	11	4	6 (Car)
	PM PEAK	7	7	
2	AM PEAK	14	16	12 (Coach)
	PM PEAK	18	12	
3	AM PEAK	6	11	9 (OGV)
	PM PEAK	8	8	
4	AM PEAK	16	17	9 (OGV)
	PM PEAK	14	22	

3.29 The results show that a total of 95 vehicles arrived or departed the site during the AM Peak hour, and a total of 96 vehicles arrived or departed during the PM Peak Hour. These traffic movements are expected to be generated from the residential element of the existing land-use only.

3.30 Although a junction capacity analysis of the junctions has not been undertaken, and so no conclusive results can be brought forward, a review of the CTC data suggests that the junctions do not have large volumes of traffic using them and have capacity for additional traffic be added to the network. To quantify the capacity and the specific amount of traffic that the network has the potential to accommodate, junction capacity analysis is required and it is expected that this would be included as part of a future TA.

3.31 A summary of the queue length data shows that the maximum queue recorded during the entire survey was a maximum length of 12m. This queue was recorded from Stretton Road and was caused by a coach.

3.32 Examining the queue length data, it was noted that there was no time during the survey in which there was a queue consisting of more than one vehicle. Full outputs of the CTC data are provided in **Appendix D**.

CTC Counts on Surrounding Network

3.33 The CTC summary provided in **Table 3.5** outlines the traffic volumes on Woodville Road and Ashburnham Road between the access/ egress junctions for Ham Close during a typical weekday.

Table 3.5 Local Network CTC Summary

Direction		Woodville Road	Ashburnham Road
Eastbound	AM Peak	102	118
	PM Peak	62	104
Westbound	AM Peak	78	125
	PM Peak	61	108

3.34 **Table 3.5** shows the number of total vehicles recorded across the peak hours travelling along Woodville Road and Ashburnham Road in between the surveyed junctions. Some of this traffic will turn at these junctions into the site or the adjacent streets and so this shows the maximum traffic levels that Woodville Road and Ashburnham Road will experience during a typical weekday.

3.35 The greatest volume of traffic recorded was westbound traffic on Ashburnham Road during the AM Peak, this is expected as St Richard's C of E Primary School is located on west Ashburnham Road and will attract traffic. This traffic count relates to approximately 2 vehicles per minute, although in reality the traffic will not be evenly spread across the peak.

3.36 It is considered that the maximum recorded traffic levels along Woodville Road and Ashburnham Road are not reaching high stress levels and at present can be accommodated on the highway network. Without a comprehensive junction capacity analysis, no conclusive results can be brought forward, but given the results of the CTC survey, it can be assumed that the addition of a maximum of 258 residential units will not cause unmanageable traffic volumes on the local highway network.

Non-Residential CTC

3.37 CTC's were undertaken at the junction between Ashburnham Road the car parking area that serves Ham Clinic and the dental surgery, the surveys were undertaken between 07:00-10:00, 11:30-12:30 and 16:00–19:00, the Ham Clinic opening times are 9am to 4pm, whilst the dental surgery opening times are 8am to 6pm so the CTCs should capture the total employee and visitor vehicle trips during the AM and PM peaks.

3.38 For these non-residential facilities, the vehicle trip generation is expected to be a like for like replacement from the existing situation to the proposed situation. Therefore the CTC's recorded reflect the existing and proposed total estimated trip generation, a summary of this is provided in **Table 3.6**.

Table 3.6 Non-Residential CTC

Time	Classified Turning Count/ Estimated Trip Generation		
	Arrivals	Departures	Totals
AM Peak (08:00- 09:00)	9	0	9
PM School Peak (15:00-16:00)	4	3	7

3.39 **Table 3.6** shows that junction counts and therefore the existing and proposed trip generation is relatively low during the network peaks. A review of the results of the CTC survey shows that the largest PM departure was of 6 vehicles between 16:00-17:00. During the AM period of 07:00-10:00 a total of 19 two-way vehicle trips were recorded whilst the recorded PM period between the hours of 15:00 and 19:00, a total of 23 two-way vehicle trips were recorded.

4 Parking Standards and Design

Introduction

4.1 Parking spaces and their layout often influence the masterplan of a new development or regeneration and therefore some initial advice has been provided in this chapter. It provides a review of LBRuT and TfL specific parking standards and design guidance. It also provides a review of current LBRuT and TfL parking standards for cars and bicycles, including design requirements, which would need to be taken into account in the development of the site.

