Greggs Bakery / Twickenham

Transport Assessment

February 2019

London Square Developments Limited

GREGGS BAKERY SITE, TWICKENHAM

Transport Assessment

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WSP

WSP House
70 Chancery Lane
London
WC2A 1AF

Phone: +44 20 7314 5000

Fax: +44 20 7314 5111

WSP.com

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Prepared by	Thomas Edwards	Thomas Edwards	Thomas Edwards	
Signature				
Checked by	Mark England	Steve Foxcroft	Steve Foxcroft	
Signature				
Authorised by	Steve Foxcroft	Steve Foxcroft	Steve Foxcroft	
Signature				
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APPENDICES

1 INTRODUCTION

1.1 CONTEXT

1.1.1. This Transport Assessment (TA) has been prepared by WSP on behalf of London Square Developments Limited (the applicant), to accompany a full planning application for the redevelopment of the Former Greggs Bakery Site on Gould Road, Twickenham, TW2 6RT. The land, referred to herein as 'the site', to which the planning application pertains, is located within the administrative boundary of the London Borough of Richmond upon Thames (LBRuT).

1.1.2. This Transport Assessment considers the transport matters associated with the redevelopment of the site which will comprise a residential-led scheme providing 116 dwellings with associated landscaping, car parking, cycle parking and a small B1 commercial unit with a GIA of 175sqm.

1.1.3. The planning application 'red line' boundary drawing is provided at Appendix A.

1.2 THE SITE

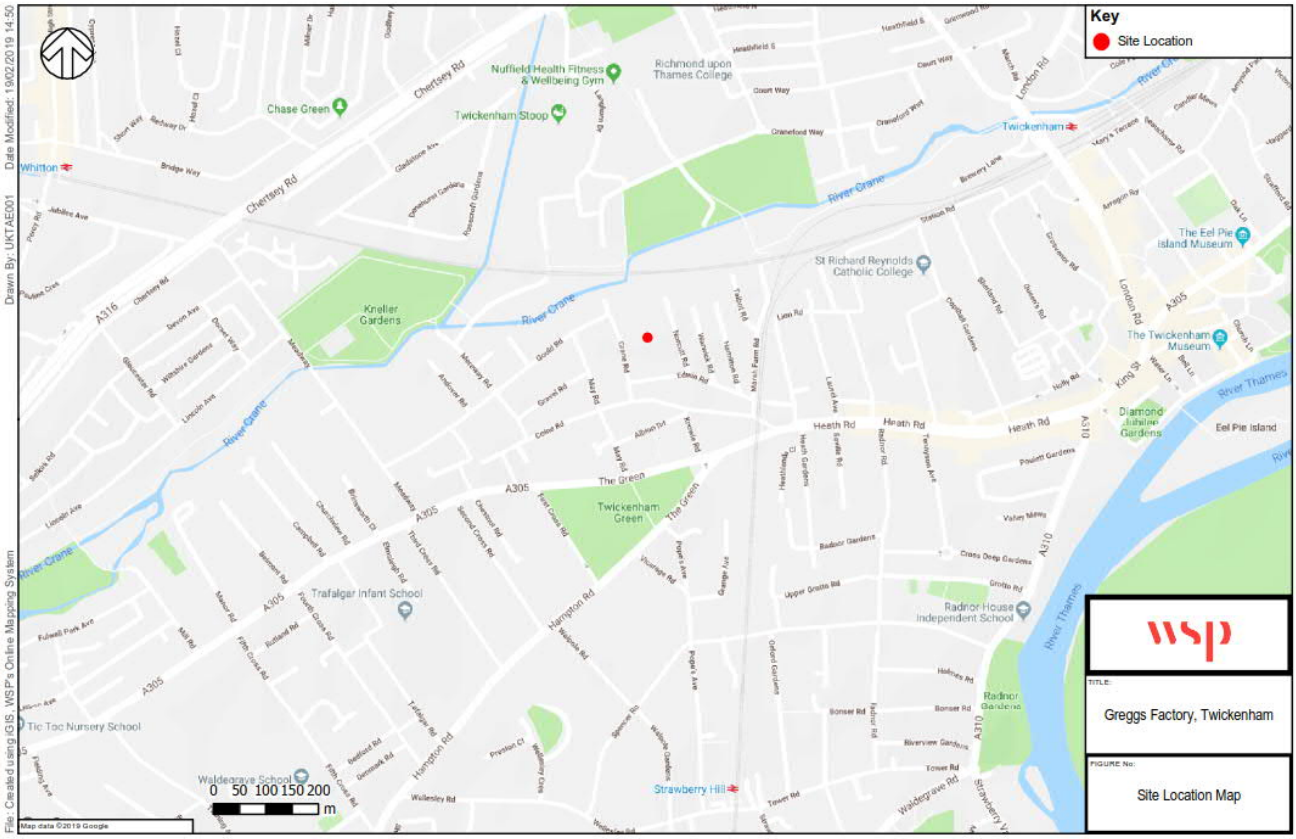
1.2.1. The site measures approximately 1.1 hectares and currently comprises empty industrial units which were formerly occupied by Greggs Bakery until Greggs vacated in 2016. Since then, the site has remained vacant. The site is situated between two residential streets, Crane Road and Norcutt Road, bordered by Edwin Road to the south, and wrapping around Crane Road to the north.

1.2.2. The infrastructure associated with the former use includes a number of offices, sheds, production buildings and areas of hardstanding, with two tall silos located towards the Edwin Road entrance. The site boundary also includes the existing end-of-terrace house Number 2 Gould Road.

1.2.3. There is an existing vehicle access from Crane Road that enters into a parking area, with an HGV service access point located towards the south of the site along Edwin Road, providing access to a service yard. When fully operational as a factory, this service yard was utilised by large rigid HGVs from early in the morning and throughout the rest of a typical day.

1.2.4. The site location is shown in Figure 1-1.

Figure 1-1 - Site Location



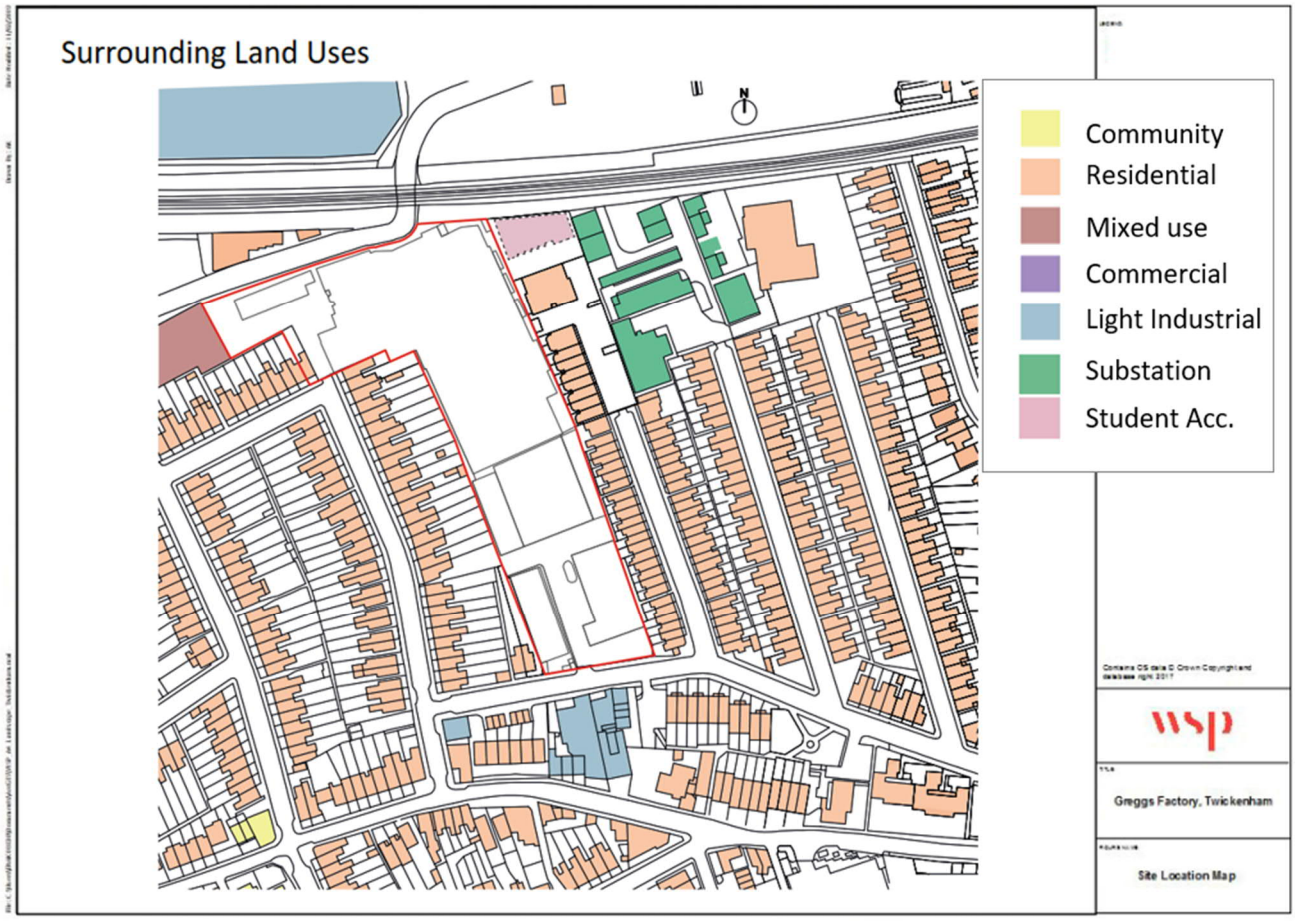
1.2.5. The area surrounding the site is predominantly residential, with some commercial and light industrial buildings interspersed within the vicinity.

