Reference number 106125-01

TRANSPORT ASSESSMENT

LONDON BOROUGH OF RICHMOND UPON THAMES

SYSTRA

TWICKENHAM REDISCOVERED PROGRAMME – RIVERSIDE PROJECT

TRANSPORT ASSESSMENT

IDENTIFICATION TABLE	
Client/Project owner	London Borough of Richmond Upon Thames
Project	Twickenham Rediscovered Programme – Riverside Project
Study	Transport Assessment
Type of document	Final Report
Date	23/11/2017
File name	Transport Assessment
Reference number	106125-01
Number of pages	60

APPROVAL

Version	Name		Position	Date	Modifications
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	Checked by	David Watson	Principal Consultant	16/10/2017	
	Approved by				
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1. INTRODUCTION

1.1 General

1.1.1 SYSTRA Ltd ('SYSTRA') has been commissioned by the London Borough of Richmond upon Thames ('LBRuT', 'the Applicant') to provide transport and highways advice relating to the proposed redevelopment of 1A, 1B King Street and 2/4 Water Lane, the site of the remaining former swimming pool buildings at the corner of Water Lane and The Embankment and the river-facing parcel of land on the Embankment in front of Diamond Jubilee Gardens in Twickenham, London, TW1 3SD ('the Site').

1.1.2 The Site currently comprises 1,217sqm of retail floorspace (A1/A2), 226sqm of office floorspace and a private car park.

1.1.3 The Proposed Development entails the demolition and removal of all existing buildings and structures, to provide a mixed-use development comprising:

- Lower Ground Floor Level: a new vehicular access from the Embankment, parking for 23 cars and 68 cycles and three seasonal units (201sqm);
- Ground Floor Level: 505sqm A3, 250sqm B1, 244sqm A1 and 62sqm flexible commercial floor space, a new public square and areas of public realm;
- First, Second and Third Floors: 39 residential units (18 no. 1 bedroom, 19 no. 2 bedroom and 2 no. 3 bedroom, including 6 no. affordable homes); and
- Public realm improvements, reconfiguration of on-street parking, improved pedestrian access and landscaping and an amendment of service vehicle access.

1.1.4 This Transport Assessment ('TA') accompanies the planning application submitted to the London Borough of Richmond upon Thames, who act as the Local Planning Authority and Local Highway Authority. It should be read alongside the following documents which accompany the application:

- Framework Commercial Travel Plan;
- Residential Travel Plan;
- Delivery and Servicing Plan (DSP); and
- Inclusive Access Statement.

1.2 Scoping Discussions

1.2.1 The project team has undertaken extensive scoping discussion with LBRuT Officers, with regular design meetings throughout the pre-planning period. A formal pre-application meeting took place with the highways and transport officers on 30 August 2017, which was attended by SYSTRA.

1.2.2 On 18 October 2017, SYSTRA issued a draft version of the planning documents to LBRuT for review and comment.

1.3 Report Structure

1.3.1 Following this introductory section, this TA is structured as follows:

- **Section 2: Policy and Guidance –** Outlines national, regional and local policy relevant to the development;

- **Section 3: Baseline Conditions** – Describes the existing transport conditions in the area surrounding the Site;
- **Section 4: Existing Site Use –** Presents the existing Site uses, access and servicing arrangements;
- **Section 5: Traffic and Parking Surveys –** Presents the findings and outputs of baseline traffic and parking surveys undertaken in the area surrounding the Site;
- **Section 6: Development Proposals –** Presents the land use, access, parking and public realm proposals;
- **Section 7: Car Park Management Plan** – Outlines the proposed management strategy for the lower ground floor car park;
- **Section 8: Multi-Modal Trip Generation –** Estimates the net change of the Proposed Development on the number of trips to and from the Site, by mode;
- **Section 9: Delivery and Servicing Strategy** – Summarises the proposed strategy for servicing and delivery trips to the Site;
- **Section 10: Construction Strategy** – Outlines the construction management strategy for the Proposed Development; and
- **Section 12: Summary and Conclusion –** Summarises the findings of the TA and concludes regarding the suitability of the Proposed Development in transport terms.

1.3.2 All technical appendices are included at the end of this report, for reference.

2. POLICY AND GUIDANCE

2.1 General

2.1.1 This section includes a summary of the key national, regional and local transport policies relevant to the Site. The following policy documents have been reviewed:

- National Planning Policy Framework (2012);
- Planning Practice Guidance (2014);
- London Plan, consolidated with alterations (2016);
- Mayor's Draft Transport Strategy (2017);
- LBRuT Emerging Local Plan (exp 2018), Core Strategy (2009) and Development Management Plan (2011); and
- The Twickenham Area Action Plan (TAAP, 2013).

2.2 National Policy & Guidance

National Planning Policy Framework (March 2012)

2.2.1 The National Planning Policy Framework ('NPPF') sets out the Government's policy framework for the planning system. It is a material consideration in planning decisions.

2.2.2 At the heart of the NPPF is a presumption in favour of sustainable development which "should be seen as a golden thread running through both plan making and decision taking" (Paragraph 14). In Paragraph 15, it goes on to say that "Policies in Local Plans should follow the approach of the presumption in favour of sustainable development so that it is clear that development which is sustainable can be approved without delay".

2.2.3 NPPF seeks to ensure that the transport system is balanced in favour of sustainable transport modes (walking, cycling, low and ultra-low emission vehicles, car sharing and public transport), giving people a real choice about how they travel.

Planning Practice Guidance (PPG) (2014)

2.2.4 The Planning Practice Guidance (PPG) section on 'Travel Plans, Transport Assessments and Statements in Decision-Taking' provides concise guidance on the use, importance of, and content to be provided within Transport Assessments, Transport Statements and Travel Plans. These can positively contribute to encouraging sustainable travel, lessening traffic generation and its detrimental impacts and reducing carbon emissions and climate impact. In doing so they can create accessible, connected, inclusive communities with improved road safety, health and quality of life.

2.2.5 The Guidance states that Transport Assessments, Transport Statements and Travel Plans should be proportionate to the size and scope of the Proposed Development, be tailored to local circumstances and be established at the earliest practicable possible stage of a development proposal.

2.3 Regional Policy

London Plan (Consolidated with Alterations, 2016)

2.3.1 Chapter 6 of the London Plan sets out the cycle and car parking standards to be adopted within London.

2.3.2 For cycle parking, the minimum standards are:

- A1 Non-Food Retail:
  - Long-stay: from a threshold of 100sqm: first 1,000sqm: 1 space per 250sqm, thereafter: 1 space per 1,000sqm; and
  - Short-stay: from a threshold of 100sqm: first 1,000sqm: 1 space per 125 sqm, thereafter: 1 space per 1,000sqm.
- A2-A5 Retail:
  - Long-stay: from a threshold of 100sqm, 1 space per 175sqm GEA; and
  - Short-stay: from a threshold of 100sqm, 1 space per 40sqm GEA.
- B1 Office:
  - Long-stay: Outer London, 1 space per 150sqm GEA; and
  - Short-stay: first 5,000sqm: 1 space per 500sqm GEA, thereafter 1 space per 5,000sqm;
- C3 Residential:
  - Long-stay: 1 space per studio and 1-bedroom unit, 2 spaces per all other dwelling; and
  - Short-stay: 1 space per 40 units.

2.3.3 For car parking, the maximum standards are:

- Blue Badge Spaces:
  - Non-residential elements of a development should provide at one accessible car parking bay for Blue Badge holders, even if no general parking is provided. If off-street parking is provided, at least two Blue Badge bays should be provided.
  - Residential: one bay to be provided for each adapted or adaptable unit
- Standard Spaces:
  - Retail, PTAL 5-6
    - Food: up to 500sqm: 1 space per 75sqm;
    - Food: up to 2,500sqm: 1 space per 30sqm
    - Non-food: 1 space per 40sqm
  - B1 Office: in Outer London, up to 1 space per 100sqm of Gross Internal Area (GIA).
  - Residential
    - 3 bed: up to 1.5 per unit
    - 1-2 bed: less than 1 per unit
    - All developments in areas of good public transport accessibility should aim for significantly less than 1 space per unit.

Mayor of London's Draft Transport Strategy (2017)

2.3.4 The Mayor's Transport Strategy is the statutory document that sets out the policies and proposals of the Mayor of London to reshape transport in London over the next 25 years. It builds on the vision for a better London that the Mayor outlined in 'A City for All Londoners', and takes forward the approach set out in 'Healthy Streets for London'.

2.3.5 The vision of the strategy is to reduce the need for cars and encouraging walking and cycling. By 2041 the strategy aims for 80% walking, cycling and public transport trips and 20% car trips. This is a significant change from today, when only 64% of journeys are made by healthy, efficient and sustainable forms of transport.

2.3.6 The strategy's visions are to:

- Create Healthy Streets and therefore healthy people;
  - All Londoners to do 20 minutes of activity a day;
  - No one is killed by a bus by 2030;
  - All taxis/private cars are zero emission by 2033; and

- Reduce freight traffic in the morning peak by 10% and total by 10-15% a day.

- Create a good public transport experience;
  - Deliver Crossrail 2 by 2033;
  - Create a London suburban metro by the late 2020s;
  - Improve accessibility and reduce journey times;
- Create new homes and new jobs;
  - Incorporate the transport principles of 'good growth' in regeneration and new development.

2.3.7 Each London borough will contribute towards the new strategy. During 2018, they will draft their Local Implementation Plans, demonstrating how they will achieve the aims of the strategy locally.

2.4 Local Policy

Emerging Local Plan

2.4.1 LBRuT is currently preparing the new Local Plan for the Borough, which will replace the existing policies within the Core Strategy and Development Management Plan, and will outline the development of the Borough over the next 15 years.

2.4.2 The main policy relating to transport and development is LP44, which states that high trip generating development should be located in areas with good public transport, and should be designed to maximise permeability through the provision of safe and convenient walking and cycling routes.

Core Strategy

2.4.3 LBRuT's Core Strategy was adopted in 2009 and sets out three inter-related themes of sustainable future, protecting local character and meeting people's needs.

2.4.4 Paragraph 4.1.27 states that there is considerable pressure on parking, with many older properties not having off-street parking, and limited capacity for further on-street parking in most areas.

2.4.5 Spatial policy CP9 aims to revitalise Twickenham Town Centre, creating a high-quality district centre serving local residents, workers and visitors, founded on the principles of sustainability. Key transport considerations include improving pedestrian and cycle links to and from the centre, and improving traffic management to manage flows and reduce dominance of vehicles on the town centre environment.

Development Management Plan

2.4.6 LBRuT's development management plan, adopted in 2011, builds on the Core Strategy and sets out more detailed policies for managing development. Section 5.4 sets out the Transport and Parking policies designed to promote sustainable modes of travel, with the aim of improving accessibility and reducing congestion and pollution.

2.4.7 Policy DM TP 1 indicates that higher trip generating development will only be permitted in areas which are easily accessible by transport other than the private car, whilst Policy DM DP 2 states that all planning applications for major developments should be accompanied by a Transport Assessment.

2.4.8 Policy DM TP 3 states that all developments will be expected to create or improve links with the local and wider transport network, in particular for pedestrians and cyclists.

2.4.9 Policy CM TP 6 states that new development and schemes protect, maintain and, where appropriate, improve the existing pedestrian infrastructure. New developments should improve the safety and security of the pedestrian environment.

2.4.10 Policy DM TP 7 indicates that new development or schemes should not adversely impact the cycling network or cyclists, with appropriate access and parking provided.

2.4.11 Policy DM TP 8 states that new developments will have to demonstrate that the new scheme provides an appropriate level of off-street parking to avoid an unacceptable impact on on-street parking conditions. Developers may only provide fewer parking spaces, including car-free schemes, if they can show that there would be no adverse impact on the surrounding highway or unacceptable overspill of on-street parking in the vicinity. In higher PTAL areas, such as Twickenham, parking provision at a lower level than the standard may be appropriate.

2.4.12 Developments are expected to meet the parking standards set out in Appendix 4. In controlled parking zones, the maximum car parking permitted is:

- A1 Retail in Twickenham Town Centre: up to 1 space per 500sqm;
- A3: 1 space per 16sqm of net dining floor area;
- A5: off-street provision for delivery vehicles / motorcycles / scooters;
- B1: 1 space per 300sqm;
- C3: 1 space per 1-2 bedroom unit, 1.5 spaces 3 bedroom unit

2.4.13 The minimum cycle parking requirement is:

- A1 Retail in Twickenham Town Centre: 1 per 100sqm;
- A3: 1 per 20 staff + 1 per 20 customers;
- A5: 1 per 50sqm;
- B1: 1 per 200sqm;
- C3: 1 space per 1-3 bedroom unit.

Twickenham Area Action Plan (TAAP)

2.4.14 The TAAP, adopted in July 2013, sets out the framework for development and change in Twickenham Town Centre. Key transport considerations relevant to the Twickenham Riverside site include:

- To improve the pedestrian environment and reduce dominance of parked and moving traffic;
- To upgrade the Embankment south of Diamond Jubilee Gardens to provide a pedestrian priority area;
- Rearrangement or possible reduction of parking along the Embankment, provided that the function of the working waterfront would be maintained;
- Increased areas of shared space / pedestrian priority on Water Lane, Wharf Lane and the Embankment;
- To retain the existing rear service areas unless equivalent alternative arrangements can be provided; and
- To ensure any changes to road layouts take account of servicing needs and where possible and necessary enhance provision.

2.5 Summary

2.5.1 A review of planning policies at a national, regional and local level has revealed a consistency in policy objectives of encouraging development in areas of good public transport accessibility and of encouraging sustainable transport.

2.5.2 There is the recognition that the area surrounding the Site is dominated by vehicles and the policy encourages the enhancement of the pedestrian and cycling environment. The development should aim to reduce car parking dominance where possible, and must ensure that the proposals do not add pressure to the on-street parking provision.