4.2 Parking standards have been ascertained from regional and local policy documents. The London Plan (with minor alterations) (2016) provides the overall strategic plan for London, including parking standards for all London Boroughs.

4.3 The Development Management Plan (DMP) adopted in November 2011, is the key document which informs planning decisions in the Borough, including the parking standards for developments.

Parking Standards

Car Parking Standards

4.4 **Figure 4.1** provides an extract from the London Plan. It can be seen that residential car parking levels vary according to location, PTAL and density. **Table 4.1** shows the maximum residential car parking standards for areas outside a Controlled Parking Zone (CPZ) in the borough.

Figure 4.1 The London Plan Car Parking Standards

	PTAL 0 to 1		PTAL 2 to 4		PTAL 5 to 6	
Suburban	**150–200 hr/ha**	**Parking provision**	**150–250 hr/ha**	**Parking provision**	**200–350 hr/ha**	**Parking provision**
3.8–4.6 hr/unit	35–55 u/ha	Up to 2 spaces per unit	35–65 u/ha	Up to 1.5 spaces per unit	45–90 u/ha	Up to one space per unit
3.1–3.7 hr/unit	40–65 u/ha		40–80 u/ha		55–115 u/ha	
2.7–3.0 hr/unit	50–75 u/ha		50–95 u/ha		70–130 u/ha	
Urban	**150–250 hr/ha**		**200–450 hr/ha**		**200–700 hr/ha**	
3.8 –4.6 hr/unit	35–65 u/ha	Up to 1.5 spaces per unit	45–120 u/ha	Up to 1.5 spaces per unit	45–185 u/ha	Up to one space per unit
3.1–3.7 hr/unit	40–80 u/ha		55–145 u/ha		55–225 u/ha	
2.7–3.0 hr/unit	50–95 u/ha		70–170 u/ha	Up to one space per unit	70–260 u/ha	
Central	**150–300 hr/ha**		**300–650 hr/ha**		**650–1100 hr/ha**	
3.8–4.6 hr/unit	35–80 u/ha	Up to 1.5 spaces per unit	65–170 u/ha	Up to one space per unit	140–290 u/ha	Up to one space per unit
3.1–3.7 hr/unit	40–100 u/ha		80–210 u/ha		175–355 u/ha	
2.7–3.0 hr/unit	50–110 u/hr	Up to one space per unit	100–240 u/ha		215–405 u/ha	

Maximum residential parking standards			
number of beds	**4 or more**	**3**	**1-2**
parking spaces	up to 2 per unit	up to 1.5 per unit	less than 1 per unit

Table 4.1 LBRuT Car Parking Standards

Use Class	Bedrooms	Car Parking Spaces (Maximum)
C3 Residential	1-2 bedrooms	1 space
	3 bedrooms	1.5 spaces (1 allocated per unit)
	4 bedrooms	2 spaces (negotiable)

4.5 A scheme of less than 400 units is unlikely to be financially viable unless sales values growth accelerates; therefore looking at a development in the region of 400-450 units, for modelling purposes to represent the 'worst case' model, 450 units have been tested.

4.6 Based on a 450 unit scheme, which represents a scheme half way between the expected minimum and maximum level of development, car parking in line with residential London Plan parking standards would constitute less than 505 residential car parking spaces. In line with LBRuT policy a maximum of 505 car parking spaces are allowed. This is based on a certain mix of different sized units with varying numbers of bedrooms per unit.

4.7 The London Plan references that *"20% of all spaces must be for electric vehicles with an additional 20% passive provision for electric vehicles in the future"*. This will need to be taken account of within future development proposals.

4.8 According to the London Plan, adequate parking spaces for disabled people on residential developments must be provided on-site, and is judged on a case by case basis. The London Plan refers to lifetime homes, which requires 10% of all dwellings to be accessible. TfL generally therefore require 10% of the total number of units to have a disabled parking space associated with them.

Cycle Parking Standards

4.9 The minimum cycle parking standards set out in Table 6.3 of the London Plan and in the LBRuT DMP have been provided in **Table 4.2.**

Table 4.2 London Plan Cycle Parking Standards

Use Class	Policy	Bedrooms	Cycle Parking Spaces (Minimum)	
			Long Stay	Short Stay
C3 Residential	The London Plan	Studio/ 1 Bedroom	1 space per studio and 1 bed	1 space per 40 units
		2+ Bedrooms	2 spaces per all other dwellings	
	LBRuT DMP	1-2 Bedrooms	1 space	-
		3 Bedrooms	1 space	
		4+ Bedrooms	2 spaces	

4.10 As with the car parking, cycle parking calculations have been calculated based on a 450 unit scheme. In line with London Plan standards a minimum of 737 long term and 11 short term cycle spaces are required, LBRuT policy requires a minimum of 460 long term cycle parking spaces. This is based on a certain mix of different sized units with varying numbers of bedrooms.