1.2.6. The area to the south of the site includes car servicing garages and workshops, whilst the River Crane flanks the site to the north. Immediately west of the site is Crane Mews, previously a redundant factory building which has been reused and developed to create a gated mews development.

1.2.7. Twickenham Railway Station, operated by South Western Railway provides a number of services to and from London Waterloo and the south west. In addition, several bus services are accessible within circa 250 to 500m walk of the site along Heath Road

1.2.8. Figure 1-2 provides an illustration of the varying land uses within the vicinity of the site.

Figure 1-2 - Surrounding Land Uses



1.3 PROPOSED DEVELOPMENT

1.3.1. The proposed development will see the demolition of the existing structures on-site (aside from no.2 Gould Road) and construction of 116 residential dwellings, with associated landscaping, parking and amenity space, and a commercial unit with a GIA of approximately 175 sqm in its place.

1.3.2. The full details of the proposed development are outlined within Section 2 of this report.

1.4 PLANNING BACKGROUND & PRE-APPLICATION DISCUSSIONS

1.4.1. An earlier proposed design for a residential-led development for the site was discussed at a pre-application meeting with LB Richmond in September 2017. The original scheme comprised 52x 3-bedroom homes and 66x 1 and 2-bed apartments.

1.4.2. The design has since evolved to respond to comments made by the borough, and a revised 116-unit scheme has been prepared to achieve high quality design and make efficient and effective use of the site. Subsequent pre-application discussions were held with LB Richmond upon Thames on 10th January 2019, and advice and design clarification duly sought from the relevant Case and Highways

Officers at LB Richmond. Feedback from the pre-application consultation has informed the design development and the content of this report.

1.5 REPORT STRUCTURE

1.5.1. This TA has been prepared in accordance with Transport for London's (TfL) latest Transport Assessment and Travel Planning Guidance.

1.5.2. This report has been prepared to outline the transport implications of the proposed development and will follow the following structure:

- Chapter 2 – Development Proposals
- Chapter 3 – Policy Context
- Chapter 4 – Baseline Conditions
- Chapter 5 – Trip Generation
- Chapter 6 – Impact Assessment
- Chapter 7 – Delivery & Servicing
- Chapter 8 – Summary & Conclusions

1.5.3. For ease of reference, a suite of larger figure drawings is appended to at the end of the report appendices, in Appendix H.

2 DEVELOPMENT PROPOSALS

2.1 INTRODUCTION

2.1.1. This chapter provides a description of the proposed development. It outlines how the site will be accessed by residents, visitors and employees and the scheme's compliance with planning policy.

2.2 DEVELOPMENT SCHEDULE

2.2.1. The proposed development will replace the unoccupied former Greggs Bakery. The proposed development seeks the demolition of existing structures on site and the erection of new residential dwellings comprising 116 units with associated cycle parking, car parking and amenity space.

2.2.2. The schedule of accommodation is summarised in Table 2-1 - Residential Development Accommodation Schedule and Table 2-2, Commercial Development.

Table 2-1 - Residential Development Accommodation Schedule

Dwelling Type	No. Units	Flats	Houses
1-bedroom	32	32	-
2-bedroom	35	30	5
3-bedroom	38	3	35
4-bedroom	11	-	11
Total	**116**	65	51

Table 2-2 - Commercial Development

Commercial Use Class	Floor Area (GIA)
B1 Office	175sqm

2.3 PROPOSED LAYOUT

2.3.1. A full copy of the Architect's proposed layout is provided in Appendix B, upon which some indicative vehicle swept-paths have been overlaid. The ground floor plan is shown in Figure 2-1.

2.3.2. As shown in Figure 2-1 the proposed development will facilitate two-way vehicle traffic on an internal road through the site, incorporating a shared-space design approach to encourage lower vehicular speeds, better driver attention and offer priority for non-motorised users. The approach is also intended to reflect the principles of a typical London Mews street which is further reinforced by the housing typologies included within the proposals.

2.3.3. A number of design interventions have been employed on the north-south mews street to reinforce the shared-space approach and hierarchy of users. For example, planters and landscaping features

will be located on the western edge (adjacent to the mews houses). This helps to direct vehicles away from structure and encourages lower speeds. In addition, whilst the clear width (between driveways on the eastern side and planters on the western side available for all users is between 6.0m and 6.2m, the surface treatment will indicate a narrower section of 4.0m width, the aim of which is to give drivers a narrower path to keep to.

2.3.4. These design interventions and the design itself results in an environment where low speeds are encouraged, non-motorised users have priority and where there is sufficient space to allow different users to safely pass each other (for example, a car can pass a stationary refuse vehicle, and pedestrians and cyclists can navigate without having deviate or stop to allow vehicles to pass).

2.3.5. A total of 115 car parking spaces (of which 12 will be accessible spaces) will be provided for the residential development, either as part of communal parking areas to the north of the site, driveway parking spaces or garage parking. This provision of spaces is within the Council's maximum parking standards. There will also be one accessible parking bay for the commercial element of the development.

Figure 2-1 - Proposed Development Ground Floor Layout

2.4 ACCESS STRATEGY

ACCESS RETENTION & INTERNAL ROAD

2.4.1. There are currently two vehicular access points to the site; one from Edwin Road to the south, and one to the north from the corner of Gould Road and Crane Road. The former was primarily used to accommodate larger operational HGV's associated with the site's former industrial use, with the latter generally used for staff and visitor parking.

2.4.2. The proposed development will largely retain the two existing access points, albeit with changes to the entry treatment. The southern access from Edwin Road will be located slightly further west of the existing access. This driven by the internal site layout which itself is driven by the need to avoid building over a main sewer which runs through the site in a north-south alignment.

2.4.3. The proposed entry treatments would reinstate the footway across each access with the vehicular accesses being akin to crossovers rather than formal junctions. This approach would return priority to pedestrians. Structures within at the site accesses such as boundary walls are designed to a maximum height of 0.6m in accordance with Manual for Streets (DfT, 2007) guidance on visibility. The detailed design of the two accesses would be the subject of discussions with the highway authority and be the subject a s278 agreement.

2.4.4. The **northern** access will lead directly to areas of interspersed formal car parking and landscaping for residents within apartments which are planned to the north of the site.

2.4.5. The **southern** access will open onto a north-south orientated mews with a mix of driveway and garage parking.

2.4.6. The internal route throughout the site is designed to be two-way. Having a two-way internal link delivers three key benefits compared to a one-way system or two unconnected separate accesses:

- No need for turning heads – which may otherwise take up significant space and create unnecessary reversing manoeuvres which for larger vehicles (such as a refuse collection vehicle) can lead to potential conflicts and risks to pedestrian safety;
- Provides a clear and legible route for emergency vehicles; and
- Removes the need for 'long-way-round' traffic movements – which might otherwise occur in a one-way system.

PEDESTRIAN CONNECTIVITY & ACCESSIBILITY

2.4.7. The footways in proximity of the site are well-lit and well-connected. The removal of the existing access gates and provision of an internal shared-space facilitates pedestrian accessibility through the site, and enhances connectivity to the River Crane to the north. Though the applicant does not intend to offer up any of the internal routes for adoption, there is no intention to gate either access and as such, neighbours and members of the public would be able to walk through the site.

2.4.8. The boundary treatment of the southern entrance will allow for the footway on Edwin Road to continue across the access, with pedestrians crossing having right of way over vehicle traffic. In this respect, the proposed configuration of the southern access will act more as a crossover than a formal junction. The northern access adjoining Gould Road and Crane Road, will also be a shared pedestrian and vehicle entrance. Again, pedestrians crossing will have right of way over vehicle traffic using the access.