2.5.3 The car parking proposals for the Site should be in line with regional and local policy, whilst the cycle parking proposals should comply with the more onerous London Plan requirements.

3. BASELINE CONDITIONS

3.1 General

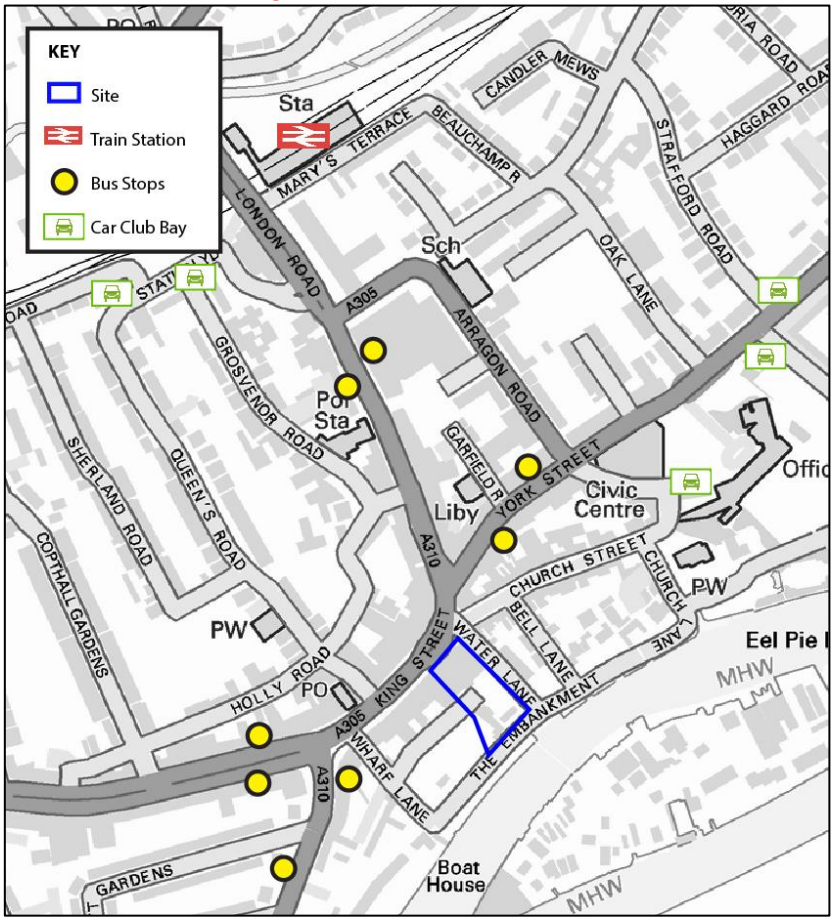
3.1.1 This section describes the existing transport conditions in the area surrounding the Site.

3.2 Site Location

3.2.1 The Site is in Twickenham Town Centre, and is bounded by King Street to the North, Water Lane to the east, the Embankment to the south and Diamond Jubilee Gardens to the west.

3.2.2 The Site and surrounding public transport infrastructure are shown in **Figure 1**.

Figure 1. Site Location Plan



3.3 Public Transport

PTAL

3.3.1 Public Transport Accessibility Levels (PTALs) measure accessibility of a point to the public transport network. The ratings range from 1a (very poor) to 6b (excellent) and are calculated using TfL's WebCAT tool.

3.3.2 The PTAL calculation takes into account bus stops that are within a walk distance of 640m (eight minutes' walk at 4.8kph) and railway and Underground stations within 960m (12 minutes' walk).

3.3.3 The PTAL for the Site is calculated to be between 5 and 6a, indicating a Very Good to Excellent level of public transport accessibility. The full PTAL report is included in **Appendix A**, for reference.

Mainline Rail Services

3.3.4 The closest mainline railway station is Twickenham, 500m north of the Site. Key services and peak hour frequencies from this station are:

- London Waterloo (seven trains per hour);
- Reading (three trains per hour);
- Stratford (three trains per hour);
- Windsor and Eton Riverside (two trains per hour); and
- Wimbledon (two trains per hour).

Bus Services

3.3.5 The closest bus services are accessed from the York Street Twickenham bus stop, approximately 100m east of the Site. They include:

- 110 between Arragon Road and West Middlesex Hospital;
- 290 between Staines and Twickenham;
- 281 between Hounslow Bus Station and Tolworth Tower;
- 33 between Fulwell Station and Hammersmith Bus Station;
- 490 between Heathrow Terminal 5 and Pools on the Park (Richmond);
- R68 between Hampton Court Station and Kew Retail Park;
- R70 between Manor Road / Sainsbury's (Richmond) and Nurseylands Shopping Centre;
- H22 between Manor Circus and Bell Road / Bell Corner (Hounslow); and
- 267 between Fulwell Station and Hammersmith Bus Station.

Car Clubs

3.3.6 The closest car club space is the "Twickenham – York Street" space operated by Zipcar near the Arragon Road / Church Street junction, approximately 230m east of the Site.

3.3.7 There are two additional car club bays at the Richmond Road / Sion Road junction, 360m east of the Site, and two near Twickenham Station.

3.4 Walking and Cycling Infrastructure

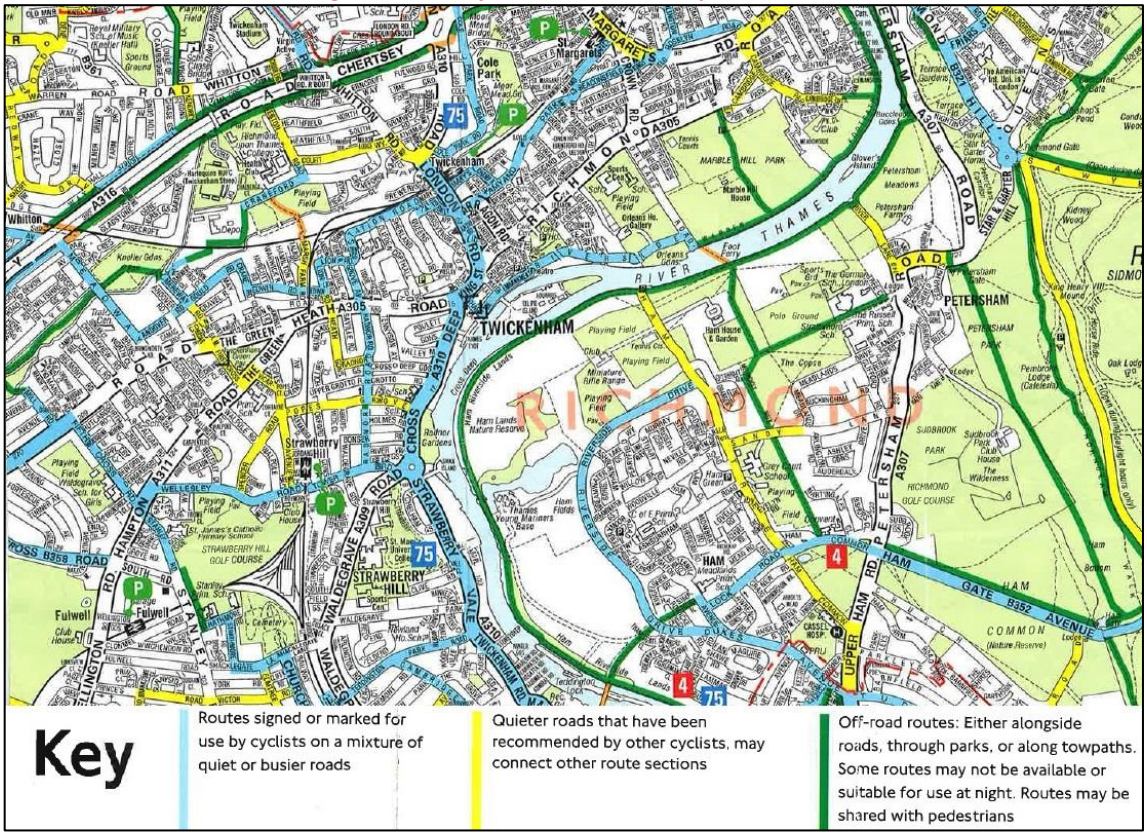
Pedestrian Links

3.4.1 The footways and raised tables are discussed in the Highways section of this Baseline. Additionally, there is a pedestrian-only link onto Eel Pie Island from the Embankment, which fronts the Site. The riverfront promenade is part of the Thames Path, a national trail that follows the River Thames from Kemble in Gloucestershire to Charlton in south east London.

Cycle Routes

3.4.2 Transport for London (TfL) produces Local Cycling Guides which map the cycle infrastructure across London. An extract from Local Cycling Guide 6 (see **Figure 2**) shows that Church Street is labelled as a route signed or marked for use by cyclists. Other cycling routes in the area include the A310 and the path on the southern bank of the Thames.

Figure 2. Cycle Infrastructure Map



Transport for London, Local Cycling Guide 9

3.4.3 There is a southbound contraflow cycle lane on Wharf Lane, which connects to the shared footway further west, along Cross Deep.

3.4.4 There are eight Sheffield-style cycle stands on the southern footway of King Street, within 50m of the Site. There are an additional seven stands on the Embankment, just to the east of the Site.

Wayfinding

3.4.5 There is a Legible London totem pole on the Embankment, just to the east of the Site.

3.5 Local Highway Network

3.5.1 This section provides an overview of the local highway network surrounding the Site.

King Street

3.5.2 King Street, to the north of the Site, is part of the A310 which runs along the Thames from Teddington in the south to Isleworth in the north.

3.5.3 In proximity to the Site, it is a dual carriageway road with one lane of traffic in each direction, as well as advisory cycle lanes (see **Figure 3**). On the approach to the junction with Water Lane, there is a right turning pocket for eastbound vehicles, and the road bisects ahead of the junction with the A305.

Figure 3. Photograph of King Street, looking west (05/07/2016)

3.5.4 There are wide footways on both sides of the street (6m on the southern side and 3m on the northern side) which are in excellent condition, and there are double yellow lines with single blips on the footway indicating that waiting of vehicles is prohibited at any time and that loading or unloading is prohibited during the day. In the section of road closest to Wharf Lane, loading and unloading are prohibited at any time, to protect the left turn lane.

3.5.5 The two pedestrian crossings closest to the Site are approximately 60m away: one is at the junction with the A305 York Street (to the east) whilst the other is adjacent to the junction with Queen's Road (to the west).

Water Lane

3.5.6 Water Lane runs north-south along the eastern boundary of the Site, connecting King Street to the Embankment. It is a one-way road (southbound only) which slopes gently towards the River Thames (see **Figure 4)**.

Figure 4. Photograph of Water Lane, looking south (05/07/2016)

3.5.7 The road width varies between 5.8m to the north and 7.3m to the south, and there are footways along both sides of the road. The northern part only has parking bays on the western side of the road, whilst the southern section has parking on both sides. At the southern end of the road, there is an access to a private car park which leads to a Service Road connecting Water Lane and Wharf Lane.

3.5.8 Towards the northern end, at the junction with King Street and Church Street, the road narrows down and there is a large raised table.

Service Road – Water Lane to Wharf Lane

3.5.9 There is a two-way Service Road which runs east-west through the Site, connecting Water Lane and Wharf Road. Within the London Borough of Richmond's Highways Land Search Register (available online), the Service Road is listed as an unnamed publicly maintained accommodation road "Accommodation Road TW Wharf Lane at rear of 3-33 King Street".

3.5.10 The road is between 3.5-4m wide and runs along the back of the residential / commercial units on King Street (see **Figure 5**). There are no consistent footway on either side of the road and, whilst there are some short kerbed sections, these are not used by pedestrians who prefer walking in the carriageway. At the eastern end, adjacent to the car park, the road widens to provide a turning head / parking / passing area.

Figure 5. Photograph of Service Road, looking west (05/07/2016)

The Embankment

3.5.11 The Embankment runs along the River Thames waterfront between Wharf Lane and Church Lane (see **Figure 6**). It varies in width and has parking on both sides of the road, whilst there is a segregated promenade along the waterfront for pedestrians and cyclists.

Figure 6. Photograph of the Embankment, looking east (05/07/2016)

Wharf Lane

3.5.12 Wharf Lane runs parallel to Water Lane, to the west of the Site. It is a one-way 6m wide road (northbound only), with an advisory contraflow cycle lane along its entire length (see **Figure 7**).

3.5.13 The majority of the street is lined with car parking on the western side of the road. The road narrows at the northern end, where there is a raised entry treatment onto King Street. There are footways along both sides of the street for its entire length.