4.11 To promote sustainable travel WYG recommends that the client adheres to the London Plan standards as these are greater and more cycle parking facilities should encourage residents or visitors to cycle to/ from the development.

5 Trip Generation Assessment

TRICS Methodology & Approach

5.1 An assessment of the forecast level of trips to and from the proposed development by all modes of transport is provided in this section of the report. The proposed trip generation has been compared against the number of trips that the existing close potentially generates at present.

5.2 The trip generation by each mode of transport to and from the proposed development has been calculated for a typical weekday.

5.3 In order to calculate the trips generated by the Proposed Development, trip rates have been extracted from the industry standard TRICS database (version 7.3.1), the output reports are provided in full in **Appendix E**.

5.4 Total person trip rates have been used for the calculations; these are numerical values (which are generally survey-based) assigned to specific land uses that predicts the number of person trips that will be generated within a defined time period. As trip rates are influenced by a range of factors, such as land use type, parking availability, public transport accessibility and local traffic conditions, WYG has cross referenced the resulting modal split of the trip generated against local ward census data to ensure a robust local modal split.

5.5 The approach and methodology followed in the multi-modal trip assessment is consistent with the *DfT / DCLG Guidance on Transport Assessment (GTA)*, revised version, published in April 2010; and is in line with the *TfL Transport assessment best practice: Guidance* document, published in April 2010.

Residential Survey Site Selection

5.6 The following Criteria was used in the site selection process;

- 'Affordable/ Local Authority Flats' and 'Flats Privately Owned';
- Greater London and South East England only;
- Surveys undertaken on weekdays only (Monday to Friday);
- Number of dwellings between 50 and 500; and
- Within the most recent eight year period.

5.7 A review of the sites in TRICS under the selection criteria identified 5 suitable survey sites for the affordable elements and 8 suitable survey sites for the private element of the regeneration proposals.

Residential Multi-Modal Trip Generation

5.8 **Table 5.1** presents multi-modal trip rates for affordable residential whilst **Table 5.2** presents multi-modal trip rates for private residential.

Table 5.1 Affordable Residential Trip Rates

Mode of Transport	AM Peak		PM Peak		Daily 2-way
	Arrive	Depart	Arrive	Depart	
Car Driver	0.055	0.313	0.182	0.111	3.248
Car Passenger	0.002	0.013	0.008	0.005	0.136
Motorcycle	0.004	0.021	0.012	0.007	0.215
Pedal Cycle	0.014	0.082	0.048	0.029	0.851
Public Transport	0.052	0.295	0.172	0.105	3.069
Walk Only	0.011	0.060	0.035	0.021	0.622
Other	0.002	0.012	0.007	0.004	0.125
Totals	0.140	0.796	0.462	0.282	8.267

Table 5.2 Private Residential Trip Rates

Mode of Transport	AM Peak		PM Peak		Daily 2-way
	Arrive	Depart	Arrive	Depart	
Car Driver	0.035	0.124	0.069	0.033	1.295
Car Passenger	0.002	0.006	0.004	0.002	0.066
Motorcycle	0.003	0.010	0.005	0.003	0.100
Pedal Cycle	0.009	0.032	0.018	0.008	0.332
Public Transport	0.034	0.121	0.067	0.032	1.262
Walk Only	0.007	0.026	0.014	0.007	0.266
Other	0.002	0.006	0.004	0.002	0.066
Totals	0.089	0.319	0.177	0.084	3.320

Existing Trip Generation

5.9 The multi modal trip rate factors above have been applied to the existing 192 dwellings, 49 private and 143 affordable, to calculate the number of multi modal trips potential generated during the peak hours and across the daily residential land use. The results of this are presented in **Table 5.3**.

Table 5.3 Existing Residential Trip Generation – 49 Private and 143 Affordable Residential Units

Mode of Transport	AM Peak		PM Peak		Daily 2-way
	Arrive	Depart	Arrive	Depart	
Car Driver	10	51	29	17	528
Car Passenger	0	2	1	1	22
Motorcycle	1	3	2	1	35
Pedal Cycle	3	13	8	5	138
Public Transport	9	48	28	16	499
Walk Only	2	10	6	3	101
Other	0	2	1	1	20
Totals	**24**	**129**	**75**	**44**	**1345**

5.10 As demonstrated in **Table 5.3**; it is estimated that the existing site use generates an estimated 61 two-way vehicle trips in the AM peak hour, 46 two-way trips in the PM peak hour and 528 daily two-way car trips.