2.5 DELIVERIES & SERVICING

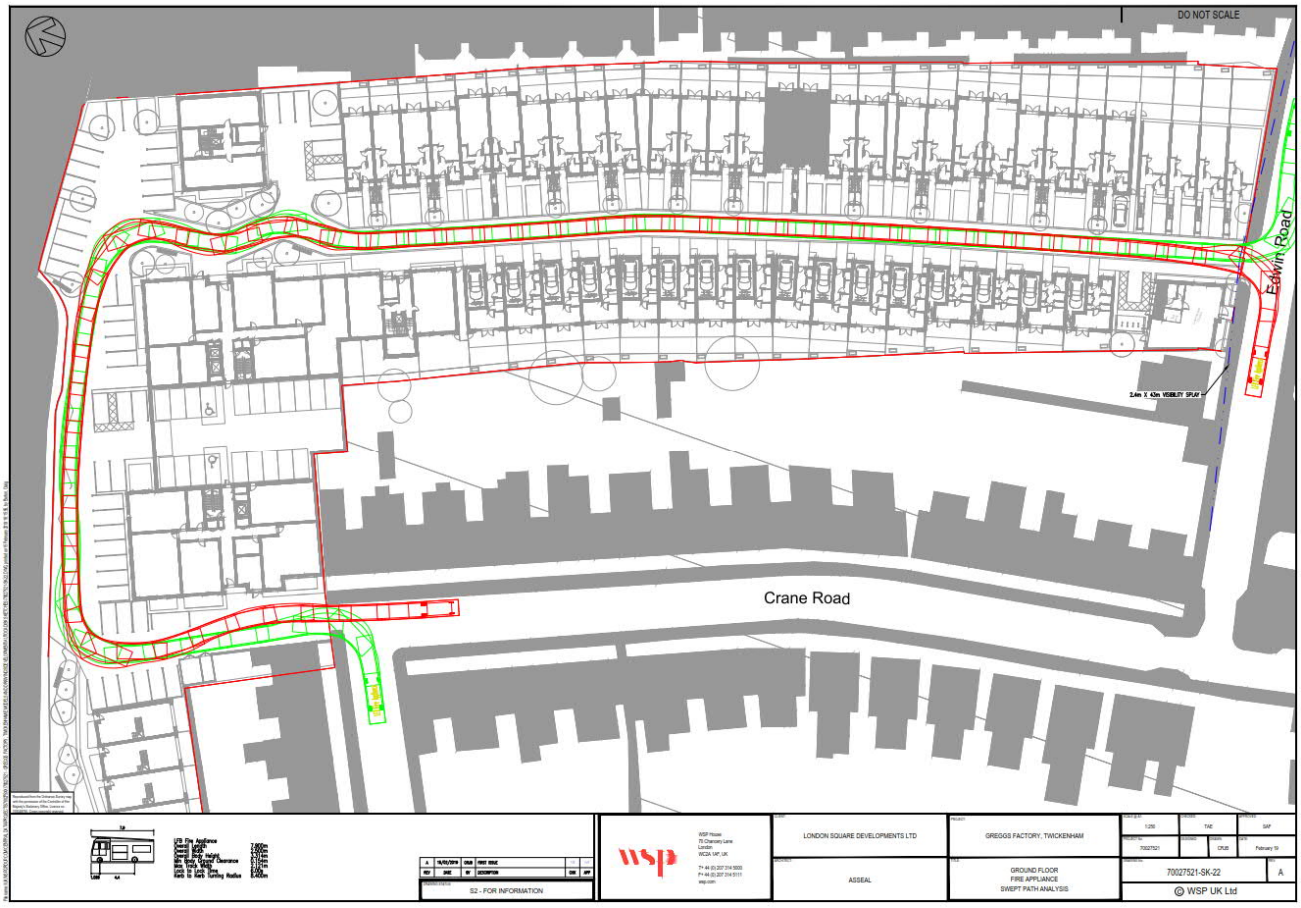
2.5.1. The proposed internal road will enable all refuse collection, residential deliveries and maintenance vehicles to access and collect from within the site. As shown by the swept path analysis contained within Appendix B, two vehicles can safely pass one another and a stationary service vehicle (such as a refuse collection vehicle) can be safely passed by another car.

2.5.2. The two-way access road ensures that all service vehicles will be able to access and egress the site in a forward gear and negates the need to provide dedicated turning heads or for HGVs to undertake reverse manoeuvres which is discouraged by the Health and Safety Executive. Deliveries and servicing for the proposed development are outlined in further detail in Section 7 of this report.

EMERGENCY VEHICLE ACCESS

2.5.3. Emergency vehicles will be able to access and egress the site in a forward gear and gain access to all parts of the site at all times. This has been validated through a vehicle tracking swept-path assessment.

Figure 2-2 - Emergency Vehicle - Fire Appliance Swept-Path



2.6 PARKING

CAR PARKING

2.6.1. The proposed development will include 115 car parking spaces for residents of which 12 which will be accessible bays. This blue-badge provision is the equivalent of 10.3% of all dwellings, which satisfies policy T6.1 (Residential Parking) of the draft London Plan (August 2018).

2.6.2. Car Parking provision is summarised in Table 2-3

Table 2-3 - Proposed Development Car Parking Provision

Land Use	Units / GIA (m2)	Standard Parking Spaces	Disabled Parking Spaces
Residential (C3)	116 units	103	12
Office (B1)	1 unit (175sqm)	-	1
Total	**-**	**103**	**13**

2.6.3. Within the site, a clear minimum carriageway width of 6.0 to 6.2m will be maintained to allow for access and egress to residential garages and driveways.

2.6.4. As per the draft London Plan guidance, at least 20 per cent of spaces will have active charging facilities, with passive provision for the remaining spaces.

PARKING PROVISION SUITABILITY

2.6.5. In order to assess the suitability of the proposed parking provision for the number of proposed dwellings, the 2011 Census data for car or van ownership by household within the ward the development is situated in (Richmond Ward 14) has been analysed. The results are indicated in Table 2-4.

Table 2-4 - 2011 Census Data - Car or Van Availability Richmond Ward 14

Richmond upon Thames Ward 014	% of households
No cars or vans in household	30%
1 car or van in household	52%
2 cars or vans in household	16%
3 cars or vans in household	2%
4 or more cars or vans in household	0%
TOTAL	100%

2.6.6. The local car ownership suggests that around 70% of existing households do own one or more cars. The average number of cars per household for the ward is 1.13. Applying these percentages to calculate an overall number of cars, gives a total of 105 vehicles. Whilst this is below the number of spaces provided, it ensures that all parking generated by the development would, in all likelihood, be contained within the site, thus mitigating any potential impact upon existing residential parking in the surrounding residential roads. The risk of overspill parking is of particular concern amongst neighbouring residents and this was echoed during the course of the public consultation exercises.

2.6.7. Additionally, the extant parking on surrounding roads is predominantly residential, with Edwin Road, Crane Road and Gould Road now within Controlled Parking Zone (CPZ) “WT”, which operates Monday to Friday 0830-1830, excluding public and bank holidays. A map of the zone is provided in Section 4 of this report.

2.6.8. To further mitigate the impact of the development within this zone, the developer will commit that all future office tenants and residential occupants will be prohibited from obtaining a permit within this zone. On this basis, it is considered that the parking impact of the proposed development will be of nil-detriment to the surrounding streets and the existing CPZ in enforcement. Though there is no CPZ west of this zone, it is considered the combination of the permit-free agreement and on-site parking provision should act as a sufficient means of mitigating the risk of overspill parking.

2.6.9. There are no opportunities for adhoc or illegal parking within the internal road, given this would clearly block garages and driveways. This is fundamental part of the proposed design. Parking will only be available for residents within the garages, driveways or communal parking areas to the north of the site. The communal parking will be allocated and leased to individual dwellings to comply the with London Plan requirements.

2.6.10. There will be no visitor parking provision as part of the development.

2.6.11. All blue-badge spaces will only be available for blue-badge holders. In the event a blue-badge space is not required, it will not be made available to non-blue-badge holders.

CAR CLUB

2.6.12. The developer will look to promote active and sustainable travel. LB Richmond upon Thames advocates car clubs as an alternative to private cars, as outlined on the Council website:

> *"Car Clubs encourage people to forego private car ownership and they are also attractive to people that make very limited use of a car. While not having the expense of buying, insuring and maintaining their own vehicle, members have access to a car. Research has shown that car club cars replace between 6 to 20 privately-owned vehicles".*

2.6.13. Zipcar and Enterprise Car Club are the two car club providers affiliated with LB Richmond upon Thames and have been contacted to ascertain the possibility of providing an additional car club bays in the area surrounding the site. Both providers expressed an interest in working alongside the developer to provide a car club bay and membership for the proposed development.

2.6.14. The location of the prospective bay is yet to be agreed, however it is anticipated it could be situated along Edwin Road.

2.6.15. The new car club bay facilitated by the development would not be exclusively for the use of residents at the site, and would thus provide a communal benefit for surrounding residential properties. The implementation of the car cub bay would be agreed with the developer, car club provider and Local Authority and secured by s106 agreement.

CYCLE PARKING

2.6.16. Cycle parking provision has been calculated in accordance with the latest emerging draft London Plan standards, to which LBRuT subscribes as outlined through the borough Local Plan. Cycling as a mode of transport within the borough is a key and widely-used mode of sustainable transport, as evidenced by the higher "Inner London" London Plan cycle standards required in Richmond as outlined in section 10.5.2 of the draft London Plan, despite being an outer London borough geographically.

2.6.17. Table 2-5 details the proposed cycle parking provision for the development by land use. This is based on the floor areas and unit numbers provided in Table 2-3 and the emerging London Plan minimum cycle parking standard.

Table 2-5 - Proposed Development Cycle Parking Spaces

Land Use	Long Stay	Short Stay
Residential (C3)	216	3
Office (B1)	6	2
Total	**222**	**5**

2.6.18. Cycle parking will be provided for employees, residents and their visitors. Long-stay provision will be secure, weatherproof, conveniently located, well-lit and accessible.

2.6.19. It is proposed that long stay residential cycle parking is provided within the boundary of each house. Cycle parking for the apartments will be provided in dedicated secure cycle stores. Access to these will be monitored by CCTV. The design options for cycle parking take into account the varied dwelling layouts, with a mixture of internal garage cycle racks and secure external cycle lockers on property driveways.

2.6.20. The short stay residential cycle spaces will be provided by means of Sheffield stands within the public realm.

2.6.21. For office workers, cycle parking will be provided within a secure and sheltered store adjoining the office building, immediately accessible by the entrance. The short stay cycle spaces associated with the non-residential uses will be provided by means of Sheffield stands, and will be provided in the public realm for all the land uses at the site.

3 POLICY CONTEXT

3.1 INTRODUCTION

3.1.1. The transport policy reviewed includes the following:

National Policy

- National Planning Policy Framework (2019); and
- National Planning Practice Guidance (2014).

Regional Policy

- Draft London Plan (2018); and
- London Plan (2016).

Local Policy

- Richmond Local Plan (2018);

3.2 NATIONAL POLICY

NATIONAL PLANNING POLICY FRAMEWORK (FEBRUARY 2019)

3.2.1. The National Planning Policy Framework, (NPPF) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be prepared.

3.2.2. Chapter 9 - Promoting Sustainable Transport, outlines the requirements of development applications, it must be ensured that:

- appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- safe and suitable access to the site can be achieved for all users; and
- any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

3.2.3. The document also provides details on what developments should do to minimise the impact on the road network:

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

3.2.4. Travel Plans (TPs) should be provided for all developments which generate significant amounts of movement.

PLANNING PRACTICE GUIDANCE (MARCH 2014)

3.2.5. The Planning Practice Guidance, (PPG) was published in March 2014, offering updated and revised guidance on planning where necessary.