Figure 7. Photograph of Wharf Lane, looking south (05/07/2016)

3.6 Parking

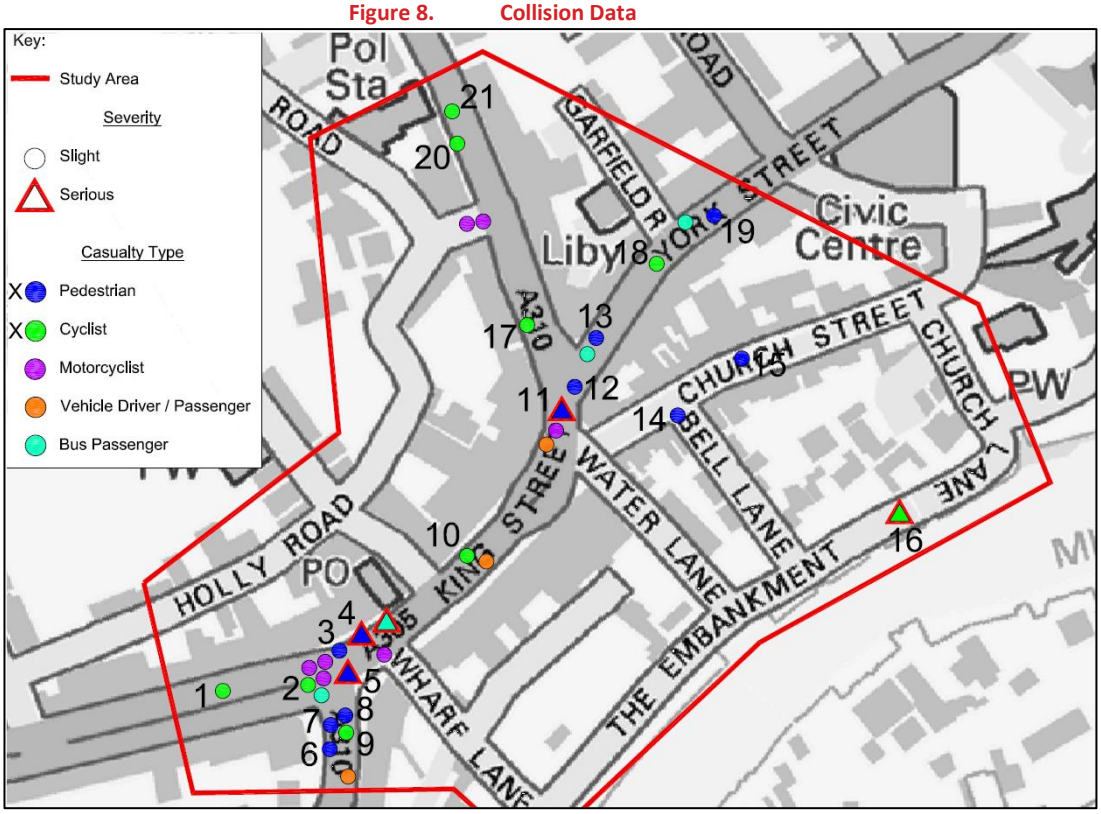
3.6.1 The Site and the surrounding area are part of Controlled Parking Zone (CPZ) D "Central Twickenham", which operates Monday-Friday 8:30-18:30. The CPZ map is included in **Appendix B**.

3.6.2 As stated above, the closest car parking spaces are on Water Lane, in the Water Lane car park, on the Embankment and on Wharf Lane. There is additional car parking further away, in locations such as Holly Road.

3.7 Road Safety

3.7.1 Up-to-date collision data has been obtained from TfL Road Safety Unit for the most recently available five-year period from 2011 to 2016 (full details in **Appendix C**). The study area and recorded collisions are shown in **Figure 8**, including information on casualty type and severity.

Figure 8. Collision Data

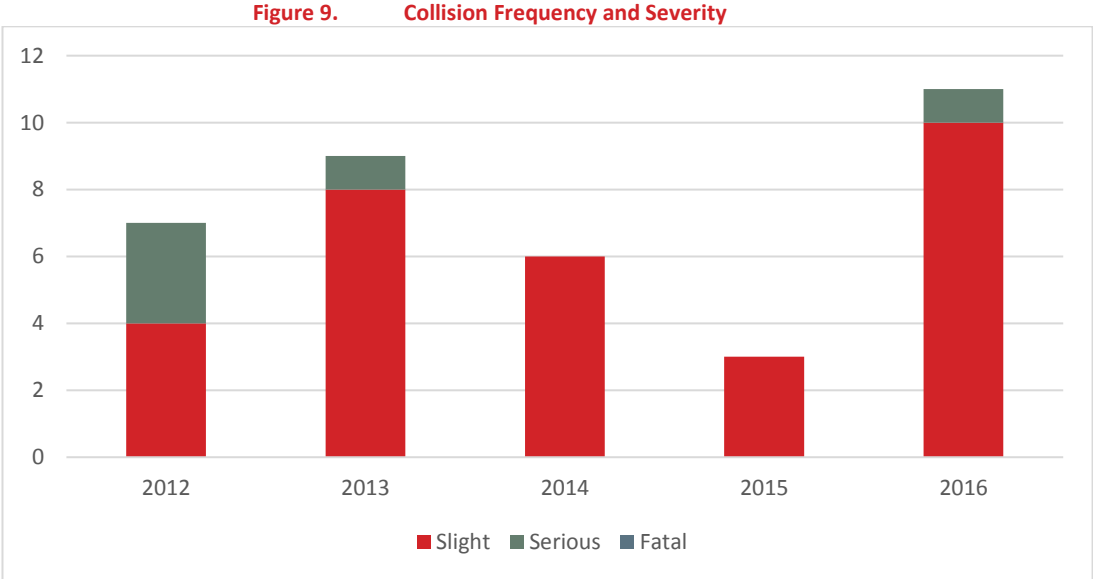


3.7.2 A total of 36 collisions were recorded in the study area over the past five years (one every 50 days on average).

3.7.3 The only clear collision cluster is at the King Street / Heath Road / Cross Deep junction, where 15 collisions were recorded (three per year, on average). No collisions took place on Water Lane, Wharf Lane and on the section of the Embankment fronting the Site.

3.7.4 The vast majority of the collisions (86%) resulted in a slight injury, with a total of five serious injuries and no fatal collisions. A breakdown of collisions by year and severity is presented in **Figure 9.**

Figure 9. Collision Frequency and Severity



3.7.5 Over the five year period, there is an average of 6 slight and 1 serious collision per year. There is no obvious pattern over time, but it is noted that 2016 saw the highest number of recorded collisions.

3.7.6 Over half of all collisions and 80% of the serious ones involved vulnerable road users (pedestrians and cyclists). A description of these collisions is provided in **Table 1**, where the reference numbers match those in **Figure 8**.

Table 1. Pedestrian & Cyclist Collision Details

NO.	DESCRIPTION	SEVERITY	CASUALTY
1	Cyclist passed a parked car and got hit by opening door	Slight	Cyclist
2	Car changed lane into the path of cyclist causing collision	Slight	Cyclist
3	Pedestrian crossing road not on a crossing was hit by a cyclist	Slight	Pedestrian
4	Pedestrian crossed to the central reserve of the dual carriageway during stationary traffic, pedestrian was clipped by a car when traffic began to move again	Serious	Pedestrian
5	Pedestrian playing football on pavement ran into the road and was hit by a passing car	Serious	Pedestrian
6	Cyclist turned right onto main road and could not avoid pedestrian walking straight into his path. Pedestrian failed to look properly.	Slight	Pedestrian
7	Bus turned left and could not avoid pedestrian running across the road not on a crossing	Slight	Pedestrian
8	Pedestrian crossed a signalised crossing during the red man stage into the path of a motorcyclist	Slight	Pedestrian
9	Cyclist was cut up by a car, causing cyclist to fall against a parked car	Slight	Cyclist
10	Car swerved and hit cyclist in cycle lane	Slight	Cyclist
11	Car turned left and collided with a pedestrian crossing the road (not on an official crossing point)	Serious	Pedestrian
12	Pedestrian was crossing at a junction (not on an official crossing point) and was hit by a car who failed to look properly	Slight	Pedestrian
13	Bus was stationary due to traffic being held at a red light, a car went to overtake the bus and hit a pedestrian who was crossing in front of the bus (not on an official crossing point)	Slight	Pedestrian

NO.	DESCRIPTION	SEVERITY	CASUALTY
14	Car turned right mounting the kerb and hit a pedestrian on the footpath	Slight	Pedestrian
15	Car mounted the pavement and collided with a pedestrian on the footway	Slight	Pedestrian
16	Van crossed path of oncoming cyclist in order to park causing the cyclist to swerve and lose control	Serious	Cyclist
17	Cyclist impaired by alcohol lost control and fell of bike, hitting head on the road	Slight	Cyclist
18	Car changed lane to the left in order to park, but moved into the path of a cyclist who collided with the car	Slight	Cyclist
19	Bus pulling into bus stop clipped a pedestrian who was stood on the pavement	Slight	Pedestrian
20	Parked car opened door into the path of an oncoming cyclist	Slight	Cyclist
21	Parked car opened door into the path of an oncoming cyclist in a cycle lane	Slight	Cyclist

3.7.7 No obvious pattern emerges from the collision record. The relatively high number of cyclist collisions indicates the vulnerability of cyclists travelling through the area. There are several instances of pedestrians crossing informally or through stationary traffic at the King Street / Heath Road / Cross Deep junction.

3.8 Summary

3.8.1 The Site is located in an area of excellent public transport accessibility, with a good walking and cycling network. King Street to the north of the Site is a strategic road with bus services, whilst the remainder of the roads surrounding the Site are mostly access roads with low vehicle flows, presenting good opportunities for walking and cycling.

3.8.2 There is ample on-street car parking provision, controlled by the Central Twickenham CPZ, and the Site includes a private car park. The collision record indicates that no collisions took place in the past five years on Water Lane, Wharf Lane and on the section of the Embankment fronting the Site.

4. EXISTING SITE USE

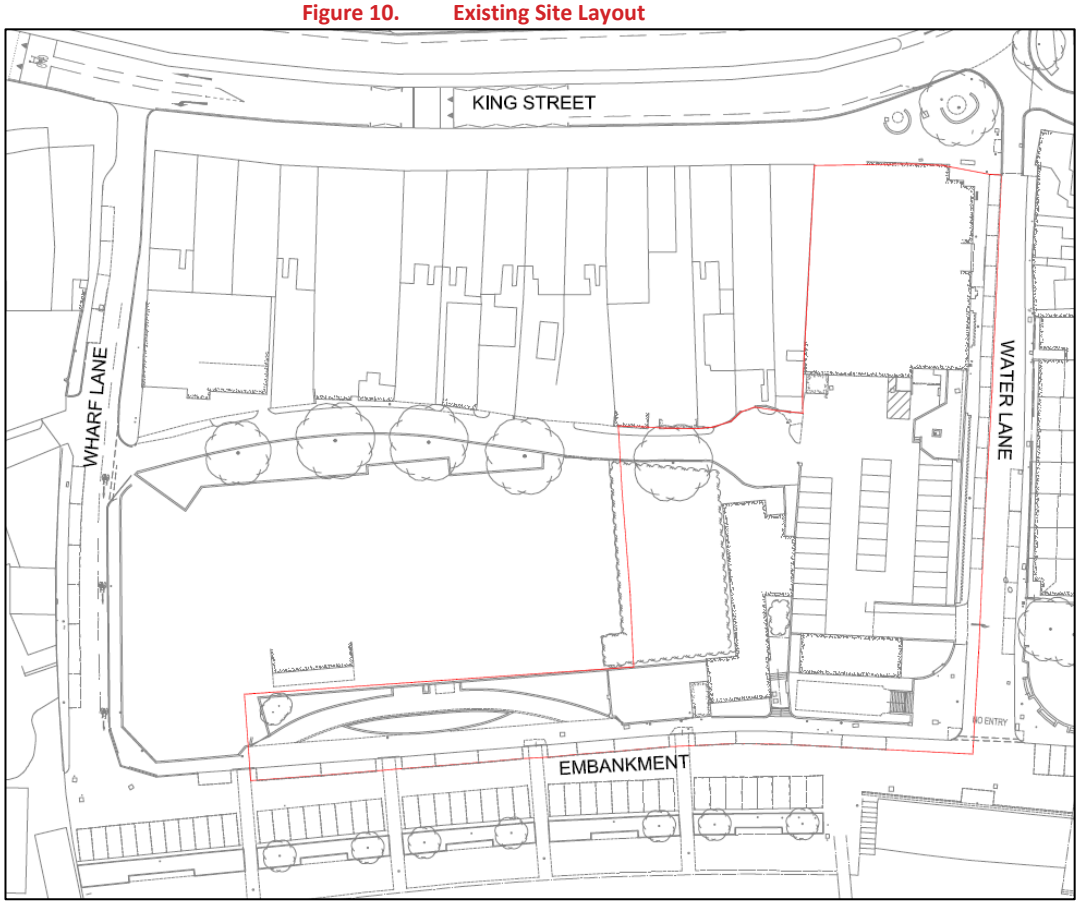
4.1 Land Use and Floor Area

4.1.1 The Site currently comprises various buildings and a private car park with 26 spaces. The existing land uses and floor areas are presented in **Table 2**, whilst the layout is shown in **Figure 10**.

Table 2. Existing Uses

LAND USE	QUANTUM
A1 Retail	741sqm
A2 Retail	479sqm
B1 Office	226sqm
Car Parking	26 spaces

Figure 10. Existing Site Layout



4.2 Land Ownership

4.2.1 The entire proposal Site is owned by LBRuT, including the existing car park. Water Lane, Wharf Lane and the Embankment are part of the public highway. As stated in Section 3 of this report, the Service Road off Wharf Lane is an unnamed publicly maintained accommodation road.

4.2.2 The units on the King Street Block which are not part of the Site are all owned by a single land owner ('the owner of the King Street commercial units'), who has been consulted in the preparation of these proposals, in particular with regards to servicing.

4.3 Access

4.3.1 As stated in the Baseline section of this report, there is a significant level difference across the Site, with the land sloping towards the River Thames. This level change creates severance and limits the opportunities for permeability. The current access points to the Site are:

- King Street: entrances to shops;
- Water Lane: one entrance to the Santander and one vehicular entrance to the private car park, connecting through to the Service Road. A painted line demarcates the pedestrian access along the ramp to the car park;
- The Embankment: stepped accesses to the Site and to Diamond Jubilee Gardens; and
- Wharf Lane: step-free access to Diamond Jubilee Gardens, vehicular access to the Service Road and servicing access for the Iceland Supermarket.