Proposed Residential Multi-Modal Trip Generation

5.11 To estimate the total proposed multi-modal trip generation a 'worst case' model of 450 units has been used. Current regeneration proposals state a range of 400-450 total units for the regeneration, it is more than likely that the actually regeneration will comprise less than the 450 units but to ensure a robust trip generation assessment, this worst case has been modelled. Should the trip generation results prove that the worst case scenario can be accommodated on the local highway network, it can be concluded that any regeneration proposal in the range of 400-450 will be suitable for the regeneration.

5.12 For the regeneration the existing 143 affordable units and 49 private units will be re-provided. Therefore, an additional 258 residential units will be modelled to represent the worst case scenario. It is expected at this time that a third of the additional residential units will be affordable, with the remaining two-thirds of the additional residential units private.

5.13 **Table 5.4** presents vehicle trip rates for the proposed land use, which comprises of 450 residential units and includes a mix of private and affordable.

Table 5.4 Predicted Future 'Worst Case' Total Residential Trip Generation – 221 Private and 229 Affordable Residential Units

Mode of Transport	AM Peak		PM Peak		Daily 2-way
	Arrive	Depart	Arrive	Depart	
Car Driver	20	99	57	33	1031
Car Passenger	1	4	2	1	43
Motorcycle	1	7	4	2	68
Pedal Cycle	5	26	15	9	270
Public Transport	19	94	54	31	974
Walk Only	4	19	11	6	198
Other	1	4	2	1	40
Totals	**52**	**253**	**145**	**83**	**2627**

5.14 As demonstrated in Table 5.4; it is estimated that the regeneration proposals have the potential to produce 120 car trips in the AM peak, 90 car trips in the PM peak and a total of 1031 two-way car trips. For all combined modes a total of 2627 trips are expected to be generated.

Net Change Residential Multi-Modal Trip Generation

5.15 Comparing the data provided in **Table 5.3** and **Table 5.4** provides the worst case scenario (a total of 450 residential units) net impact of the residential regeneration proposals on trip generation, this net impact is provided in **Table 5.5**

Table 5.5 Predicted Future 'Worst Case' Net Change in Residential Trip Generation

Mode of Transport	AM Peak		PM Peak		Daily 2-way
	Arrive	Depart	Arrive	Depart	
Car Driver	11	48	28	15	503
Car Passenger	0	2	1	1	21
Motorcycle	1	3	2	1	33
Pedal Cycle	3	13	7	4	132
Public Transport	10	46	26	14	475
Walk Only	2	9	5	3	96
Other	0	2	1	1	19
Totals	**27**	**123**	**70**	**39**	**1282**

5.16 As shown above the impact of the proposals would result in an increase of 59 car trips in the AM peak and an increase of 43 car trips in the PM peak. The local public transport network is expected to face an increase of 56 trips in the AM peak and an increase of 40 trips in the PM peak. As these results have been modelled on a basis of 450 residential units, it is expected that in reality, the net increase in trips will be lower.

5.17 As demonstrated in Chapter 3, it is considered that there are currently no excessive volumes of traffic in the immediate vicinity of the site. Furthermore, the car parks and on-street car parking is currently generally under-utilised. The expected increase in vehicle trips, resulted from a worst case scenario, is therefore considered not to result in a negative impact on the operation of the local highway network.

Non- Residential Trip Generation

5.18 The non- residential elements of the regeneration include the Ham Clinic and the dental surgery, accessed via the same junction from Ashburnham Road, the vehicle trip generation is expected to be a like for like replacement from the existing situation to the proposed situation. Therefore CTC data has been used to estimate the existing and proposed vehicle trip generation and is discussed in **Chapter 3** and **Table 3.6**.

5.19 The estimated existing and proposed trip generation assessment for Ham Clinic and the dental surgery combined results in a total of 9 two-way vehicle trips in the AM peak and 7 two-way vehicle trips in the PM peak. These vehicle trips are negligible when compared with existing traffic volumes on the local highway network.

Effect on Petersham Road (A307)

5.20 WYG has been provided traffic count data for Petersham Road (the A307) dating from 29 February to 27 March 2016, during term-time. The data included two-way traffic counts, recorded by hour, for a section of Petersham Road close to the Sandy Lane junction.