3.2.6. The PPG provides additional guidance to supplement the planning policies contained in the NPPF.

3.2.7. The guidance on Transport Assessments (TAs) refers back to Paragraph 32 of the NPPF, and there are no major changes from previous guidance on scope or content.

3.2.8. Paragraphs 14 and 15 of the NPPG states that the scope of a TA should include the following:

- An overview of the planning context relating to the Proposed Development;
- Details of the Proposed Development layout and access arrangements by all transport modes;
- A description of the existing land uses within the site and the surrounding area, as well as public transport provision (including proposed changes);
- Data relating to existing traffic flows on the links and junctions around the Site, with flows broken down by vehicle type;
- Details of the methodologies used to determine the anticipated trip generation and trip distribution for the Proposed Development;
- An assessment of the forecast transport impacts of committed schemes in the vicinity of the development;
- Personal Injury Accident (PIA) data analysis for the past three years, or the past five years if the area is identified as having a high accident rate;
- Details of existing parking in the area and the proposed parking strategy for the development; and
- Measures to mitigate the residual transport impacts of the proposed development.

3.2.9. Whilst this development site is below the threshold required for a Transport Assessment, a comprehensive Transport Statement has been prepared, broadly including the information outlined above.

3.3 REGIONAL POLICY

THE LONDON PLAN (2016)

3.3.1. The London Plan is the overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 2036. It forms part of the development plan for Greater London. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor.

3.3.2. The London Plan aims to ensure that London's transport is easy, safe and convenient for everyone. It states that London should be a city where it is easy, safe and convenient for everyone to access jobs, opportunities and facilities with an efficient and effective transport system which actively encourages more walking and cycling and makes better use of the Thames.

3.3.3. Policy 6.1 states the importance of closer integration of transport and development and hopes to encourage this by (inter alia):

- *"Encouraging patterns of development that reduce the need to travel, especially by car;*
- *Seeking to improve the capacity and accessibility of public transport, walking and cycling, particularly in areas of greatest demand;*
- *Supporting development that generates high levels of trips only at locations with high levels of public transport accessibility, either currently or via committed, funded improvements;*
- *Improving interchange between different form of transport, particularly around major rail and underground stations, especially where this will enhance connectivity in outer London;*
- *Facilitating the efficient distribution of freight whilst minimising its impacts on the transport network;*
- *Supporting measures that encourage shifts to more sustainable modes and appropriate demand management;*
- *Promoting greater use of low carbon technology so that CO2 and other contributors to global warming are reduced;*
- *Promoting walking by ensuring an improved urban realm; and,*
- *Seeking to ensure that all parts of the public transport network can be used safely, easily and with dignity by all Londoners, including by securing step-free access where this is appropriate and practicable."*

3.3.4. Policy 6.3, regarding the effects of development on transport capacity, states that new developments that will give rise to significant numbers of new trips should be located either where there is already good public transport provision with capacity adequate to support the additional demand, or where such high-quality provision is being introduced. The phasing of development, the use of Travel Plans, and addressing freight issues, may all help reduce the impact of the development.

3.3.5. Policy 6.7 considers improvements to streets and surface transport. At the strategic level it is stated that the Mayor will work with the boroughs to implement improvements to the quality of bus, bus transit and tram services. At the local level the Development Planning Documents should promote these transport systems through a number of measures including ensuring direct, secure, accessible and pleasant walking routes to bus stops.

3.3.6. Policy 6.9 refers to cycling and the requirement for developments to provide secure, integrated and accessible cycle parking facilities in line with the minimum standards in order to work towards a 5% cycle mode share by 2026. The minimum cycle parking requirements are set out in Table 6.3 in the adopted London Plan.

3.3.7. With regard to parking, policy 6.13 states that an appropriate balance must be struck between promoting new development and preventing excessive car parking provision that can undermine cycling, walking and public transport use. Any development providing off-street parking should provide at least two bays designated for 'blue badge' holders.

DRAFT LONDON PLAN (2018)

3.3.8. The Draft London Plan is not expected to be adopted until Autumn 2019, and has not yet been the subject of public examination, and accordingly, although it will be a material consideration for planning purposed the formal weight it can be afforded will be limited in that regard. However, the draft Local Plan has been reviewed in the context of the proposed development and the likely future

direction of transport matters as it is considered best practice to inform proposals by London's vision for the future.

3.3.9. The document aims to ensure that London's transport is easy, safe and convenient for everyone and encourages the use of public transport and for people to walk and cycle more. The Draft London Plan picks up on the Mayor's target, as set out in Policy T1, that 80% of all trips in London are to be made by foot, cycle or public transport by 2041.

3.3.10. The Draft London Plan recognises that London's challenges of guaranteeing its status as an efficient, well-functioning, globally competitive city are intertwined with the obstacles and opportunities that transport brings. It states that integration of land use and transport is essential in realising and maximising growth and ensuring that different parts of the city are connected in a sustainable and efficient way.

3.3.11. In order to achieve this, the Draft London Plan acknowledges that a strategic shift is needed to reduce Londoners' dependency on the car, creating a healthy, pleasant and sustainable street environment in which people can walk, cycle and use public transport.

3.3.12. Policy T2: Healthy Streets, outlines that development proposals should:

- demonstrate how they will deliver improvements that support the 'Healthy Streets' indicators in line with TfL guidance, as shown in Figure 3-1;
- reduce the dominance of vehicles on London's streets whether stationary or moving; and
- be permeable by foot and cycle and connect to local walking and cycling networks as well as public transport.

Figure 3-1 - Healthy Streets Indicators

Source: Lucy Saunders

3.3.13. Policy T4, 'Assessing and Mitigating Transport Impacts' states that:

> *"development proposals should reflect and be integrated with current and planned transport access, capacity and connectivity. It is acknowledged that transport assessments should be submitted with development proposals where appropriate"*; and

"focus on embedding the Healthy Streets approach within, and in the vicinity of the new development".

3.3.14. The Draft London Plan focuses heavily on improving infrastructure and facilities for cycling and subsequently increasing its mode share across London. Policy T5: Cycling, recognises that access to secure cycle parking is vital to achieve these goals and as such, all new development in the city must provide convenient and accessible cycle parking in line with minimum standards. Regarding short stay cycle parking, this *"must be available for shoppers, customers, messengers and other visitors, and must be convenient and readily accessible. It must have step-free access and be located within 15m of the main entrance wherever possible'*.

3.3.15. It is acknowledged that the dominance of vehicles on streets is a significant barrier to walking and cycling, and reduces the appeal of streets as public places. To manage London's road network, align with the Healthy Streets Approach and ensure that people and businesses can move about as the population grows, new car parking provision must be carefully controlled.

3.3.16. The minimum cycle parking standards are shown in Table 3-1.

Table 3-1 - Draft London Plan minimum cycle parking standards

Use	Long-stay	Short-stay
Residential	1 space per studio 1.5 spaces per 1 bedroom unit 2 spaces per all other dwellings	1 space per 40 units
Office	areas with higher cycle parking standards: 1 space per 75 sqm. Rest of London: 1 space per 150 sqm. (GEA).	first 5,000 sqm: 1 space per 500 sqm thereafter: 1 space per 5,000 sqm (GEA)

**A1 non-food retail*

3.3.17. Policy T6: Car Parking, states that parking should be restricted in line with existing and future public transport accessibility and connectivity. Car-free development should be targeted in places that are well-connected, whilst development elsewhere should be designed to provide the minimum necessary parking ('car-lite'). Where parking is provided, electric vehicle charging should be implemented.

3.3.18. Appropriate provision should also be made for Blue Badge holders. At residential developments it is proposed that at least one designated disabled persons parking bay per dwelling is available for 3% of dwellings from the outset, with capacity for up to 10% if demand requires. All non-residential elements of a development should provide at least one disabled parking bay.

3.3.19. The draft London Plan also specifies that the level of cycle parking provision is dependent on the local of the destination, identifying that the central and inner London boroughs, plus Richmond, Merton, Kingston, Hounslow, and Barking & Dagenham have higher percentages of workplace, leisure and shopping trips made by cycle (see section 10.5.2). As such, the minimum standards for short-stay cycle parking for Class A uses and long-stay cycle parking for employees for office use, in these boroughs are set at twice the level as the rest of London boroughs,

3.4 LOCAL POLICY

LB RICHMOND LOCAL PLAN (JULY 2018)

3.4.1. The London Borough of Richmond upon Thames Local Plan sets out the strategic framework for the borough from 2018 to 2033. The Local Plan contains the strategic vision and objectives for the borough, as well as the policies and site allocations that will guide the future development of the borough.

3.4.2. There are three key strategic objectives of the Local Plan, the guidance within which sets out the key sustainability issues facing the borough, and the key principles through which to deliver change:

- Protecting Local Character
- A Sustainable Future
- Meeting Peoples Needs

3.4.3. The strategic objectives of the Local Plan have been considered through both the design and approach to transport in the development proposals.