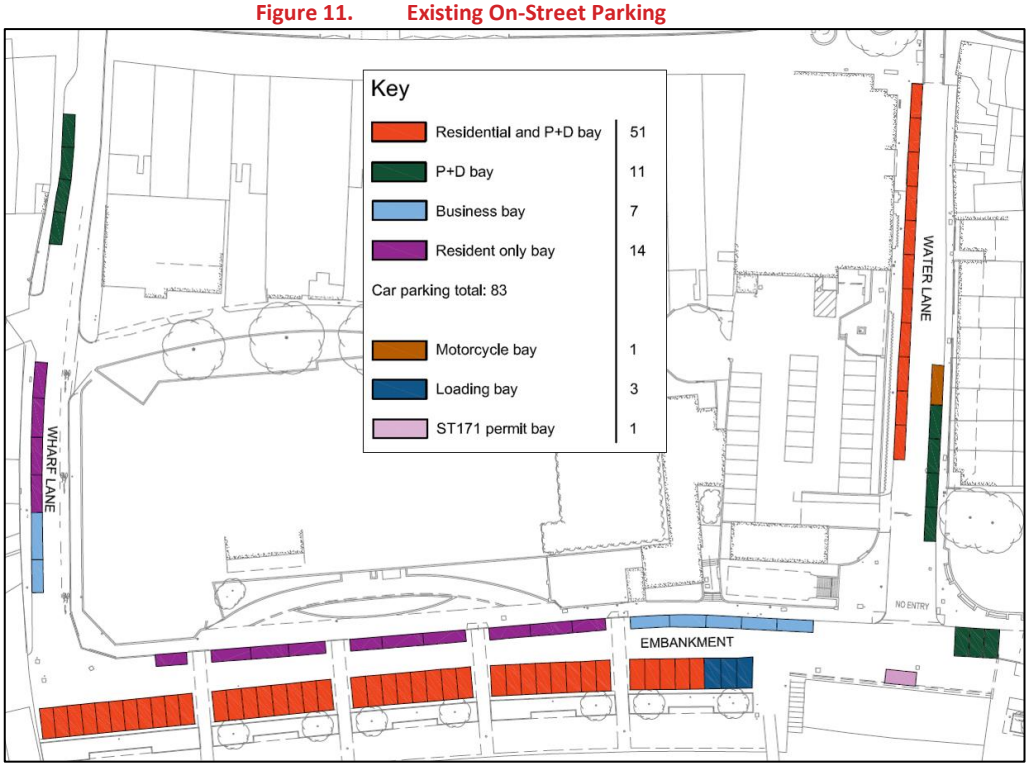
4.3.2 The permeability of the Site is currently poor, with no step-free access from the Embankment and few access points to Diamond Jubilee Gardens. The Service Road provides east-west connectivity, but it is an unsafe environment for pedestrians and cyclists.

4.4 Parking

4.4.1 There are 26 car parking spaces within the Site, which are currently allocated to businesses on King Street, with the licenses renewed on a monthly basis.

4.4.2 The on-street car parking spaces on the streets surrounding the Site include a mixture of pay & display, residents-only, mixed use and shared use bays, as indicated in **Figure 11** below. The ST171 permit bay is for an ice cream van.

Figure 11. Existing On-Street Parking



4.4.3 To assess the existing levels of parking stress, surveys was undertaken in line with the Richmond Parking Survey Methodology (see **Appendix D**), with the scope of the surveys agreed with LBRuT Transport Officers.

4.5 Servicing

4.5.1 Servicing of the Site currently takes place ether on-street on Water Lane or in the private car park within the Site. There are some opportunities for off-peak servicing on the double yellow lines on King Street.

4.5.2 The existing servicing arrangement for the Site and for the surrounding land users (the King Street commercial units and Eel Pie Island) have been assessed with dedicated servicing surveys, as detailed in the following section of this TA.

4.6 Summary

4.6.1 The proposal Site is entirely owned by LBRuT and comprises a mixture of land uses (A1, A2, B1 and residential), as well as a private car park. The level change across the Site creates severance, and there are opportunities for improved permeability, particularly from the Embankment and to Diamond Jubilee Gardens.

4.6.2 There is ample parking on the streets adjacent to the Site, with a wide range of parking bays. Servicing takes place mostly on-street or on the private car park. There are opportunities to formalise current arrangements to improve pedestrian and cyclist safety.

5. TRAFFIC AND PARKING SURVEYS

5.1.1 The following transport surveys have been undertaken in the area surrounding the Site:

- Parking Surveys:
  - Wednesday 4 November 2015: 5-6am, 8-10am, 3-5pm;
  - Saturday 7 November 2015: 12-1pm;
  - Thursday 30 June 2016: 2-5am;
  - Tuesday 8 November 2016: 1-5am, 8-10am, 3-5pm;
  - Wednesday 9 November 2016: 1-5am;
  - Saturday 12 November 2016: 12-1pm; and
  - Sunday 13 November 2016: 1-5am.
- Automatic Traffic Counts:
  - 02-08 July 2016
- Servicing Surveys:
  - 01-07 July 2016; and
  - 7 November 2016 and 11 November 2016.

5.1.2 The findings of these surveys are outlined in detail in **Appendices E and F**. Please note that the *Twickenham Riverside Transport Survey Note* (August 2016) was prepared under the JMP name, before it was formally merged into SYSTRA.

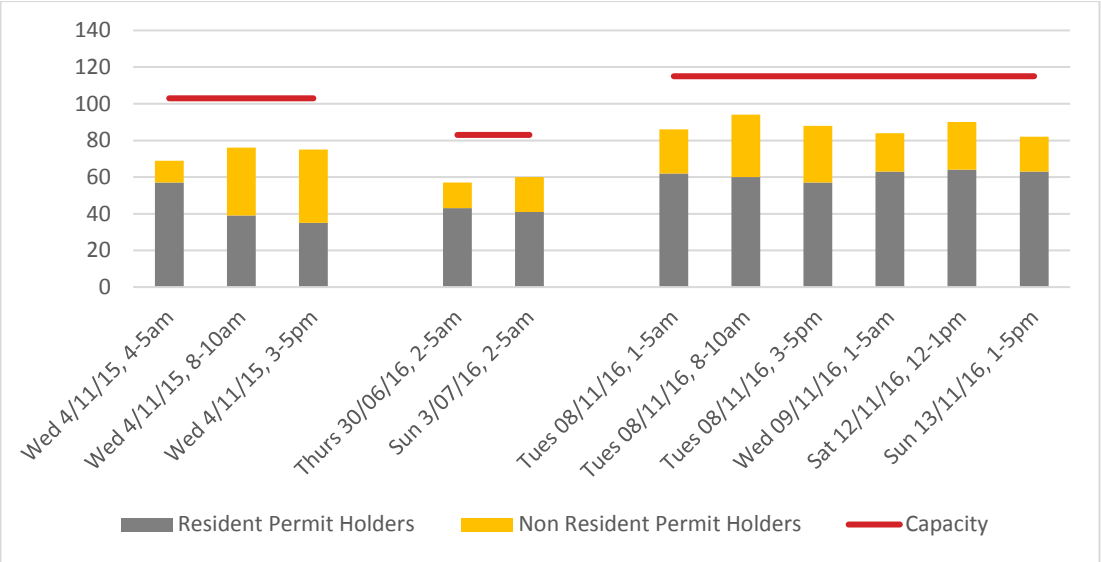
5.1.3 The following sections of this report include the headline findings that emerged from the transport surveys.

5.2 Parking Surveys

5.2.1 The first two sets of parking surveys focused solely on the streets adjacent to the Site, whilst the latter included areas further afield, as well as off-street car parks. The surveys were undertaken in line with the Richmond Parking Survey Methodology (**Appendix D**) and their scope was agreed with LBRuT Transport Officers.

5.2.2 The data for Water Lane, Wharf Lane and The Embankment is summarised in **Figure 12**. In all three surveys, disabled, loading, motorcycle and the ice cream van bays were discounted. It is noted that the capacity for each round of surveys is slightly different, as the extent of the area along the Embankment (to the east) varied each time.

Figure 12. Parking Survey Results



From the data in **Figure 12**, the following points emerge:

- Wharf Lane, Water Lane and the Embankment have an average occupancy of 74% across all beats;
- Average daytime stress (77%) is only slightly greater than overnight stress (71%),
- The peak demand of 82% is recorded on 08/11/16, between 8-10am, when 94 cars are parked in the 115 bays. It is concluded from this that up to 11 car parking bays could be removed (104 remaining) whilst ensuring peak occupancy does not exceed the 90% threshold stated in the Richmond Parking Survey Methodology; and
- Resident permit holders account for 75% of the overnight and 40% of the daytime demand, indicating that many residents do not use their cars daily. There is one instance in which non-residential demand exceeds the residential one.

5.2.3 Other findings from the parking surveys are included in **Appendices E and F**, but the headlines include:

- In the wider survey area, there is ample spare capacity (stress 42-66%), particularly in the off-street car parks (Holly Road, Church Lane, The Embankment);
- Parking stress in resident-only parking bays on these streets was consistently above 90%, whilst shared use (average 73%) and pay & display (average 62%) bays reveal ample spare capacity. Business parking bay use varies between 29-100%.

5.2.4 The above information has informed the car parking proposals for the Site, presented in the following sections of this report. The main proposals, in line with policy, include:

- Reduction of on-street parking: removal of up to 11 car parking bays;
- Re-allocation of car parking spaces to reduce resident car parking stress;
- Removal of pay & display bays; and
- Retention of business parking bays.

5.3 ATC Surveys

5.3.1 Automatic Traffic Count surveys were undertaken on Water Lane, Wharf Lane and King Street. The detailed findings are presented in **Appendix E**, but the main headlines are:

- King Street: average flow is 16,900 eastbound and 14,700 westbound vehicles, with approximately 1,000-1,200 in the peak hour. The 85th percentile speed (24mph) was well below the speed limit. Approximately 80% of the flow is made up by cars, with 9% LGVs, 7% pedal or motorcyclists and 4% HGVs;
- Water Lane: average daily flow is 1,000 vehicles, with 80 vehicles in the peak hour. Cars accounted for 85% of vehicles, LGVs 7%, motor/pedal cyclists 8% and only six HGVs on average. The 85th percentile speed was 12.4mph, below the 20mph speed limit. Some vehicles were seen to travel northbound along Water Lane;
- Wharf Lane: average daily flow is 900 vehicles, with 80 in the peak hour. Cars accounted for 74% of vehicles, LGVs 4% and pedal cycles 21%, showing the popularity of the contraflow cycle lanes. Only nine HGVs were recorded on average. The 85th percentile speed was 15.8mph, below the 20mph speed limit.

5.4 Servicing Surveys

5.4.1 All the findings of the servicing surveys can be found in **Appendix E**, and a detailed summary is available in the Delivery and Servicing Plan which accompanies this planning application. The main findings include:

- The three servicing bays on the Embankment are well-used, particularly for the servicing of Eel Pie Island;
- There is occasional informal servicing on Water Lane and on the Embankment;
- The private car park is often used for servicing;
- The servicing arrangement on the Service Road are currently unsafe, with large vehicles reversing long distances, vehicles stopping on the street to service and overrunning kerbs (see **Figure 13**); and
- On Wharf Lane, vehicles regularly stop on the kerb to service, blocking the contraflow cycle lane and obstructing pedestrian flows (see **Figure 13**).

Figure 13. Servicing on Wharf Lane

5.4.2 The survey has highlighted the need to formalise servicing arrangements to ensure the safety of all users. In particular, the number of vehicles using the Service Road should be minimised, and dedicated facilities should be provided for loading both on Water and Wharf Lane.

5.5 Summary

5.5.1 Traffic, parking and servicing surveys have been undertaken to assess issues and opportunities for the streets surrounding the Site. The surveys have highlighted the potential to achieve the policy vision of reducing car parking dominance by removing a limited number of car parking spaces and reconfiguring the provision to cater for residents and businesses.

5.5.2 The ATC surveys have indicated that Wharf Lane and Water Lane experience low traffic volumes and vehicle speeds, whilst the servicing surveys have emphasised the need to formalise the arrangements to ensure pedestrian and cyclist safety.

5.5.3 These findings have informed the development proposals presented in the following section of this report.

6. DEVELOPMENT PROPOSALS

6.1 General

6.1.1 This section presents the land use, access, parking and servicing proposals of the development, devised in line with policy requirement and based on the findings of transport surveys undertaken on Site.

6.2 Land Uses

6.2.1 The proposals entail the demolition of the existing buildings and the construction of two new buildings, linked with a bridge. The quantum of development presented in **Table 3**.