5.21 The weekday average for the AM and PM peaks (school peaks) and the daily total have been extracted and compared with the proposed development estimated vehicle traffic generation as provided in **Table 5.5**.

5.22 It is important to note that the trip generation produced represents a worst case scenario. It is therefore likely that the actual amount of vehicles on the local highway network during the peak hours will be lower than **Table 5.5** outlines. It is also unlikely that every single vehicle trip generated by the Proposed Development will make use of the A307.

5.23 The effect of the regeneration on Petersham Road provided below in **Table 5.6** also assumes that all vehicles will arrive/ depart the site via Petersham Road. In reality, although a large proportion of vehicles will travel via Petersham Road as it is a TfL strategic route, and travel is restricted in the north and east due to the river, not all vehicles will use this route, especially as numerous facilities including schools, food stores and medical facilities can be accessed without travelling on Petersham Road.

5.24 **Table 5.6** Provides a summary of the total vehicles using Petersham road on a typical weekday, in comparison with the estimated vehicle trip generation for the worst case net increase.

Table 5.6 Proportion of Predicted Vehicle Increase on Petersham Road

Weekday Average	February-March 2016 average weekday two-way traffic count	Predicted Additional Regeneration Trip Generation	Regeneration Trip Generation as a proportion of existing two-way traffic (%)
AM Peak	875	59	7%
PM/ School Peak	965	43	4%
Daily (7am-10pm)	13,028	503	4%

5.25 It can be seen from **Table 5.6** that at present, during the AM Peak, 875 vehicles used the section of Petersham Road close to the Sandy Lane junction. At worst the regeneration will add an additional 59 vehicles onto the road or 1 vehicle per minute between 8am to 9am.

5.26 During the PM school peak, Petersham Road, at present, has 965 vehicles on the network, the regeneration, at absolute most will add an additional 43 vehicles to the network, or 1 vehicle every 1-2 minutes.

5.27 Through an average weekday Petersham Road recorded an average of 13028 two-way vehicles. The regeneration has the potential to add, at most, an additional 503 two-way vehicle trips onto Petersham Road. This equates to approximately 1 vehicle every 2 minutes between the hours of 7am and 10pm.

6 Potential Future Public Transport Improvements

6.1 As stated in **Chapter 2**, the site is located in an area with a PTAL of 1b ("Poor"), as defined by the TfL PTAL methodology. WYG has been informed that the Client is seeking to improve the PTAL rating of the area in relation with the regeneration. Due to the location of the area, being bounded to the north and east by the River Thames, significant improvements to public infrastructure is limited.

6.2 Measures that could increase the PTAL rating include; increasing the frequency of peak hour public transport services, increasing the range of different public transport routes and increasing the capacity of peak hour public transport services.

6.3 In relation to the Ham Close regeneration, it is considered that feasible improvements can only be applied to the TfL bus services, 371, K5 and 65.

6.4 Further to discussions with LBRuT Highways, it is understood that TfL is currently considering an extension to the K5 bus services, that currently stops in Duke Avenue south of Ham Close. It is understood that TfL is considering extending the route to Ham Close, although it is further understood that a dedicated turnaround facility would need to be provided within the site for this to be achieved. Should this be agreed in the regeneration proposals, it has the potential to increase the PTAL rating of the site by improving access to public transport.

6.5 An alternative bus route, providing access to locations not served by the 371, within the walk access time as defined by TfL will increase the PTAL rating, albeit not significantly if this is the only improvement.

6.6 Bus service 371 is the only public transport service that is included in the PTAL assessment. To improve the PTAL rating and the quality of the bus services from the site, the frequency of the 371 could be increased during the AM and PM peak hours (08:00-09:00 and 15:00-16:00). TfL already provides double decker services during peak times to increase the capacity, although this is not reflected in the PTAL rating. At present the 371 service has a frequency of 8-10 minutes during 07:00– 15:00 and a frequency 5-9 minutes during 15:00-16:00. A further increase in frequency is suggested to be considered to improve the PTAL rating and reduce the congestion on these services.

6.7 Bus service 65 has stops on Petersham Road approximately 1.2km east of the site, due to the distance of the bus stop to the site this service has not been included in the PTAL assessment. Should a bus stop for this service be accessible within the walk access time then the PTAL for this area would increase. In reality however, residents of Ham Close will already and will continue to use this service, as it is a 13 minute walking distance, and therefore the low PTAL may not necessarily accurately reflect the accessibility of the site via public transport.