3.4.4. Encouraging sustainable transport, walking and cycling forms a key focus within the borough's approach to "A Sustainable Future", as outlined in Chapter 3 of the Spatial Strategy, some relevant sections of which are outlined herein:

> *3.1.17*
>
> *To reduce environmental impacts, including air pollution and congestion, and to maximise opportunities for health and promoting active lifestyles, the Council will continue to work with its partners to improve and promote safe, sustainable and accessible transport choices, including public transport, cycling and walking. Focusing development in the main centres of the borough (i.e. Richmond and Twickenham as well as Teddington, East Sheen and Whitton) will result in sustainability benefits, including a reduction in the need to travel by car and also mitigate the effects of development pressure on the rest of the borough. A main element of the Spatial Strategy is to promote cycling and walking, which contribute significantly towards creating an attractive and pleasant environment, which has been shown to be not only beneficial to an individual's health and social life, but also to bring economic benefits to the borough's centres*

3.4.5. In considering suitable locations for housing development, the Local Plan outlines a clear emphasis for utilising brownfield sites in areas of good transport accessibility in meeting the borough's housing target, the relevant sections for which are extracted herein:

> *3.1.28*
>
> *The housing target for the borough is set out in the London Plan, with 315 dwellings per annum to be provided for the period of 2015-2025. The Mayor of London will expect the Council to exceed this target. This Spatial Strategy and the policies of the Local Plan identify opportunities for development to come forward by optimising the use of sites, particularly in centres with good public transport accessibility and mixed use redevelopments.*
>
> *3.1.29*
> *The Local Plan is informed by an up to date borough-wide Strategic Housing Market Assessment (SHMA). This considers and assesses the local housing needs and has informed the housing policies as set out in this Plan. Affordable housing is a priority in the*

borough and is key to delivering the Spatial Strategy and the relevant strategic objective. Therefore, the Council will pursue all opportunities to maximise affordable housing through a range of measures, including providing more choice in the different types of affordable housing with the aim to provide for different levels of affordability.

3.4.6. Residential-led development within the borough is also guided by the Council's Monitoring Report on Housing:

3.1.30
This demonstrates that the Council can continue to meet its strategic housing target without building on or using greenfield sites. New housing will therefore be provided through redevelopment and optimising the use of brownfield sites. Higher density development will be sought in more sustainable locations, such as the borough's centres and areas better served by public transport, subject to compatibility with the surroundings and local context, respecting the quality, local character, including heritage value, and amenity of existing neighbourhoods and villages.

3.4.7. Chapter 11 of the Local Plan pertains specifically to Transport, through Policy LP44 *"Sustainable Travel Choices*" and Policy LP45 *"Parking Standards and Servicing",* the respective guidance for which is illustrated herein.

Policy LP 44

Sustainable Travel Choices

The Council will work in partnership to promote safe, sustainable and accessible transport solutions, which minimise the impacts of development including in relation to congestion, air pollution and carbon dioxide emissions, and maximise opportunities including for health benefits and providing access to services, facilities and employment. The Council will:

A. Location of development

Encourage high trip generating development to be located in areas with good public transport with sufficient capacity, or which are capable of supporting improvements to provide good public transport accessibility and capacity, taking account of local character and context.

B. Walking and cycling

Ensure that new development is designed to maximise permeability within and to the immediate vicinity of the development site through the provision of safe and convenient walking and cycling routes, and to provide opportunities for walking and cycling, including through the provision of links and enhancements to existing networks.

C. Public transport

Ensure that major new developments maximise opportunities to provide safe and convenient access to public transport services. Proposals will be expected to support improvements to existing services and infrastructure where no capacity currently exists or is planned to be provided.

Protect existing public transport interchange facilities unless suitable alternative facilities can be provided which ensure the maintenance of the existing public transport operations. Applications will need to include details setting out how such re-provision will be secured and provided in a timely manner.

D. The road network

Ensure that new development does not have a severe impact on the operation, safety or accessibility to the local or strategic highway networks. Any impacts on the local or strategic highway networks, arising from the development itself or the cumulative effects of development, including in relation to on-street parking, should be mitigated through the provision of, or contributions towards, necessary and relevant transport improvements.

In assessing planning applications the cumulative impacts of development on the transport network will be taken into account. Planning applications will need to be supported by the provision of a Transport Assessment if it is a major development, and a Transport Statement if it is a minor development.

E. River transport

Encourage the use of the River Thames for passenger and freight transport through the protection of, improvement to, and provision of new relevant infrastructure including wharves, slipways and piers.

F. Safeguarding of routes and facilities

Land required for proposed transport schemes as identified in the London Plan and the Council's Local Implementation Plan for Transport will be protected from developments which would prevent their proper implementation.

Local filling stations and supporting services such as car repair facilities will be protected from redevelopment for alternative uses unless exceptional circumstances can be demonstrated that warrant their loss.

3.4.8. Through the implementation of new development , there is a clear emphasis on incorporating sustainable infrastructure into design, across "Waking, cycling and public transport":

11.1.4

Developments should encourage the use of modes other than the car by making it as easy as possible through provision of good pedestrian facilities, clear layout and signage, provision of cycling facilities and improving access to public transport interchanges. Civic spaces and public realm should be accessible and inclusive. A good walking environment has been shown to be beneficial to an individual's health and social life, but also to bring economic benefits to the borough's centres.

11.1.5.

Cycling and walking contributes significantly towards creating an attractive and pleasant environment. New development should include all the facilities needed to encourage a safe walking and cycling environment from first occupation

Policy LP 45

Parking Standards and Servicing

Parking standards

The Council will require new development to make provision for the accommodation of vehicles in order to provide for the needs of the development while minimising the impact of car based travel including on the operation of the road network and local environment, and ensuring making the best use of land. It will achieve this by:

1. Requiring new development to provide for car, cycle, 2 wheel and, where applicable, lorry parking and electric vehicle charging points, in accordance with the standards set out in Appendix 3. Opportunities to minimise car parking through its shared use will be encouraged.
2. Resisting the provision of front garden car parking unless it can be demonstrated that:
   a. there would be no material impact on road or pedestrian safety;
   b. there would be no harmful impact on the character of the area, including the streetscape or setting of the property, in line with the policies on Local Character and Design; and
   c. the existing on-street demand is less than available capacity.
3. Car free housing developments may be appropriate in locations with high public transport accessibility, such as areas with a PTAL of 5 or 6, subject to:
   a. the provision of disabled parking;
   b. appropriate servicing arrangements; and
   c. demonstrating that proper controls can be put in place to ensure that the proposal will not contribute to on-street parking stress in the locality.

   All proposals for car free housing will need to be supported by the submission of a Travel Plan.
4. Managing the level of publicly available car parking to support the vitality and viability of town and local centres within the borough whilst limiting its impacts on the road network.

3.4.9. The parking standards as referred to in Policy LP45 are detailed for each use class in Appendix 3 of the Local Plan, the approach to which is outlined in Section 11.2.1:

11.2.1

The borough has high levels of car ownership and use within fairly densely development residential areas with some narrow streets and many older houses without off-street parking. This has led to high levels of on-street parking, worsened in areas where there is a demand for commuter parking. The standards set are maximum parking levels and car parkin provision should not be provided at a level less than these standards unless an exceptional circumstance is demonstrated. This approach aims to ensure that sufficient on-site car parking is provided to meet the needs of the occupiers of the new development, but also to ensure that excessive on-street parking demand is not created which could have an adverse impact on local highway/traffic conditions, street scene and impacts on making the best use of land.

3.4.10. The maximum car parking and minimum cycle parking standards for B1 (office) and C3 (residential) use classes as outlined in the Local Plan are indicated in Table 3-2 herein:

Table 3-2 - Richmond Local Plan Parking Standards

Use	Car Parking Standard	Cycle Parking Standard
Residential (C3)	PTALs 0-3: 1-2 bedroom, 1 space PTALs 0-3: 3+ bedrooms, 2 spaces PTAL's 4-6: as per London Plan, although local circumstances, CPZ times and on-street paring conditions will need to be assessed	As per London Plan
Office (B1)	As per London Plan *Servicing to be provided off-street unless in town or district centre*	As per London Plan

4 BASELINE CONDITIONS

4.1 INTRODUCTION

4.1.1. This chapter provides a review of the existing baseline transport conditions in the vicinity of the site in the context of the following:

- Pedestrian accessibility
- Cycle accessibility
- Local highway network
- Wider Parking Context
- Personal Injury Accidents (PIAs)
- Public Transport Accessibility (National Rail & London Buses)
- Car Clubs