Table 3. Proposed Development

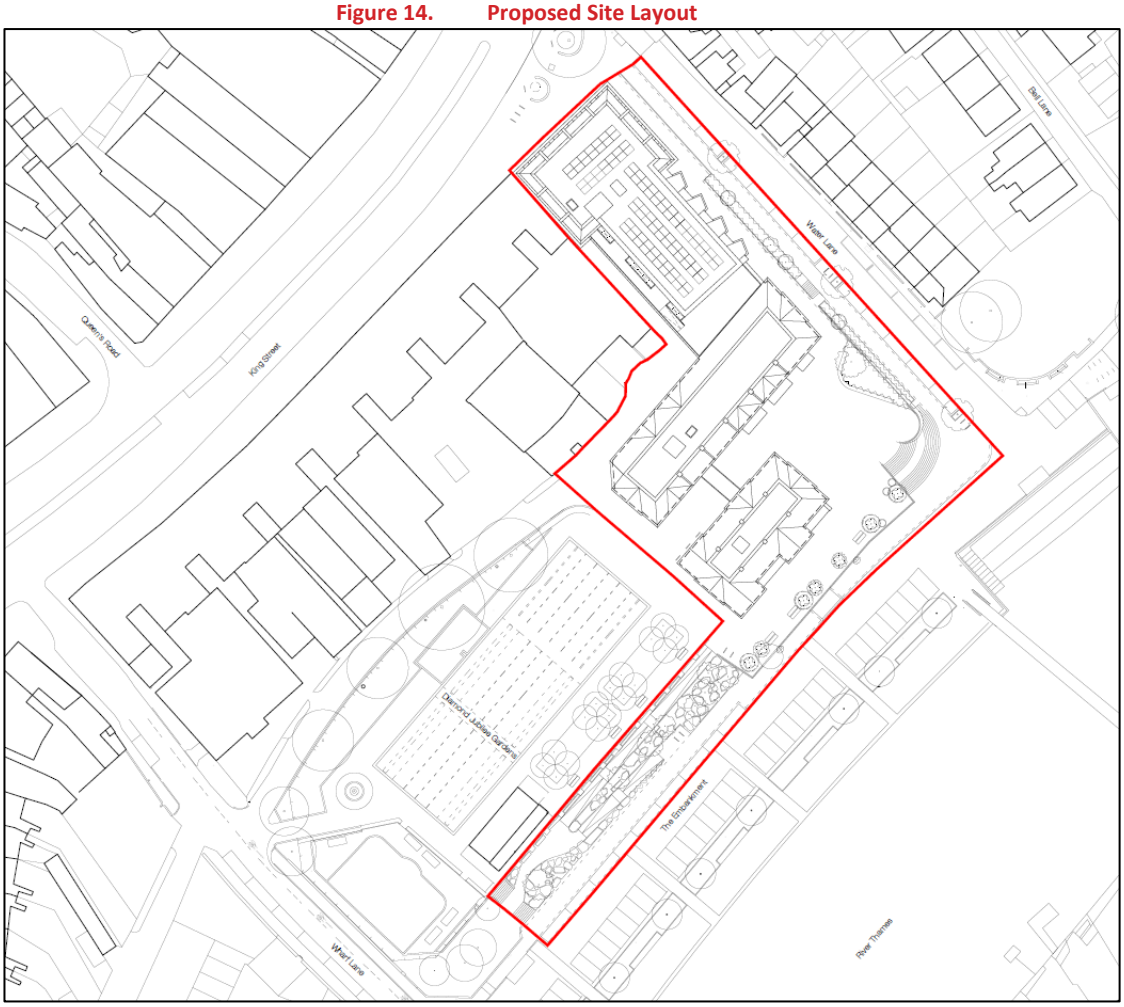
UNIT	LAND USE	QUANTUM
Unit 1	A1	244sqm
Unit 2	B1	250sqm
Unit 3	A3	274sqm
Unit 4	A1 / A3 / D1	62sqm
Unit 5	A3	231sqm
Residential	C3	39 units (18 no. 1-bed, 19no. 2-bed, 2no. 3-bed)

6.2.2 All the retail uses will be on the ground floor, with residential units on the three upper floors. Given the level changes across the Site, a podium will be created, with the lower ground floor level accommodating car and cycle parking.

6.2.3 As part of the development, a new public square will be provided, alongside improved access and permeability.

6.2.4 The proposed Site layout is shown in **Figure 14.** Additional ground and lower ground level plans are included in **Appendix G**.

Figure 14. Proposed Site Layout



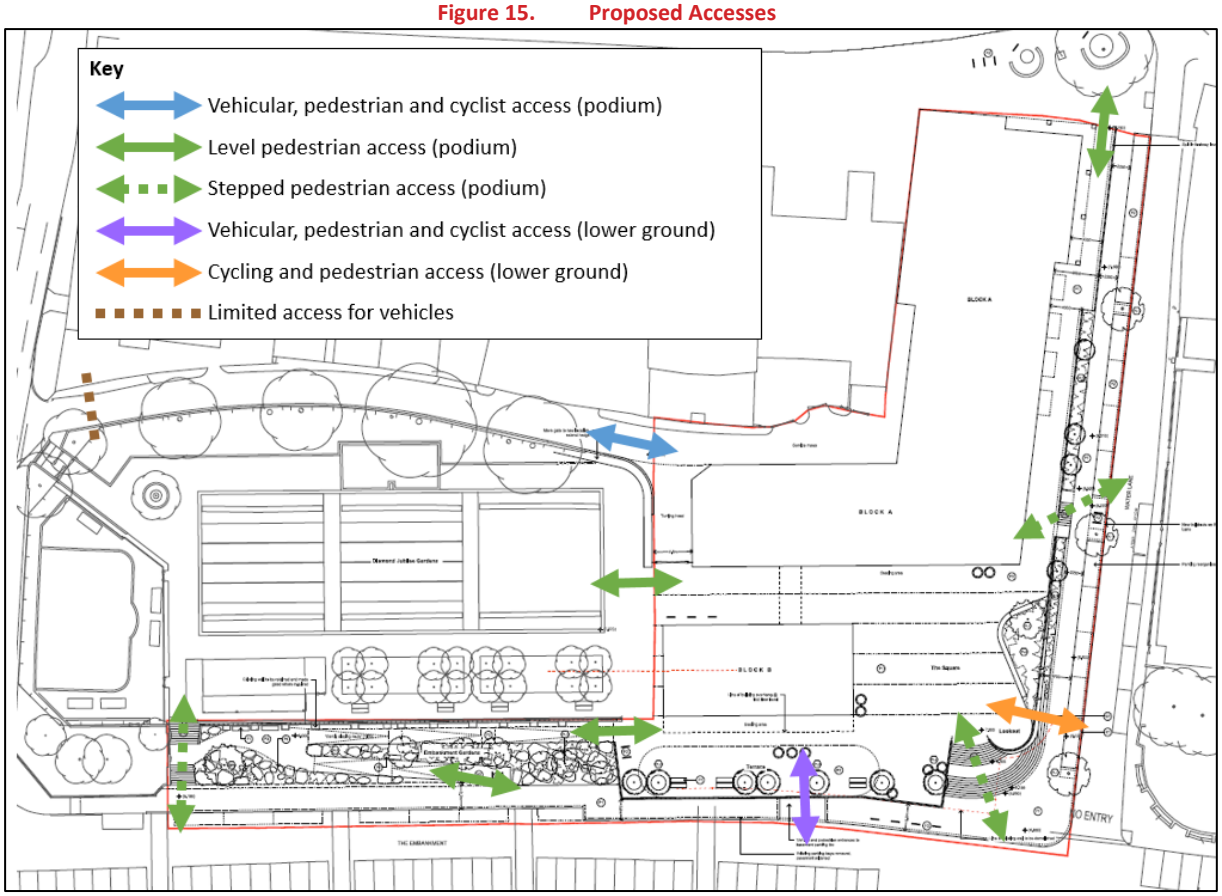
6.3 Access Arrangements

6.3.1 The Proposed Development will be constructed on a podium, to align with the existing level of King Street and Diamond Jubilee Gardens.

6.3.2 The existing level accesses from King Street and Wharf Lane / Diamond Jubilee Gardens will therefore be retained and enhanced, with a 2-3m wide footway along the eastern façade of the buildings. The proposed public square will also enhance the pedestrian environment, in line with the policy objectives (see **Figure 14**).

6.3.3 A new step-free access to the Site / Diamond Jubilee Gardens will be provided from the Embankment, with a 1:20 ramp, improving north-south permeability (see **Figure 15**).

Figure 15. Proposed Accesses



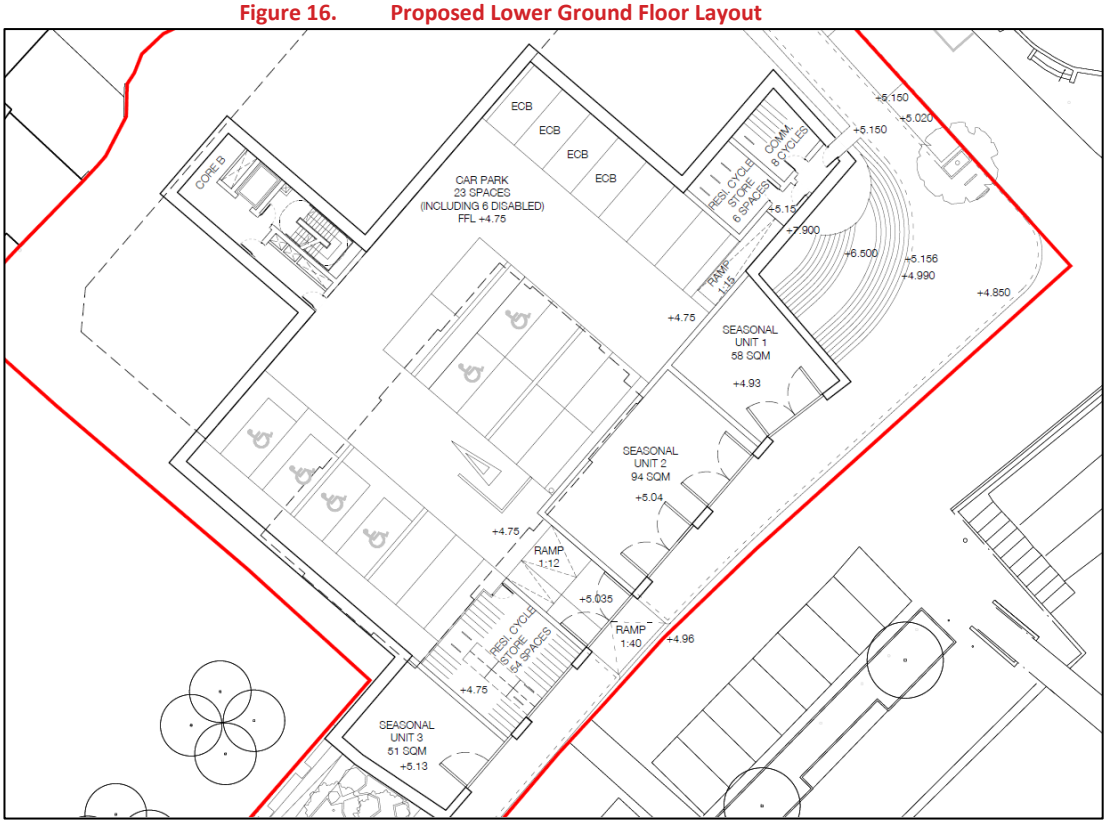
6.3.4 The existing vehicular access to the private car park will be extinguished, with a stepped access proposed in a similar location. Whilst it is not envisaged that this access will be heavily used, it retains east-west permeability through the Site.

6.3.5 A new feature staircase will be provided at the south-east corner of the Site, providing connectivity to the Embankment and to Eel Pie Bridge.

6.3.6 Vehicular access to the lower ground floor car park will be taken from the Embankment, as shown in **Figure 16**. This location was selected because it minimises excavation and ramp length, whilst maximising visibility of oncoming vehicles. The visibility splay and swept path analysis for the proposed access is shown in SYSTRA drawings 106125-21, 106125-22 and 106125-23 in **Appendix H**.

6.3.7 To minimise the visual intrusion of the vehicular access, it will be 4.5m wide. This is not deemed sufficient for two vehicles to safely pass each other, therefore signal controls and a stop line will be provided within the car park area. Incoming vehicles will be given priority, to ensure they do not obstruct the public highway.

Figure 16. Proposed Lower Ground Floor Layout



6.3.8 Cyclists and pedestrians will be able to access the lower ground level either from a dedicated access off Water Lane or via the vehicular access. A 6.8m long 1:15 gradient ramp is provided within the building at the Water Lane access, ensuring it can be used by all.

6.4 On-Site Parking

Car Parking

6.4.1 As outlined in Section 2 of the TA, the policy aspirations with regards to car parking are:

- London Plan: all developments in areas of good public transport accessibility should aim for significantly less than 1 space per unit. On-street disabled spaces must be provided for the commercial land uses and for the accessible residential units;
- LBRuT Core Strategy: there is considerable pressure on parking, with many older properties not having off-street parking and limited capacity for further on-street parking in most areas;
- LBRuT CD9: Reduce dominance of vehicles on Twickenham Town Centre;
- LBRuT DM TP 8: New developments will have to demonstrate that new schemes provide an appropriate level of off-street parking to avoid an unacceptable impact on on-street parking conditions;
- Twickenham Area Action Plan: rearrangement and possible reduction of parking along the Embankment, provided that the function of the working waterfront could be maintained.

6.4.2 Based on the above information, the development proposals will aim to reduce on-street parking provision wherever possible.

6.4.3 To comply with the London Plan, the Proposed Development will have to accommodate accessible car parking on Site. To minimise the potential for overspill parking (DM TP 8), the Proposed Development will be aim to accommodate any parking demand it will generate.

Parking has been a contentious topic throughout the consultation period and the surveys have identified parking stress for certain types of on-street parking. As such, on-street parking is deemed essential to ensure the Proposed Development does not have a detrimental impact on the surrounding highway network.

6.4.4 The Proposed Development will be built on a podium, and the area below will therefore have to be excavated, to build a supporting structure. This provides the opportunity for a lower ground floor level, which can accommodate long-stay parking associated with the proposed land uses on Site. The parking layout is shown in **Figure 16**.

6.4.5 The Census 2011 data for car ownership by tenure has been investigated to estimate the demand for car parking which will be generated by the Proposed Development. The car parking ratio for flats in the Richmond Upon Thames Middle Layer Super Output Area 14 (MSOA14) is 0.66 vehicles / unit.

6.4.6 Based on the above information, and in line with the London Plan and LBRuT Parking Standards, it is therefore proposed to provide:

- One car parking space for each 2-bedroom or 3-bedroom unit, with the exception of the affordable units (19 spaces for 19 units). Four of these will be accessible, for the four adaptable wheelchair units (i.e. 1:1 provision);
- Two Blue Badge parking spaces for staff of the proposed retail units; and
- Two spaces to be allocated either to residents or staff members, subject to future demand.