PTAL Improvement Summary

6.8 Overall due to the area's location and the existing infrastructure there are limited cost-effective options available to significantly improve the PTAL rating of the area.

6.9 WYG advise that an increase from '1b' to '2' might be possible with the addition of a bus stop in the area for the K5 bus service, and an increase in frequency of the 371 bus service during the peak hours. It is also advised that during the peak hours a double decker bus is used to increase capacity.

6.10 In reality, although the area has a low PTAL, residents of the site will be willing to travel to areas in the local vicinity, in order to access additional public transport services, such as the 65 bus service from Petersham Road. Therefore, although a PTAL rating acts as a guide for public transport accessibility, real life accessibility may differ.

7 Sustainable Transport Strategy

Introduction

7.1 In the context of a potential future planning application, it is expected that a Framework Travel Plan (FTP) will need to be prepared. This will need to include various measures aimed at actively promoting and encouraging travel to and from the site by sustainable (i.e. non-car) modes.

7.2 A FTP will include a sustainable transport strategy that will set out and clearly define the stages by which the TP will be developed and implemented and is key to the longevity and success of the TP.

7.3 Key actions of the sustainable strategy will include:

- **Appointment of a Travel Plan Coordinator (TPC)** – to oversee and manage the Travel Plan process, including liaising with residents, LBRuT and relevant stakeholders, implementing measures and overseeing annual Travel Plan monitoring post-occupation.
- **Engagement with various partners and stakeholders** – including LBRuT Travel Plan officers, TfL Cycling officers, public transport officers and residents' association.
- **Marketing** – raising awareness of the Travel Plan and various measures.

7.4 Future measures that will be implemented on-site in order to achieve FTP objective can be split into two types:

1. **Hard' or 'Physical' Measures** – Engineering / architectural measures incorporated into the design of the development e.g. parking provision; and
2. **'Soft' Measures** – Marketing and management measures implemented as part of the development proposals on an on-going basis in order to maximise the uptake of sustainable travel measures and in order to reduce dependency on private cars, particularly single occupancy trips.

7.5 Future measures, for inclusion in a Framework Travel Plan, are likely to comprise:

'Hard' or 'physical' measures:

- **Car parking provision** – Ensuring that the level of car parking provision across the development is not excessive so as to encourage car use in place of the use of sustainable modes, but should be balanced so as to ensure those who have little or no choice but to drive, can still do so. The level of car parking will need to reflect car ownership levels amongst existing residents and new incoming residents.
- **Disabled parking provision** – The level of disabled parking provision should be policy compliant and also appropriate to the needs of the close. As a starting point, 10% of all residential parking spaces will be designed to 'Blue Badge' disabled / wheelchair accessible space dimensions, subject to prevailing LBRuT Highways and TfL requirements.
- **Electric vehicle charging** – Electric vehicle charging points will be integrated into the design of the development. In accordance with current London Plan requirements, it is expected that 20% of spaces will have active electric vehicle charging point provision with a further 20% passive provision. It is possible that the required levels of charging point provision may change in the future.
- **Cycle parking provision** – The level of cycle parking provision should be policy compliant and provide a mix of long-stay parking for residents, and employees associated with non-residential uses, and short-stay parking for visitors. It is a usual requirement for all cycle parking to be sheltered and located in an area that has good natural surveillance, e.g. is overlooked by residential dwellings and/or is visible from the street, and for long-stay cycle parking to be sheltered and in a secure location, e.g. within the buildings and/or behind a locked gate.

'Soft' measures:

- **Community notice boards** – These will provide information on the Travel Plan; what it is, why it has been developed, and some headline results from the baseline travel survey (once this has been undertaken). This can provide the greater detail to enable residents to understand the implications and impacts of their travel choices, with real, personal, tangible benefits such as costs savings, health and fitness, and environmental.
- **Travel information packs** – All new households will be provided with a travel information pack (TIP) as part of their welcome pack. Travel information packs will be distributed to all residents. The packs will be used to raise awareness of sustainable initiatives being implemented throughout the lifecycle of the travel plan including the promotion of key services and facilities, promotion of online shopping, promotion of car share clubs and promotion of membership to the London Cycling Campaign. The TIP will include contact details for the TPC and on-site services. The TIP will invite residents to raise their travel-related queries with the TPC for consideration and discussion. A copy of the TIP will also be provided in the entrance lobby to each block.