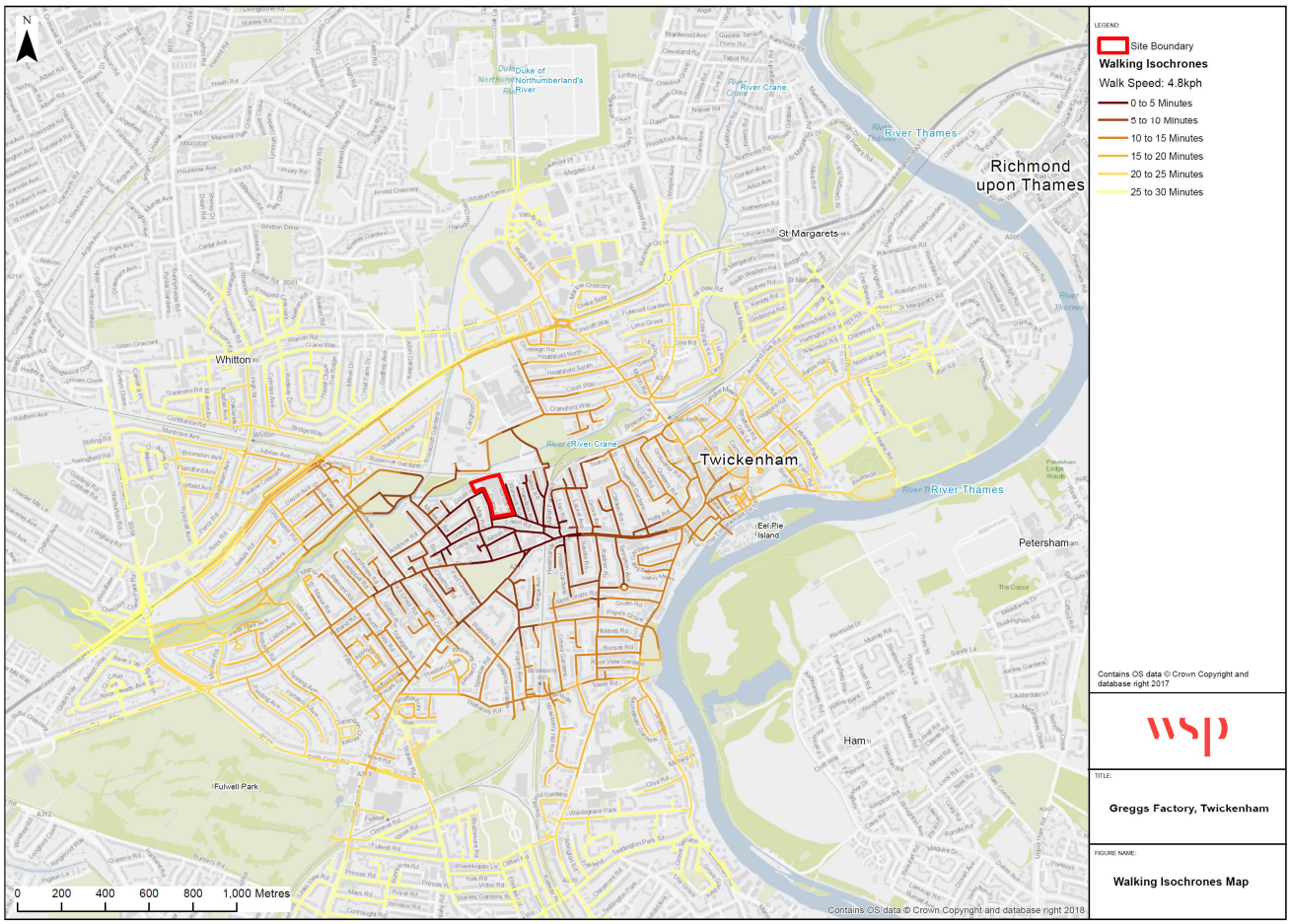
4.2 PEDESTRIAN ACCESSIBILITY

4.2.1. The footpaths and footways in proximity of the site are well-lit and well-connected. The site benefits from good footpath connectivity to the A305 The Green and Twickenham Railway Station. In addition to a range of public transport options, the site is also within walking distance of several local amenities and services, including London Road and King Street, thus reducing the need for residents to travel by private car.

4.2.2. A pedestrian isochrone map is shown in Figure 4-1**.** illustrating isochrones of walking bands based on 5-minute time intervals depicting 5,10,15, 20, 25 and 30-minute walk catchment areas from the development site, assuming a walk speed of 4.8 km/hr. Several points for transport connections are within proximity of the site, including Twickenham Station (Stop B) via Marsh Farm Road at 15 minutes (1.28 km), Twickenham Green bus stop (Stop GL) via Norcutt Rd and A305 at 7 minutes (640 m) and Twickenham Station bus stop via Marsh Farm Rd at 16 minutes (1.28 km). Strawberry Hill Railway station, to the south of the site, is around 16-minutes walk (1.28 km) from the site. Pedestrian footways and footpaths are generally provided on both sides of the streets in the vicinity.

4.2.3. The A305 Heath Road south of the site has dedicated Bus lane with Twickenham Green (Stops GC, GL, GM, GT) and Heath Road Grove Avenue (Stop GS and Stop GP) as the nearest bus stops from the site.

Figure 4-1 - Walking Accessibility



4.3 ACCESSIBILITY BY CYCLE

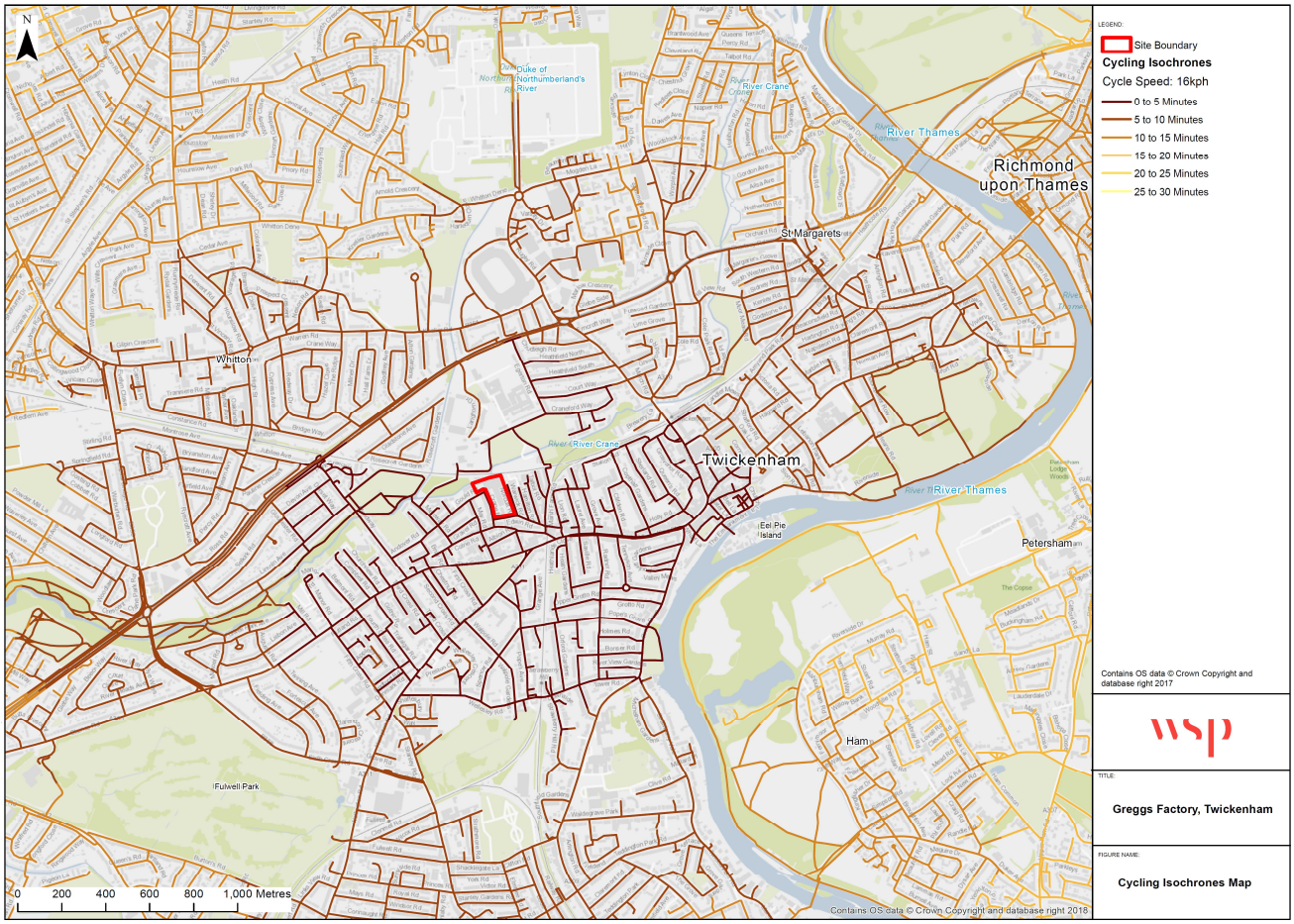
4.3.1. It is typically considered that cycling also has the potential to substitute for short car trips, particularly those less than five kilometres in length, and to form part of a longer journey by public transport. However, many people will cycle considerable distances depending on the weather, time of day, fitness and real or perceived safety / convenience.

4.3.2. A cycling isochrone map is shown in Figure 4-2, illustrating cycling band isochrones based on 5-minute time intervals depicting 5,10,15, 20, 25 and 30-minute cycling catchment areas from the development site, assuming a cycling speed of 16 km/hr. As the map details, the site is within a reasonable cycle distance of both Strawberry Hill, Twickenham Green and Heath Road, all of which provide access to a range of local amenities and services.

4.3.3. Twickenham Railway Station is a 6-minute (1.6 km) cycle ride, whilst Strawberry Hill Railway station which is further south of the site, is accessible via cycle in 5 minutes (1.28 km).

4.3.4. There is no dedicated cycling infrastructure in the vicinity to the site in terms of cycleways and cycle lanes, with cyclists sharing the adjoining carriageways for movement along with other modes of transport. Cycle parking stands are however provided along the A305 Heath Road, and a further 30 racks provided at Twickenham Railway Station.