6.4.7 These proposals comply with the maximum car parking standards, which are

- Residential: 1 space per 1 or 2-bedroom unit, up to 1.5 per 3-bedroom unit;
- A3: 1 space per 75sqm; and
- B1: 1 space per 300sqm.

6.4.8 The parking ratio for the residential units will therefore be between 0.48 and 0.54 (subject to allocation of the two remaining spaces), broadly in line with the demand expected based on Census data (see above), whilst encouraging sustainable travel.

6.4.9 In line with policy requirements, the Applicant is willing to accept a restriction on all units (commercial and residential), preventing eligibility to on-street car parking permits.

Electric Charging

6.4.10 In order to encourage the uptake of electric vehicles, the Proposed Development will exceed the policy requirement for electric charging provision. The policy requirement is for 20% of residential spaces to be designated for electric vehicles, with an additional 20% passive provision (electrical connections but no physical charger) for electric vehicles in the future.

6.4.11 The Proposed Development will exceed this requirement, as all the car parking bays will have passive electric provision, with 4 spaces (20%) provided with active provision from the on-set. The active charging bays are indicated with the EOB symbol on the plans.

Long-Stay Cycle Parking

6.4.12 The lower ground floor will also host the long-stay cycle parking required to comply with London Plan requirements (see **Table 4**). For Units 1 and 4, the most onerous Use Classes have been assumed (A1 Food Retail and A3 Retail respectively).

Table 4. Long-Stay Cycle Parking Minimum Requirements

USE CLASS	UNITS	QUANTUM	STANDARD	REQUIREMENT
A1 Food Retail	Unit 1	244sqm	1 per 175sqm	2
B1 Office	Unit 2	250sqm	1 per 150sqm	2
A3 Retail	Units 3, 4 and 5	567sqm	1 per 175sqm	4
C3 Residential	1-bed	18	1 per unit	18
C3 Residential	2+ bed	21	2 per unit	42
Total				68

6.4.13 A total of 68 long-stay cycle parking spaces will be provided at lower ground floor level in accordance with minimum standards, using a mixture of Sheffield-style stands and two-tiered Josta Stands. Separate, safe and secure stores will be provided for the residential and commercial elements of the Proposed Development (see **Figure 17**). Fobs will ensure cyclists can only enter the designated areas and stores.

Figure 17. Proposed Long-Stay Cycling Provision

6.4.14 A dedicated cyclist entrance will be provided on Water Lane, but cyclists will also be able to use the main vehicular entrance from the Embankment.

6.4.15 Given the small quantum of non-residential cycle parking, it is not proposed to provide any showers or lockers, although these may be provided by individual tenants in their buildings.

Short-Stay Cycle Parking

6.4.16 London Plan-compliant short-stay cycle parking will be provided on Site. The minimum number of cycle parking spaces required for each land use is outlined in **Table 5**.

Table 5. Short-Stay Cycle Parking Minimum Requirements

USE CLASS	UNITS	QUANTUM	STANDARD	REQUIREMENT
A1 Food Retail	Unit 1	244sqm	1 per 40sqm	7
B1 Office	Unit 2	250sqm	1 per 500sqm	1
A3 Retail	Units 3, 4 and 5	567sqm	1 per 40sqm	15
C3 Residential		39	1 per 40 units	1
Total				24

6.4.17 The development will provide 13 Sheffield-style stands (26 spaces) on the footways and in the public realm, exceeding policy requirements and encouraging sustainable travel to and from the Site.

6.4.18 The proposed locations of short-stay cycle parking spaces (shown in **Figure 14** and in **Appendix G**) are:

- Two stands at the top of the accessible ramp from the Embankment to the Site;
- Two stands at the southern end of on Water Lane, fronting the feature staircase;
- Two stands near the midpoint of Water Lane, fronting the steps to the podium;
- Four stands on King Street, fronting the development; and
- Three stands on the podium, at the rear of the loading area.

6.4.19 The cycle spaces have been strategically located at the edges of the development, to discourage people from cycling through the main square. The location has been informed by the expected desire lines, with most cyclists expected to arrive from King Street, the Embankment and Wharf Lane / Service Road.

6.4.20 As agreed with LBRuT, all the short-stay spaces associated with the Proposed Development have been located on the footways adjacent to the Site. The spacing of the stands is in line with the London Cycling Design Standards.

6.5 Off-Site Parking

Car Parking

6.5.1 To accommodate the proposed access, provide the required loading bays and address the policy requirement to reduce car dominance, the following changes to off-street parking are proposed:

- The Embankment: to ensure the proposed access is visible and the footway can be widened, remove seven car parking spaces from the northern side of the Embankment (-7 bays);
- Wharf Lane: one new loading bay to be provided, replacing four bays (-4 bays);
- Water Lane:

- Western side: one new loading bay to be provided, relocating parking bays further south in front of the existing access to the car park, which will be extinguished. Net loss of 1 bay (-1 bays);
- Eastern side: one new parking bays provided on the eastern side of the road (+1 bays), with a new kerb build out at the southern end of the road.

6.5.2 Overall, the parking proposals will result in a loss of 11 on-street car parking spaces, in line with the survey findings.

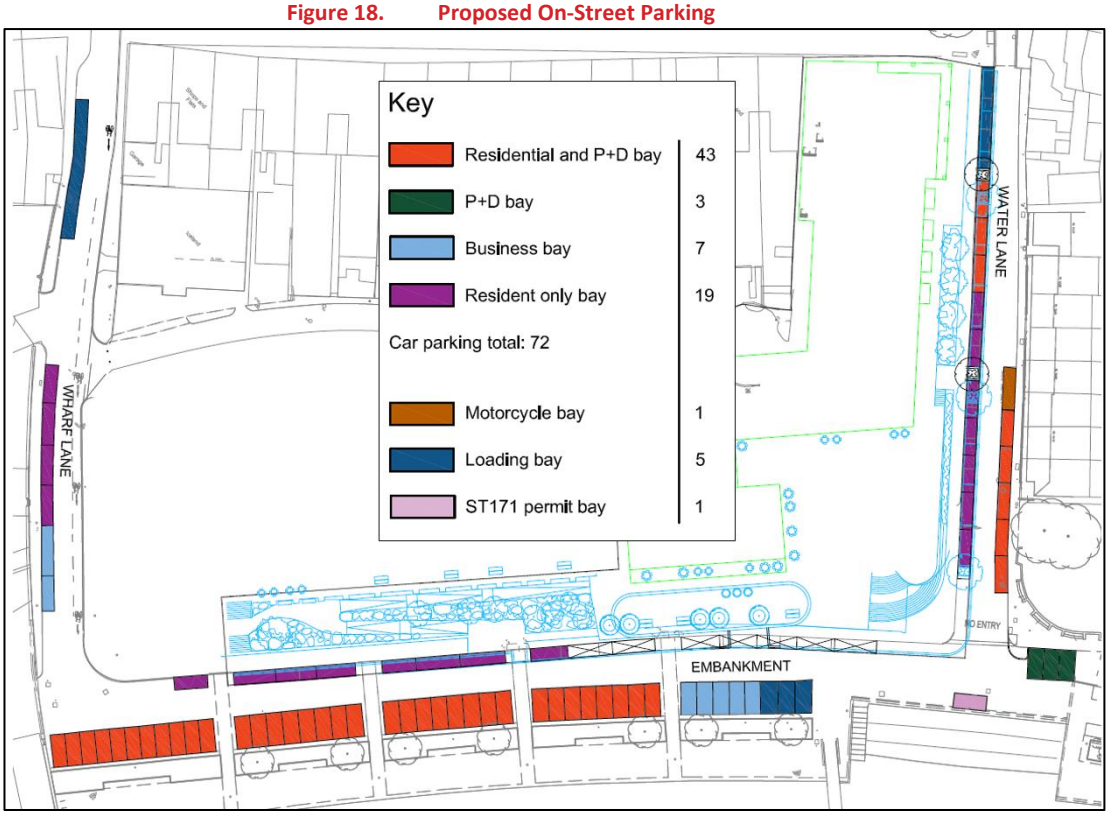
6.5.3 To ensure the remaining parking provision best matches the recorded demand, the following changes to designation are proposed:

- Business Bays:
  - Relocate the five business bays removed from the northern side of the Embankment onto the southern side, replacing the five easternmost shared use bays (-5 shared use bays);
- Pay & Display bays:
  - Four bays lost due to the loading bay on Wharf Lane (-4 p&d bays)
  - Four bays on Water Lane converted to shared use (-4 p&d bays, +4 shared use bays)
- Resident bays:
  - Relocate the two resident bays removed from the northern side of the Embankment onto Water Lane, replacing two shared use bays (-2 shared use bays);
  - Provide five additional resident bays on Water Lane, replacing shared use bays (+5 resident bays, -5 shared use bays)
- Shared use bays:
  - One bay relocated from the eastern to the western side of Water Lane (no change).

6.5.4 The total loss of parking provision is therefore eight p&d bays and eight shared use bays, whilst five new resident bays are created (net loss of 11 bays).

6.5.5 A plan showing the proposed on-street parking arrangement is shown in **Figure 18**. For reference, the existing on-street car parking arrangements are shown in **Figure 11**.

Figure 18. Proposed On-Street Parking



6.5.6 It is noted that the relocation will require changes to the Traffic Management Orders, which are subject to public consultation, to be undertaken following determination of the planning application for the Proposed Development.

6.5.7 However, not all the relocations and removals proposed above are essential for the feasibility of the scheme. Whilst it is essential for some bays to be relocated to ensure vehicles can safely enter and exit the lower ground floor, the provision of on-street loading bays is not essential (even through it is highly recommended). This is particularly true for the loading bay on Wharf Lane, which caters to the servicing of the King Street commercial units to the west of the Site.

6.5.8 The off-site car parking proposals have been designed so that they will not prejudice any future changes to on-street car parking provision which may be considered by LBRuT, subject to a separate consultation exercise.

6.6 Walking and Cycling Improvements

6.6.1 The proposals aim to remove conflicts between vehicles, pedestrians and cyclists, to improve the safety and attractiveness of active travel.

6.6.2 The new loading bays on Water Lane and Wharf Lane will ensure footways and cycle lanes are kept clear at all times (see **Figure 18**), minimising diversions and the potential for conflicts with vehicles.

6.6.3 The proposed access restrictions on the service cul-de-sac (see **Figure 15)** will create a largely pedestrianised environment, providing connectivity to the Site from Wharf Lane. This will be particularly convenient for cyclists, as they will have a level route without the need to enter Diamond Jubilee Gardens, dismount their bicycles or use ramps.

6.6.4 The removal of the vehicular through route and car park from Water Lane will increase pedestrian safety on Site.

6.6.5 Where possible, the design of the scheme results in an increase to footway widths, in particular on the eastern side of Water Lane (from 1.9m to 2.5m), on the corner with the Embankment (up to 8.5m wide) and on the northern side of the Embankment (from 2m to 2.2m). At the latter location, the proposed kerb line will be in line with existing car parking road markings, with no detrimental impact on vehicles manoeuvring into or out of the bays on the opposite side of the road. These improvements can be seen on the plans included in **Appendix G.**

6.6.6 A new ramp is provided from the Embankment, providing step-free level connectivity for all users (1:20 gradient with level platforms every 10m), and permeability is enhanced through the new steps from Water Lane and the Embankment.

6.7 Summary

6.7.1 The proposals entail the demolition of the existing buildings and the construction of two new buildings, linked with a bridge. The ground floors will comprise a mixture of retail and commercial uses, with 39 residential units on the upper floors.

6.7.2 The proposals aim to formalise servicing arrangements and minimise car parking dominance by converting the existing servicing road to a cul-de-sac with restricted access, providing two new loading bays and reducing or reallocating existing on-street parking.

6.7.3 The Proposed Development will be constructed on a podium, with the lower ground floor accommodating 23 car and 68 long-stay cycle parking spaces, in line with policy requirements.

6.7.4 To improve pedestrian and cyclist safety and permeability, traffic movements are restricted, new step-free and stepped connections are provided and footway widths are increased, particularly on Water Lane and on the Embankment.

7. CAR PARK MANAGEMENT PLAN

7.1.1 A total of 23 car parking spaces and 68 cycle parking spaces will be provided at lower ground floor level, for residents and employees of the Proposed Development.

7.1.2 Access to the car park will be from the Embankment, with a barrier in place to restrict access to permit holders. The barrier will be operated with an electric fob issued to residents or staff members on a demand basis, with CCTV cameras in place to monitor any instances of non-compliance. An additional door separates the car park from the lift into the development, which will be operated by the same fob.

7.1.3 As discussed above, traffic lights and a stop line will be in place to minimise the likelihood of vehicles having to wait on the public highway before entering the car park. Given the limited quantum of parking proposed, this appears to be an acceptable arrangement.

7.1.4 The main vehicular access into the car park is from the Embankment, which can be used by pedestrians, vehicles and cyclists entering or exiting the development. It is envisaged that pedestrians would be unlikely to use this, as they would prefer to access via the main core at podium level.

7.1.5 An additional access is provided from Water Lane, for the use of cyclists and pedestrians.

7.1.6 Spaces will be allocated as follows:

- 1 car parking space for each 2-bedroom or 3-bedroom unit, with the exception of the affordable units (19 spaces for 19 units);
- 2 Blue Badge parking spaces for staff of the proposed retail units; and
- 2 spaces to be allocated either to residents or staff members, subject to future demand.

7.1.7 The spaces will be included in the leases of the tenants, and will be demarcated with dedicated numbers. Property owners will not be permitted to rent the spaces out to members of the general public, with the use of the spaces monitored over time.

7.1.8 Four of the 19 resident parking spaces are disabled bays, which will be included in the leases for the adapted / adaptable wheelchair units.

7.1.9 The electric charging provision will exceed the London Plan requirements, with active provision at four of the spaces and passive provision at all other bays.