7.6 Key services and facilities:

- **Personalised journey planning** – The TPC will provide personalise travel planning advice to residents of the development. This could include information on fastest route for accessing public transport services and stations.
- **Facilities for mobility impaired people** – The above service will also accommodate specific journey planning requirements of mobility impaired persons living at the site.
- **Provision of fast internet access** – All residential units will be broadband enabled prior to occupation, providing residents with the opportunity to sign up to an internet service provider. The TPC will make reasonable endeavours to negotiate discounted broadband contracts with internet service providers to ensure that residents have an added incentive to consider working from home and web based shopping.

Encouraging Sustainable Transport by Design

7.7 In addition to the measures to encourage sustainable travel outlined above to be included in the Framework Travel Plan, the final design of the regeneration proposals should actively encourage travel by non-car modes.

Walking

7.8 To encourage walking throughout the development and to local services, high quality, wide footways must be present throughout. Dropped kerbs are encouraged, as are pedestrian crossings. Pedestrian crossings can be signalised or not, due to the low levels of traffic recorded from the CTC surveys, non-signalised crossings are considered suitable.

7.9 A coherent pedestrian network should be included into the design with pedestrian desire paths not being impeded by street furniture.

7.10 As outlined in Chapter 6 of DfT '*Manual for Streets'* (2007) pedestrian desire lines should be as straight as possible to prevent people from deviating from the path. Footpaths along the side of a carriageway should include dropped kerbs with tactile pavement were appropriate.

7.11 Space within the curtilage, or ground floor of the block of flats is also valuable for people with pushchairs or similar, and may encourage walking.

Cycling

7.12 As with walking, cycling will be a more attractive option to residents and visitors if an attractive cycle environment is provided.

7.13 As outlined in DfT '*Manual for Streets'* (2007), the choice of transport mode for short journeys, particularly in urban areas, often depends on minor differences between convenience and time.

Presence of facilities that allow cycles to be collected easily and quickly will encourage cycling. The final design should aim to make cycle access as convenient, or even more convenient, than access to car parking.

7.14 Cycle parking must be provided in line with the minimum standards, and it is advised that exceeding the minimum standards would be beneficial. Cycle parking areas should be secure, sheltered and well lit at night, and either on ground-level or with suitable ramps to allow ease of access with bikes.

7.15 DfT '*Manual for Streets'* (2007) states:

> *"Shared cycle parking is normally more efficient than providing sufficient space within each dwelling for the maximum possible number of cycles. Shared cycle parking facilities should be secure and convenient to use"*

7.16 Suggested cycle parking areas included; basement cycle parks, in purposed-designed buildings or in an extension to a residential building.

7.17 As the area in which the site is located is mixed use with commercial and community facilities, and includes shops, a school, a community building, a church and recreation areas it is recommended that the regeneration provides well-located and convenient public cycle parking to serve these nearby facilities. Public cycle-parking should be provided in a well – overlooked area, a range of cycle parking designs are available but Sheffield Stands are often preferred.

Public Transport

7.18 To encourage the use of the local bus services to the residents of the regeneration, the design must ensure that the bus stops can easily be accessed on foot and be clearly visible. The route from all residential buildings to the bus stops must be accessible for wheelchair users.

7.19 The regeneration design should not encroach on the space surrounding the existing bus stops, as these areas need to be wide enough to allow space for waiting passengers and pedestrian movement.

8 Summary, Conclusions and Next Steps

Summary and Conclusions

8.1 WYG is commissioned by the London Borough of Richmond upon Thames (LBRuT) and the Richmond Housing Partnership (RHP) (together referred to as the 'Client') to provide initial transport and highways consultancy advice, and produce a Transport and Highways Feasibility Report (hereafter referred to as the 'feasibility report') in connection with the potential future regeneration of Ham Close (the 'Close' and 'site'), situated in the London Borough of Richmond upon Thames (the 'Borough').

8.2 The Local Planning Authority is LBRuT Planning and the Local Highways Authority is LBRuT Highways. The Strategic Transport Authority is Transport for London (TfL).

8.3 WYG understands that the Client is currently considering the redevelopment of the existing Close, which currently comprises 192 residential units (143 affordable and 49 leasehold flats) for which RHP is the freeholder, Ham Clinic, a dentist and youth centre. The proposed scheme will involve the demolition of all these buildings and the construction of a new community building as well as new residential units. A scheme of less than 400 units unlikely to be financially viable unless sales values growth accelerates, therefore it is likely that the development will be in the region of 400-450 units.