Figure 4-2 - Cycling Accessibility



4.4 PUBLIC TRANSPORT CONNECTIVITY

4.4.1. The site benefits from reasonable public transport services in terms of railways and bus transit modes.

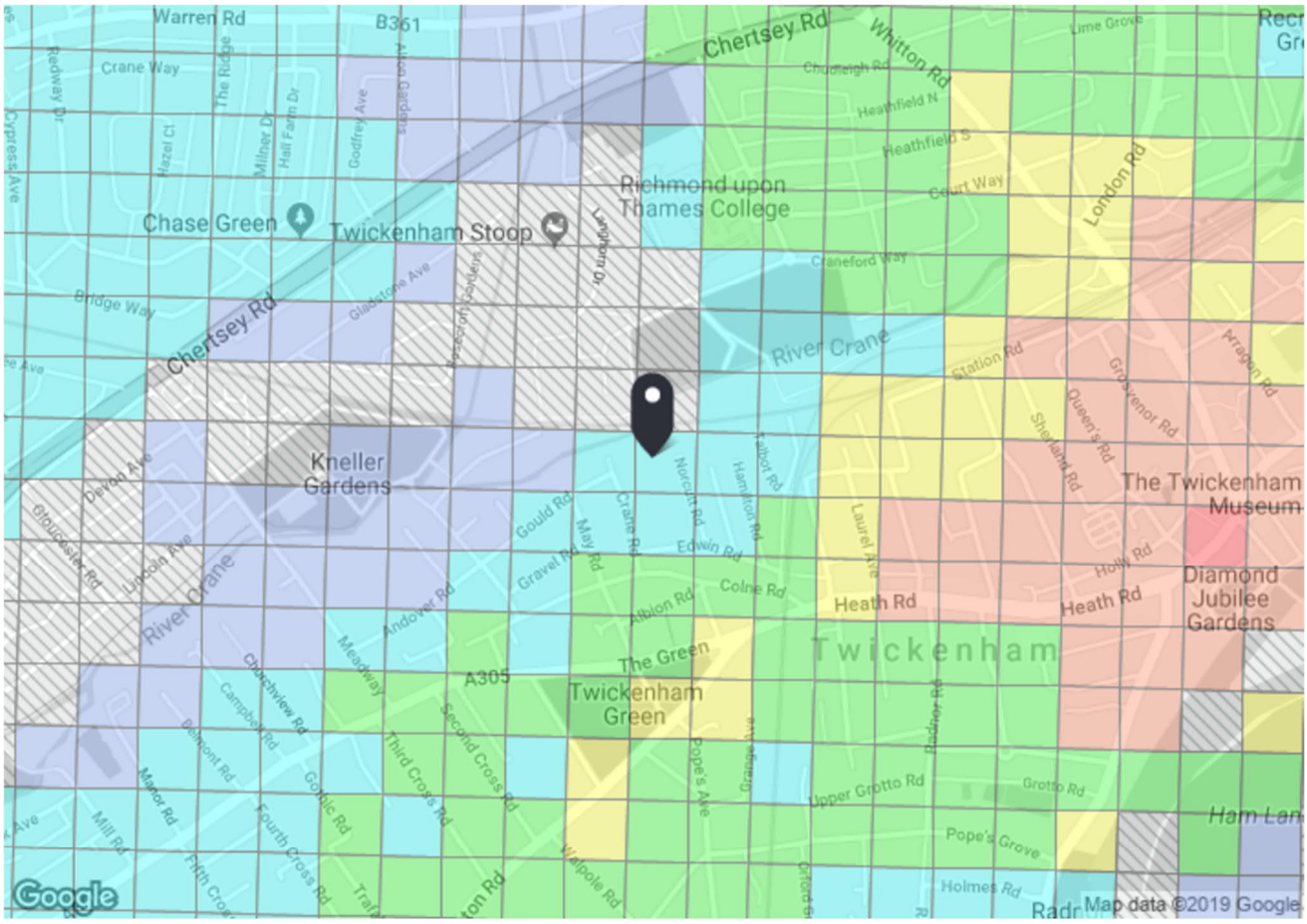
PTAL ASSESSMENT

4.4.2. The Public Transport Access Level (PTAL) methodology has been adopted by the Greater London Authority and TfL as a means of quantifying and comparing accessibility by public transport for a given site. The PTAL methodology takes into account service frequency and the time taken to access the public transport network, including:

- The walk time to various public transport services
- The average wait time for each service
- The reliability of each service

4.4.3. A PTAL map for the site is illustrated in Figure 4-3.

Figure 4-3 - PTAL Base Year



PTAL output for Base Year

2

Easting: **515326**, Northing: **173345**

Map key - PTAL

0 (Worst)	1a
1b	2
3	4
5	6a
6b (Best)	

Map layers

PTAL (cell size: 100m)

TRANSPORT FOR LONDON

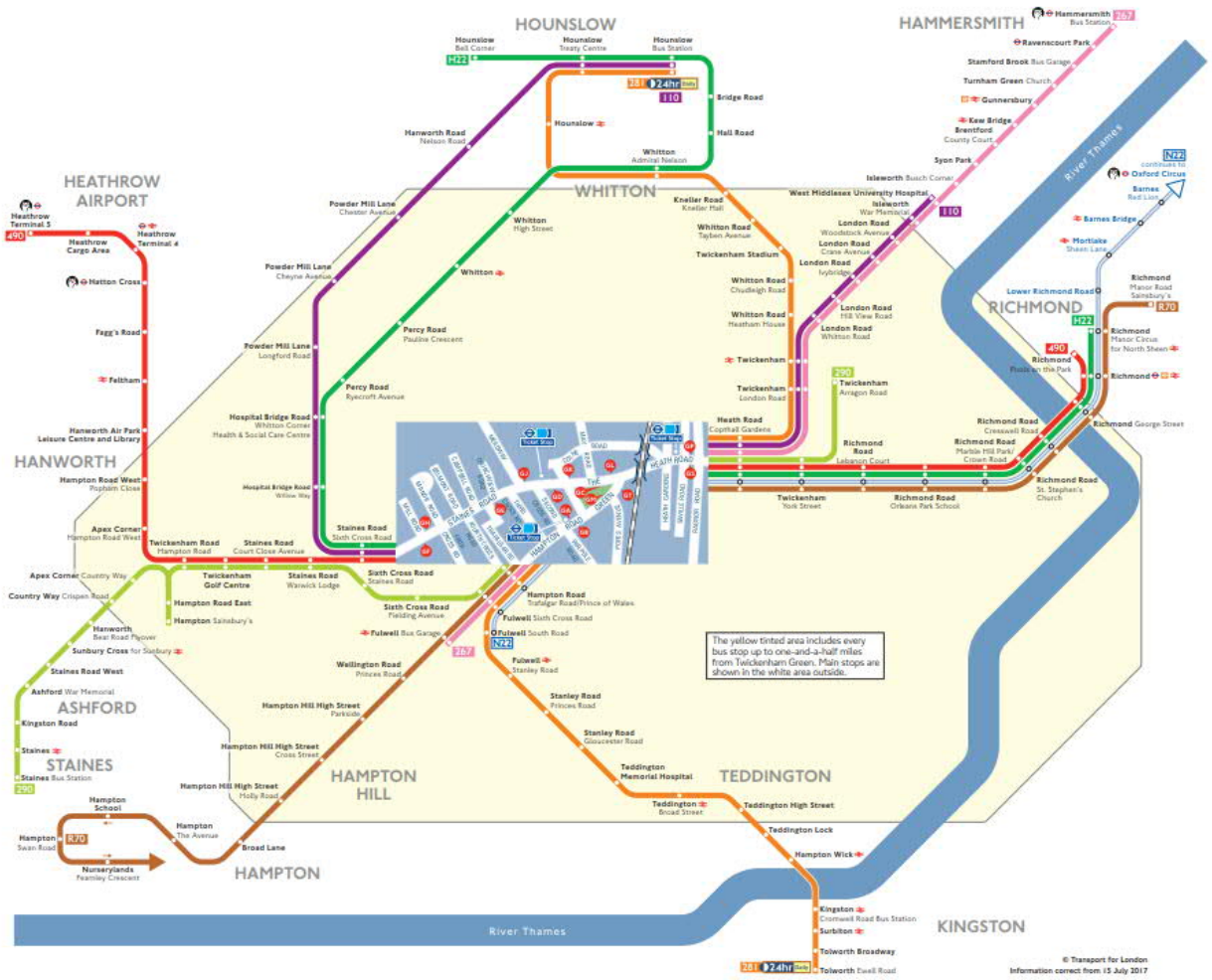
4.4.4. The site has a PTAL of 2, however this only accounts for two local bus stops and not the railway station, which is just outside of the PTAL catchment but is still within a reasonable walking distance. In this respect, PTAL is not the most representative measure of the site's accessibility. Moving just 200m to the east and PTAL levels rise to 4 and 5 close to the centre of Twickenham.

4.5 BUS NETWORK

4.5.1. The site benefits from a number of bus routes in the area, with the closest bus routes situated along Heath Road Grove Avenue (Stop GS), to the southeast of the site providing services towards Hounslow, Fulwell, Tolworth and Heathrow Airport.

4.5.2. A map illustrating the bus routes and stops in proximity to Twickenham Green, south of the site is depicted in Figure 4-4.

Figure 4-4 - Bus Stops & Routes



A summary of the frequent bus services available within 250-500m walking distance of the site are outlined in Table 4-1.