8. MULTI-MODAL TRIP GENERATION

8.1 Introduction

8.1.1 This section of the TA provides a summary of the multi-modal trip generation associated with the existing and Proposed Development.

8.1.2 For a robust trip generation assessment, the following data sources have been used:

- Person trip rates from the industry standard TRICS database;
- Morning and evening mode share from 2011 Census Method of Travel to Work data; and
- Interpeak mode share from the industry standard TRICS database

8.1.3 As previously stated, Unit 4 will have a flexible use (Unit 3 A1 / A3 / D1). Of these, the A3 use was deemed to be the worst case, and was therefore assessed. The net change per land use is outlined in **Table 6**.

Table 6. Land Use Net Change

LAND USE	EXISTING FLOOR AREA	PROPOSED FLOOR AREA	NET CHANGE
A1 Retail	741sqm	244sqm	-497sqm
A2 Retail	479sqm	-	-479sqm
A3 Retail	-	567sqm	+567sqn
B1 Office	226sqm	250sqm	+24sqm
C3 Residential	-	39 units	+39

8.1.4 Each land use is assessed separately in the following sections of this report. The seasonal units at lower ground floor level are deemed to have negligible impact on the trip generation of the Proposed Development.

8.2 A1/A2 Retail

8.2.1 The Proposed Development will result in a reduction in A1/A2 retail floor area. Whilst this will result in a reduction in trips into and out of the Site, neither the existing or proposed stores are destination stores.

8.2.2 Given the town centre location of the Site, it is expected for most existing and proposed customer trips to be pass-by trips, therefore the reduction in floor area will not result in an overall reduction in trips to the local area. Whilst a slight reduction in staff trips is likely to occur, this is not deemed to be significant.

8.2.3 This assessment corroborates the statement made above that scenario 1 is more robust (worst-case) than scenario 3.

8.3 A3 Retail

Site Selection

8.3.1 To find a comparable site to the A3 Retail use of the Proposed Development, the following parameters were used in the industry-standard TRICS database search:

- Land Use: 06 – Hotel, Food and Drink;
- Sub Land Use: B – Restaurant and C – Pub / Restaurant;
- Multi-modal surveys only; and
- Outer London Borough Sites.

8.3.2 The sites matching these criteria and their main characteristics are shown in **Table 7.**

Table 7. A3 TRICS Site Selection

REF	DESCRIPTION	POSTCODE	GFA	PARKING	PTAL	SELECTED
BN-06-C-01	Pub / Restaurant, Barnet	EN5 3EP	724	27	2	N
HG-06-C-01	Wetherspoon, Wood Green	N22 6BH	1,000	0	6b	Y
WH-06-C-01	Pub / Restaurant, Wandsworth High Street	SW18 4LB	400	0	6b	Y

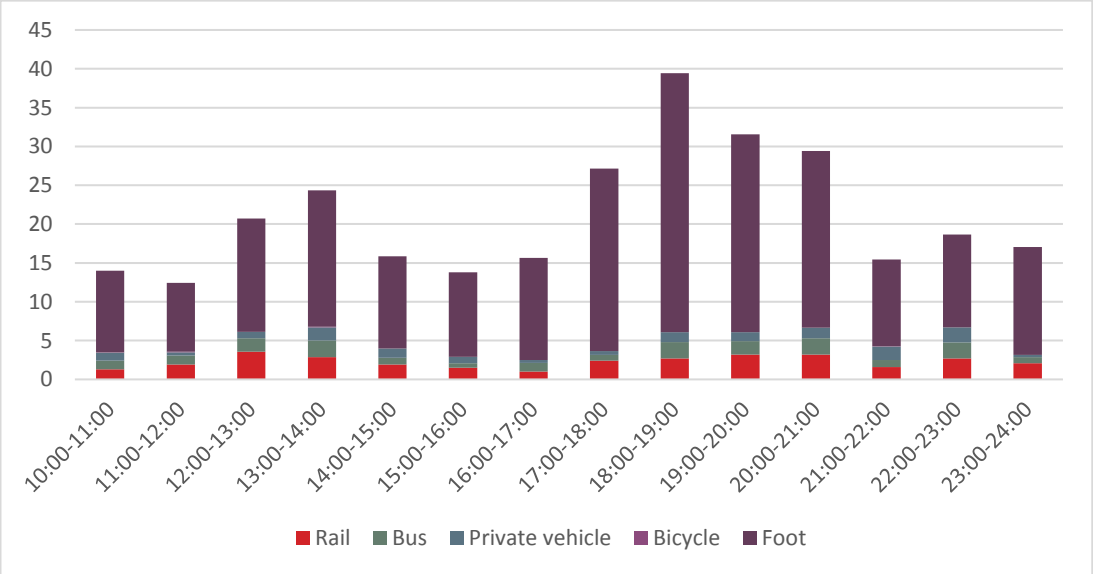
8.3.3 No restaurants matched the above criteria, whilst three pub / restaurants did. The TRICS database does not contain any cafes. Whilst it is noted that the Proposed Development will not comprise a pub, it is deemed that the above sites represent a worst-case scenario.

8.3.4 The Barnet site was discounted from the analysis due to the low PTAL and high parking provision.

Trip Rates

8.3.5 The resulting multi-modal trip rates per 100sqm throughout the day are shown in **Figure 19.** In this and in all following figures, rail trips include London Underground trips.

Figure 19. A3 Retail Trip Rates per 100sqm



8.3.6 The data shows that the peak period is 18:00-19:00, with 39 trips per 100sqm. The vast majority (78%) of trips are by foot, indicating these are likely to be linked or pass-by. Only 5% of trips are made by private vehicle.

8.4 B1 Office

8.4.1 The Proposed Development will result in an increase of 20sqm in B1 retail floor area. This is expected to have a negligible impact on the trips to and from the Site.

8.5 C3 Residential

Site Selection

8.5.1 To find a comparable site to the residential use of the existing and Proposed Development, the following parameters were used in the TRICS database search:

- Land Use: 03 – Residential;
- Sub Land Use: C – Flats Privately Owned;
- Multi-modal surveys only;
- Outside Central London; and
- PTAL 5-6.

8.5.2 The sites matching these criteria and their main characteristics are shown in **Table 8.**

Table 8. C3 TRICS Site Selection

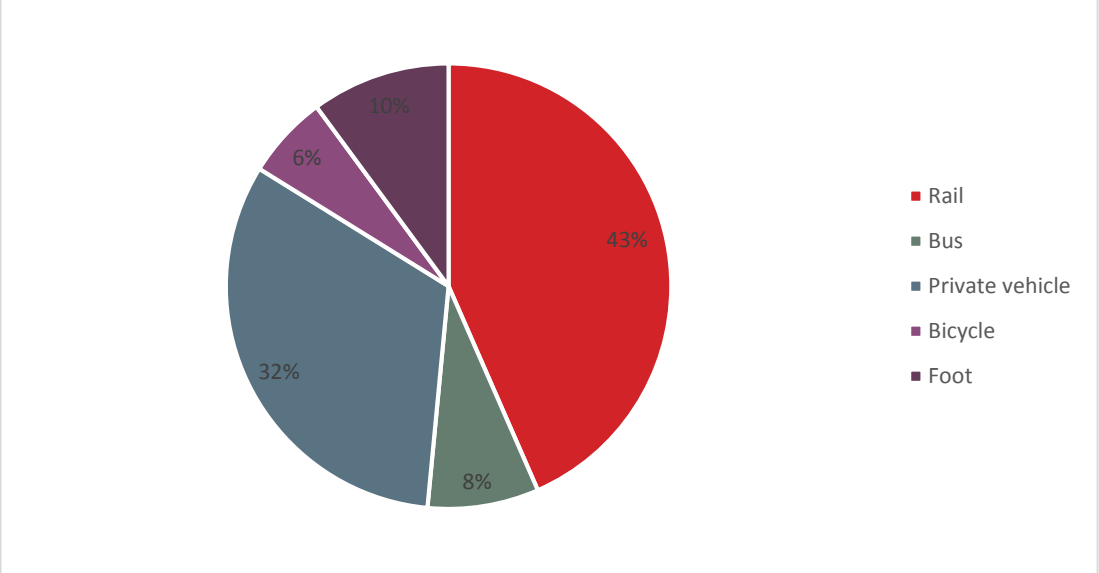
REF	DESCRIPTION	POSTCODE	DWELLS	PARKING	PTAL	SELECTED
BT-03-C-02	Block of Flats, Wembley	HA9 0NH	472	151	5	N
KI-03-C-02	Block of Flats, Kingston upon Thames	KT2 5AQ	132	149	6a	Y
WH-03-C-01	Block of Flats, Clapham Junction	SW11 2JW	30	36	6a	Y

8.5.3 Three sites met the above criteria, one of which was discounted due to the unrepresentative parking provision (lower with respect to the Proposed Development).

Mode Share

8.5.4 To account for the local context of the Site, the morning and evening mode share data was taken from the 2011 Census Method of Travel to Work dataset (Resident Population) for the Middle Super Output Area (MSOA). The mode share is presented in **Figure 20**.

Figure 20. MSOA Method of Travel to Work Data (Resident Population) – Census 2011



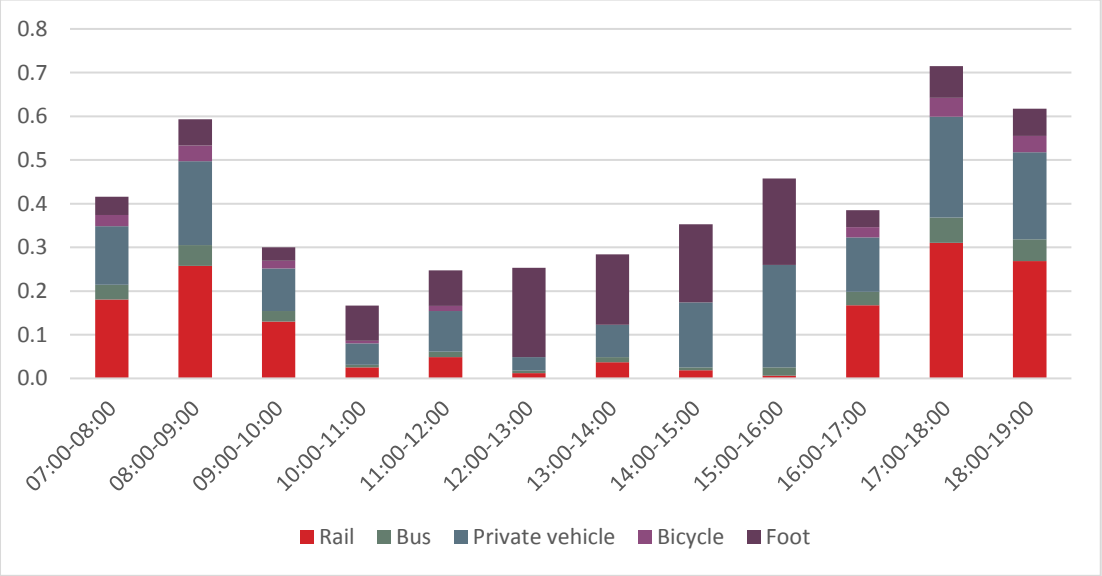
8.5.5 The above mode share was applied to the commuting hours (07:00-10:00 and 16:00-19:00), whilst for the rest of the day, the TRICS mode share was used.

8.5.6 Whilst it is noted that in the peak hours there will be trips other than commuting trips (school, leisure), the method of travel to work data is deemed to represent a worst-case.

Trip Rates

8.5.7 The resulting multi-modal trip rates per dwelling throughout the day are shown in **Figure 21.**

Figure 21. C3 Residential Trip Rates per Dwelling



8.5.8 The data shows that the peak periods are 08:00-09:00 and 17:00-18:00, with 0.6 and 0.7 trips per dwelling. Approximately one third of all trips are by public transport, one third by private vehicle and one third by foot or bicycle.

8.6 Car Park

8.6.1 As part of the Proposed Development, the existing private car park on Site will be replaced with a new public square. The parking surveys undertaken at the Site indicate an average of 12 vehicles are parked in the private car park on a workday (**Appendices E and F**).

8.6.2 For a robust trip assessment, a minimum of 24 existing vehicle trips are therefore assumed to take place into and out of the private car park. In this instance, the following distribution has been assumed:

- 07:00-08:00: 2 vehicles in;
- 08:00-09:00: 8 vehicles in;
- 09:00-10:00: 2 vehicles in;
- 16:00-17:00: 2 vehicles out;
- 17:00-18:00: 8 vehicles out; and
- 18:00-19:00: 2 vehicles out.

8.6.3 As the public square will not generate any vehicle trips, these existing trips are subtracted from the proposed to estimate the net impact on the Proposed Development.

8.7 Net Impact

8.7.1 Presuming the worst-case scenario 1 land use allocations, the change in floor areas with respect to the existing uses would be as follows:

- A1 Retail: -497sqm -> no net change in trips;
- A2 Retail: -479sqm -> no net change in trips;
- A3 Retail: +567sqm;
- B1 office: +24sqm -> no net change in trips;
- C3 residential: +39 units; and
- Loss of private car park (26 spaces).

8.7.2 The resulting impact on development trip generation, based on the trip rates and mode shares identified above, is summarised in **Figure 22** and **Table 9**.