8.4 It is understood that, all of the existing residential units will be re-provided and of the additional housing at least a third will be affordable. For modelling purposes this report tests a scheme of 450 residential units to analyse the worst case scenario.

8.5 The site has a PTAL rating of 1b, indicating a 'Poor' level of public transport accessibility. It is possible for the area to have a minor increase in PTAL rating by the addition of a bus stop in the area for the K5 bus service, and an increase in frequency of the 371 bus service during the peak hours. It is also advised that during the peak hours a double decker bus is used to increase capacity.

8.6 Access to local services for residents is available by walking, cycling and public transport.

8.7 A road safety review has identified a total of three separate collisions within the local highway network, the three collisions resulted in a total of four casualties. All four causalities had 'slight' injuries, no 'serious' or 'fatal' occurred during the most recent three year period.

8.8 To establish the existing parking occupancy in the areas within, and immediately surrounding, the site, a specialist third party survey company, Nationwide Data Collection (NDC), was commissioned to carry out an initial parking survey. The results show that the maximum occupancy levels of on-street and car parks are 39% and 46% respectively, this suggests that the car parking provision is currently under-utilised and that the increase in residential units outlined in the regeneration proposals can comfortably be accommodate in the existing parking provision.

8.9 There is the potential for an additional 273 cars associated with the redevelopment proposals based on 2011 census data. A total of 361 on-street car parking spaces, including 243 unrestricted spaces are available. During the parking survey the highest recorded level of car parking on unrestricted sections across the entire survey area was 94 cars. Therefore, there is car parking capacity available on-street for the regeneration proposals, before the site's inclusive car parking is taken into consideration.

8.10 It is considered that there would likely be sufficient available capacity for cars displaced from the garages in Ham Close to be accommodated on the on-street parking.

8.11 In order to establish traffic movements on the highway network traffic surveys were undertaken at key junctions.

8.12 The results show that a total of 95 vehicles arrived or departed the site during the AM peak hour, and a total of 96 vehicles arrived or departed during the PM peak Hour. These traffic movements are expected to be generated from the residential element of the existing land-use only. Although a

junction capacity analysis of the junctions has not been undertaken a brief review of the CTC data suggests that the junctions, Woodville Road and Ashburnham Road have available capacity to support the regeneration proposals. The maximum traffic counts were recorded westbound during the AM peak on Ashburnham Road equates to approximately 2 vehicles per minute.

8.13 Queue length data shows that there was no time during the survey in which there was a queue consisting of more than one vehicle

8.14 On an average weekday Petersham Road recorded an average of 13028 two-way vehicles. The regeneration has the potential to add, at most, an additional 503 two-way vehicle onto Petersham Road. This equates to 4% of existing traffic or approximately 1 vehicle every 1-2 minutes between the hours of 7am and 10pm.

8.15 A multi-modal trip generation assessment has also been undertaken using the industry standard TRICS v7.3.1, along with a review of relevant local census data for the area. The impact of the regeneration proposals of worst case scenario of 450 residential units would result in an increase of 59 car trips in the AM peak and an increase of 43 car trips in the PM peak. The local public transport network is expected to face an increase of 56 trips in the AM peak and an increase of 40 trips in the PM peak.

8.16 At this stage and based on the outcome of the multi-modal trip assessment, it is considered that, subject to the outcome of junction capacity assessment, the number of vehicles expected to be generated by the proposed development, according to both the TRICS and census data, would likely be accommodated on the surrounding streets in terms of parking capacity without resulting in a detrimental highway impact.

Next Steps

8.17 It is important to note that WYG's initial conclusions are based on a desk-based review of the emerging masterplan proposals, alongside a site visit, undertaken between May and June 2016. This study has not included junction modelling or highway capacity assessment which, it is considered, will form a key part of any future Transport Assessment (TA) Report.

8.18 It is expected that a future development planning application would need to be accompanied by a thorough TA Report and a Framework Travel Plan (FTP) that fully assesses the impact of the regeneration on the local transport and highway networks.

8.19 A future TA Report should seek to improve, where necessary, existing public transport, walking and cycling links and facilities, and through doing this present a comprehensive mitigation strategy to deal with the residual traffic impact of the development on the surrounding highway network.

8.20 Detailed discussions with LBRuT Highways and TfL will be critical in the run-up to a future development planning application to clarify the details and extent of the proposed highway improvements, committed developments and the scope of the TA Report including junction modelling. Clarification will also be required from a planning consultant on compliance from a town planning perspective.