Figure 22. Scenario 1 Net Change in Trips by Mode

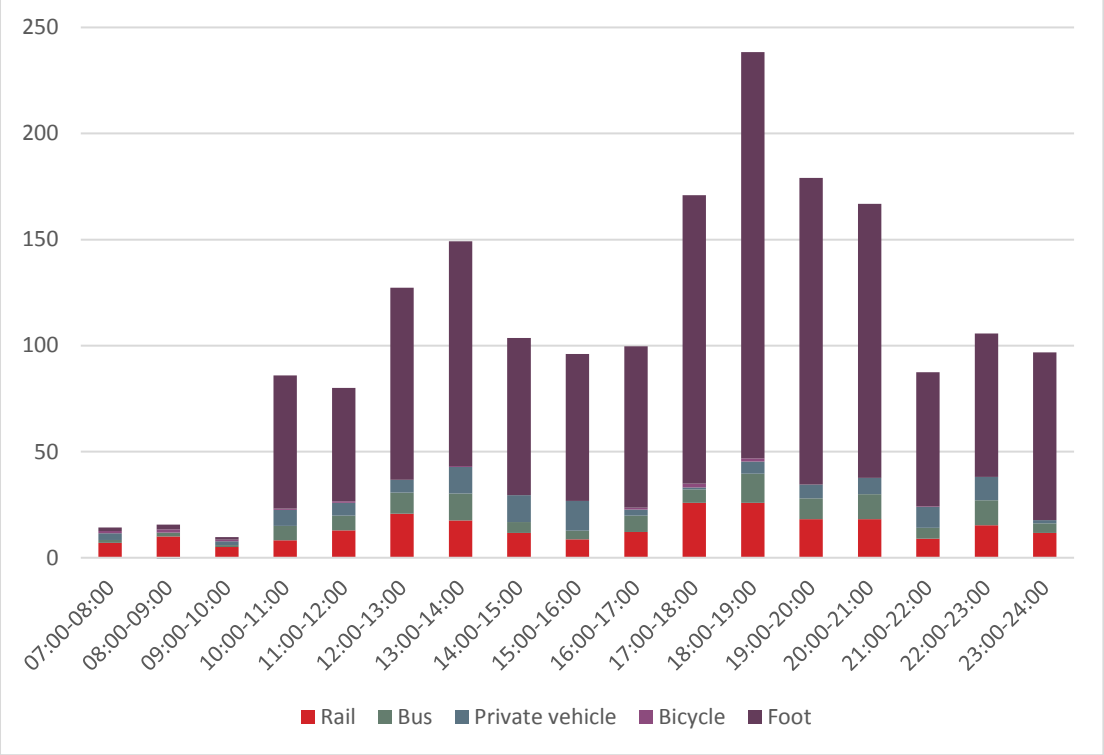


Table 9. Net Change in Trips by Mode

TIME	RAIL*	BUS	PRIVATE VEHICLE	BICYCLE	FOOT	TOTAL
08:00-09:00	10	2	-1	1	2	15
09:00-10:00	5	1	2	1	1	10
12:00-13:00	21	10	6	0	91	127
13:00-14:00	18	13	13	0	106	149
17:00-18:00	26	6	1	2	136	171
18:00-19:00	26	14	6	1	192	238
TOTAL	238	120	110	9	1,348	1,826

*Rail includes London Underground, Overground and DLR

8.7.3 The Proposed Development increases the number of trips to and from the Site, with an additional 1,826 daily trips covering all modes, 74% of which are made by foot. It is expected that many of these will be linked trips, given the town centre location.

8.7.4 In the morning peak hour (08:00-09:00), 10 additional trips will be made by rail, two by bus, one by bicycle and two on foot, whilst there will be a reduction of one vehicle trip. Approximately 90% of the additional trips are associated with the residential uses on Site.

8.7.5 In the lunchtime peak hour (13:00-14:00), there will be 106 additional pedestrian trips, with another 31 by public transport and 13 by private vehicle. Approximately 90% of these are associated with the A3 uses on Site.

8.7.6 In the evening peak (17:00-18:00), 26 additional trips will be made by rail, six by bus, one by private vehicle, two by bicycle and 136 on foot. Approximately 84% of these are associated with the A3 uses on Site.

8.7.7 Based on the small increase in vehicle trips to and from the Site, no junction assessments will be required. The additional number of trips by public transport is deemed to be negligible.

8.8 Summary

8.8.1 A trip generation assessment has been undertaken based on TRICS and Census data. The worst-case assessment has assumed the reduction in A1 and A2 floor areas will not reduce the number of trips associated with the Site, and a pub/restaurant was deemed to be the most representative A3 land use available in the TRICS database.

8.8.2 The assessment indicates that the Proposed Development will result in an additional 1,826 additional trips per day, 74% of which undertaken by foot and likely to be linked trips.

8.8.3 The impact in the network peak hours is 15 additional trips between 08:00-09:00 and 171 additional trips between 17:00-18:00, one of which is by private vehicle, 33 by public transport and 136 on foot.

8.8.4 This trip generation exercise has indicated that the Proposed Development will have a negligible impact on the highway and public transport network, but will result in a substantial increase in pedestrian trips to the Site.

9. DELIVERY AND SERVICING STRATEGY

9.1.1 As noted in the earlier sections of this TA, the current vehicle manoeuvres on the Service Road operations appear unsafe, with large vehicles and dangerous reversing manoeuvres. The Proposed Development will remove the connection from the Service Road to Water Lane, creating a servicing cul-de-sac.

9.1.2 The proposals aim to minimise the number and size of vehicles using the cul-de-sac, so that it can operate as a safe pedestrian and cyclist access route into the Site from Wharf Lane. As previously stated, many cyclists use the contraflow cycle lane on Wharf Lane and the service cul-de-sac will provide an ideal route into the Site which does not require dismounting or cycling on ramps.

9.1.3 In order to achieve this vision, access to the cul-de-sac will be managed and restricted to essential users: refuse collection, residents and staff of the King Street units and emergency vehicles. Refuse vehicles will be able to drive to within 10m of all the proposed refuse stores. It is envisaged that the restriction will be achieved either through bollards or cameras, subject to discussions with LBRuT and the owner of the King Street commercial units (between the Site and Wharf Lane).

9.1.4 For non-essential servicing and delivery trips, a wide range of options were considered, including both on-street and off-street provision. The level differences across the Site limit the opportunities for on-site servicing. Additionally, vehicular access to the podium would severely compromise the pedestrian-centred ethos of the Proposed Development, which delivers a new public square. The potential for servicing at lower ground floor was also considered, but it would have required additional lifts and a complex management strategy, with the potential for vehicles stopping on the Embankment, where pedestrian and cyclist volumes are greater than on Water Lane.

9.1.5 For the King Street commercial units, there were considerably fewer options available as the sites are not being redeveloped. On-street servicing was therefore deemed to be the only viable option.

9.1.6 As such, two new large dedicated loading bays will be provided on Water Lane and Wharf Lane, formalising servicing arrangements and minimising conflicts with pedestrians and cyclists (particularly on Wharf Lane). It is envisaged that deliveries to the Site will mostly use the Water Lane bay, whilst deliveries to the King Street commercial units (including Iceland) will use the Wharf Lane bay. The bays are 15-18m in length, and can be used by up to a 10m rigid vehicle, ensuring that the footways and cycle lanes will be kept clear.

9.1.7 Whilst loading bays are proposed, it is noted that the existing loading bays on the Embankment are often mistaken as parking bays by visitors. As such, the proposed loading bays should either be clearly signed, or could be simply demarcated with yellow lines, permitting loading. The Applicant will liaise with LBRuT following determination to agree the preferred designation.

9.1.8 Additional details on the proposed servicing and delivery arrangements, including expected trip generation and swept path analysis, are included in the Delivery and Servicing Plan which accompanies this planning application.

10. CONSTRUCTION STRATEGY

10.1.1 A draft Construction Management Plan (CMP) has been prepared by Validus LM Ltd. and accompanies this planning application. The CMP provides indicative construction phasing for the scheme, which will be undertaken in two phases:

- Phase 1: Site south of the current Service Road; and
- Phase 2: Site north of the current Service Road.

10.1.2 Throughout construction, vehicles are expected to arrive and leave from the A316 Great Chertsey Road, via London Road. Vehicles will access the Site from Water Lane, travel west along the Embankment and exit from Wharf Lane.

10.1.3 For Phase 1 of construction, it is envisaged that the northern section of the Embankment will be used for loading / unloading of vehicles, with parking bays temporarily suspended. For phase 2, this area will be moved to the western side of Water Lane.

10.1.4 The Construction Management Plan includes measures to minimise the impact of construction vehicles on the public highway and surrounding users, including, but not limited to:

- Air pollution, dust and dirt control (wheel washing facilities, dust monitoring);
- Restricted hours of construction (07:30-18:00 Monday-Friday, 08:00-13:00 Saturday);
- Deliveries restricted to outside of network peak hours;
- Construction Logistics and Community Safety (CLOCS) compliant construction vehicles;
- The use of banksmen for all complex vehicle manoeuvres; and
- Protection of pedestrians and cyclists.

10.1.5 It is expected that the enabling works will begin in April 2018, with the main contract Phase 1 works taking place between July 2018 and March 2020, and Phase 2 between October 2019 and March 2021.

10.1.6 For further details please refer to the draft CMP.

11. SUMMARY AND CONCLUSION

11.1.1 SYSTRA Ltd ('SYSTRA') has been commissioned by the London Borough of Richmond upon Thames ('LBRuT', 'the Applicant') to provide transport and highways advice relating to the proposed redevelopment of 1A, 1B King Street and 2/4 Water Lane, the site of the remaining former swimming pool buildings at the corner of Water Lane and The Embankment and the river-facing parcel of land on the Embankment in front of Diamond Jubilee Gardens in Twickenham, London, TW1 3SD ('the Site').

11.1.2 The Site currently comprises 1,217sqm of retail floorspace (A1/A2), 226sqm of office floorspace and a private car park.

11.1.3 The Proposed Development entails the demolition and removal of all existing buildings and structures, to provide a mixed-use development comprising:

- Lower Ground Floor Level: a new vehicular access from the Embankment, parking for 23 cars and 68 cycles and three seasonal units (201sqm);
- Ground Floor Level: 505sqm A3, 250sqm B1, 244sqm A1 and 62sqm flexible commercial floor space, a new public square and areas of public realm;
- First, Second and Third Floors: 39 residential units (18 no. 1 bedroom, 19 no. 2 bedroom and 2 no. 3 bedroom, including 6 no. affordable homes); and
- Public realm improvements, reconfiguration of on-street parking, improved pedestrian access and landscaping and an amendment of service vehicle access.

11.1.4 This Transport Assessment ('TA') accompanies the planning application submitted to the London Borough of Richmond upon Thames, who act as the Local Planning Authority and Local Highway Authority. It should be read alongside the following documents which accompany the application:

- Framework Commercial Travel Plan;
- Residential Travel Plan;
- Delivery and Servicing Plan (DSP); and
- Inclusive Access Statement.

11.1.5 The project team has undertaken extensive scoping discussion with LBRuT Officers, with regular design meetings throughout the pre-planning period. A formal pre-application meeting took place with the highways and transport officers on 30 August 2017, which was attended by SYSTRA. SYSTRA also submitted draft versions of the reports to LRBuT, for review and comment.

11.1.6 The development proposals have been informed by a review of local, regional and national policy including the London Plan, Draft Mayor's Transport Strategy, LBRuT's Core Strategy and Development Management Plan, and the Twickenham Area Action Plan.

11.1.7 The Site is in Twickenham Town Centre and has excellent public transport connectivity (PTAL 5-6a). The surrounding area has high-quality pedestrian and cycle infrastructure, including the riverside facilities along the Embankment. However, the level changes across the Site create severance, and there are opportunities for improved permeability, particularly from the Embankment and to Diamond Jubilee Gardens.

11.1.8 Traffic, parking and servicing surveys have been undertaken to assess issues and opportunities for the streets surrounding the Site. The surveys have highlighted the potential to achieve the policy vision of reducing car parking dominance by removing 11 car parking

spaces and reconfiguring the provision to cater to residents and businesses. The proposals have been designed not to preclude any future changes to on-street car parking which LBRuT may wish to implement.

11.1.9 The proposals entail the demolition of the existing buildings and the construction of two new buildings, linked with a bridge. The ground floors will comprise a mixture of retail and commercial uses, with 39 residential units on the upper floors.

11.1.10 The proposals aim to formalise servicing arrangements and minimise car parking dominance by converting the existing servicing road to a cul-de-sac with restricted access, providing two new loading bays and reducing or reallocating existing on-street parking.

11.1.11 The Proposed Development will be constructed on a podium, with the lower ground floor accommodating 23 car parking and 68 long-stay cycle parking spaces, with dedicated vehicular, cyclist and pedestrian accesses. A car park management plan has been drafted, explaining how the 23 car parking spaces will be allocated and managed. Six of the 23 car parking spaces will be accessible.

11.1.12 To improve pedestrian and cyclist safety and permeability, traffic movements on the Service Road will be restricted, new stepped and step-free connections will be provided and footway widths will be increased, particularly on Water Lane and on the Embankment. Additionally, 26 short-stay cycle parking spaces will be provided in the public realm on Site.

11.1.13 The proposals aim to create a healthy and permeable pedestrian-friendly Site which can be the heart of Twickenham Town Centre. The existing private car park (26 spaces) will be replaced with a new public square, with seating, trees and landscaping, in line with the Healthy Streets approach outlined in the Draft Mayor's Transport Strategy.

11.1.14 A robust trip generation assessment has been undertaken based on TRICS and Census data. The results of the assessment indicate that the Proposed Development will result in an additional 1,826 additional trips per day, the vast majority of which (74%) are undertaken by foot.

11.1.15 The impact in the network peak hours is 15 additional trips between 08:00-09:00 and 171 additional trips between 17:00-18:00, one of which is by private vehicle, 33 by public transport and 136 on foot.

11.1.16 Key elements of the proposed delivery and servicing and construction strategies for the Proposed Development have been outlined, with further details included in the draft DSP and CMP which accompany this submission.

11.1.17 In conclusion, the Proposed Development complies with planning policy in terms of its sustainable location, parking proposals and improvements to pedestrian and cycle facilities. It is therefore considered acceptable in transport terms.