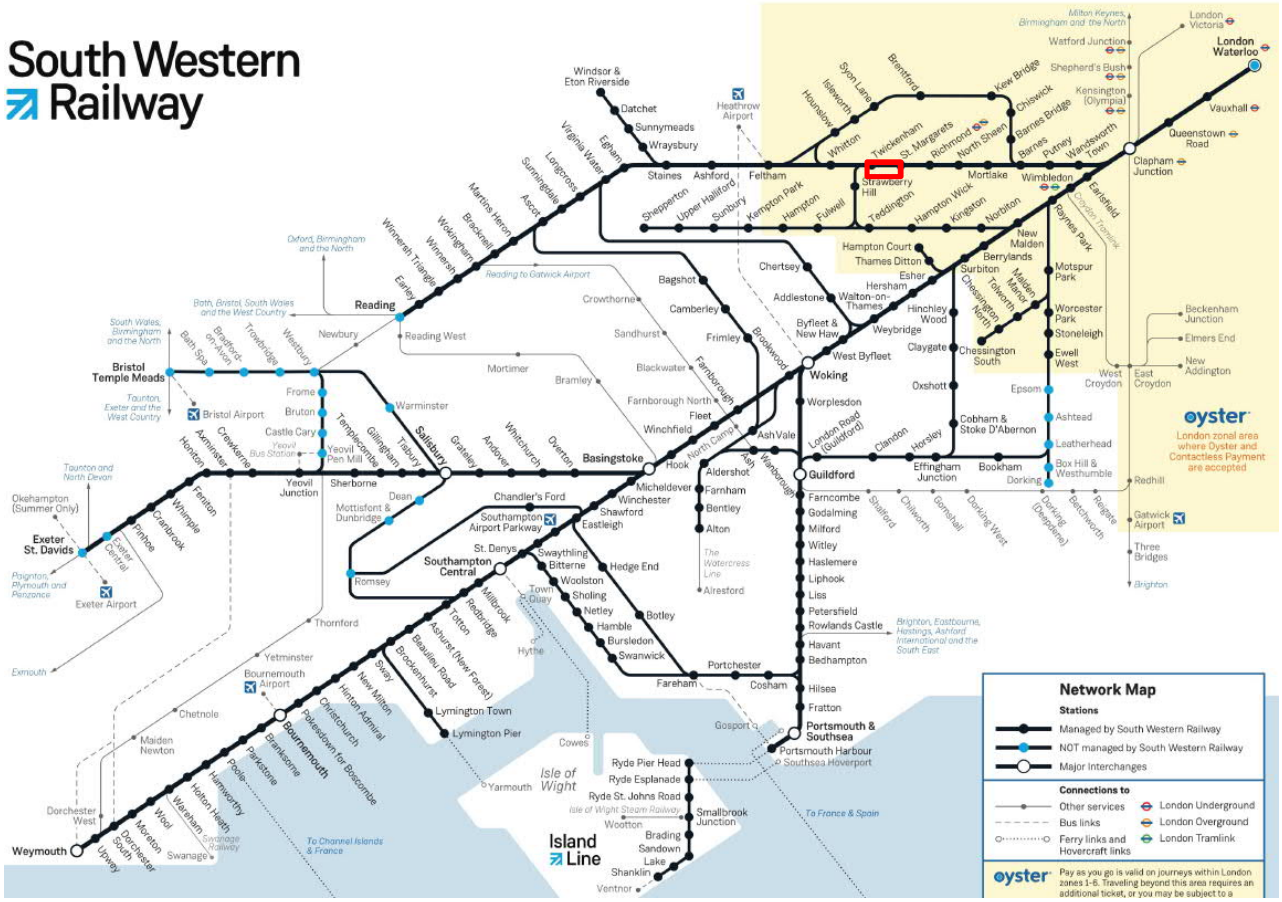
Table 4-1 - Summary of Bus Services

Route	Principal Stops	AM peak frequency	PM peak frequency	Operator
110	West Middlesex Hospital - Isleworth - Twickenham - Powder Mill Lane - Hounslow	9	6	London United
490	Heathrow Airport - Hatton Cross - Feltham - Staines Road - Twickenham - Richmond	15	15	Abellio London
267	Fulwell - Twickenham - Isleworth - Brentford - Turnham Green - Hammersmith	18	17	London United
281	Tolworth - Surbiton - Kingston - Teddington - Fulwell - Twickenham - Whitton - Hounslow	18	19	London United
290	Staines - Ashford - Sunbury Cross - Fulwell - Twickenham	3	3	Abellio London
H22	Hounslow - Hall Road - Whitton - Staines Road - Twickenham - Richmond - Richmond *Manor Circus*	15	15	London United
R70	Hanworth/Nurserylands (circular) - Hampton Hill - Fulwell - Twickenham - Richmond	16	19	Abellio London

4.6 RAIL NETWORK

4.6.1. The closest railway station to the site is Strawberry Hill, however Twickenham Railway Station, located approximately 1.6 km to the east of the site along Station Road provides a greater number of services. The station is operated by South West Railway providing access to destinations including London Waterloo, Reading, Clapham Junction, Chiswick and Wimbledon. A network map illustrating the rail connectivity from Twickenham Station is shown in Figure 4-5.

Figure 4-5 - South West Railway Network Map



4.6.2. Table 4-2 summarises the rail services and their frequencies at Twickenham station.

Table 4-2 - Summary of Rail Services from Twickenham Station

Direction	First / Last Train	Peak Hour Trains (per hour)
London Waterloo	00:11/ 23:43	10-17
Reading	05:36/ 23:10	2-4
Chiswick	05:53/ 23:43	3-5
Windsor and Eton Riverside	05:53/ 23:52	2
Wimbledon	05:53/ 23:41	7-10

4.7 HIGHWAY CONTEXT

4.7.1. There are currently two vehicular access points to the site; one from Edwin Road to the south, and one to the north from the corner of Gould Road and Crane Road. The former was primarily used to

accommodate larger operational HGV's associated with the site's former industrial use, with the latter generally used for staff and visitor parking.

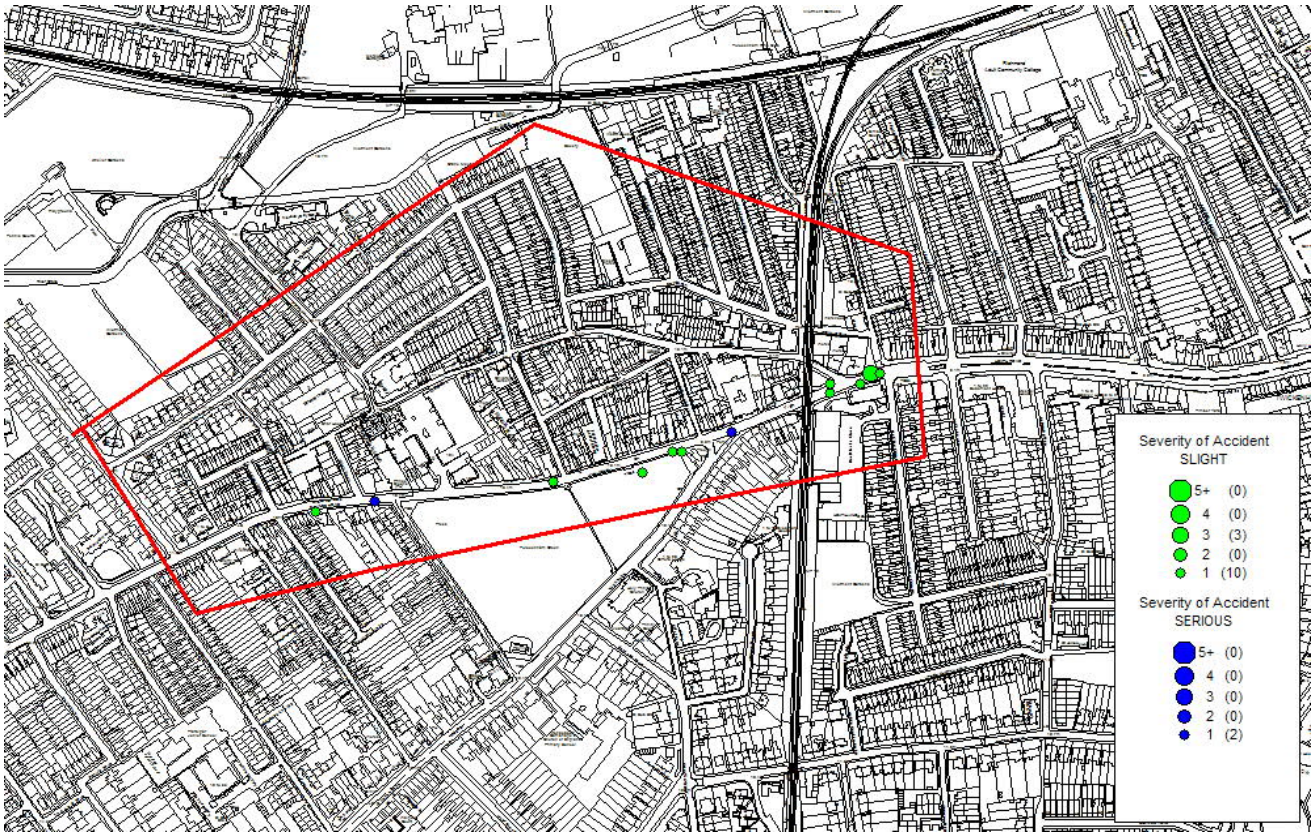
4.7.2. Both Edwin Road and Gould Road are well connected to the wider road network. To the south of the site, Edwin Road connects through Marsh Farm Road or Colne Road to the A305 The Green / Heath Road, carrying traffic between Richmond and Twickenham centres from the A316 Chertsey Road to the west, which in turn connects to M3 to the west, or Hampton Hill Road towards Heathrow. To the west of the site, traffic can access and egress the A316 Chertsey Road from Meadway, which in turn provides access towards Gould Road and the adjoining residential areas.

4.8 PERSONAL INJURY ACCIDENT (PIA) DATA REVIEW

4.8.1. Personal Injury Accident (PIA) records for a study area surrounding the site have been obtained from TfL's Accident Analysis for the latest three-year period ending May 2018.

4.8.2. An analysis of the PIA data has been undertaken to ascertain if there are any safety issues or accident black spot areas. The full PIA data is contained within Appendix C. The extent of the study area is illustrated in Figure 4-6. The green and blue markings, illustrate the occurrence of 'slight' or 'serious' accidents within the survey area.

Figure 4-6 - PIA Data



4.8.3. A review of the data shows that there were a total of 15 PIAs over a three year period ending May 2018. All PIAs occurred at or near junctions along The Green / Heath Road (A305).

4.8.4. Of the 15 PIAs, 13 were classed as slight, two as serious and none as fatal. The two PIAs classified as serious were accidents attributed to "a failure to look properly" and "impaired by alcohol".

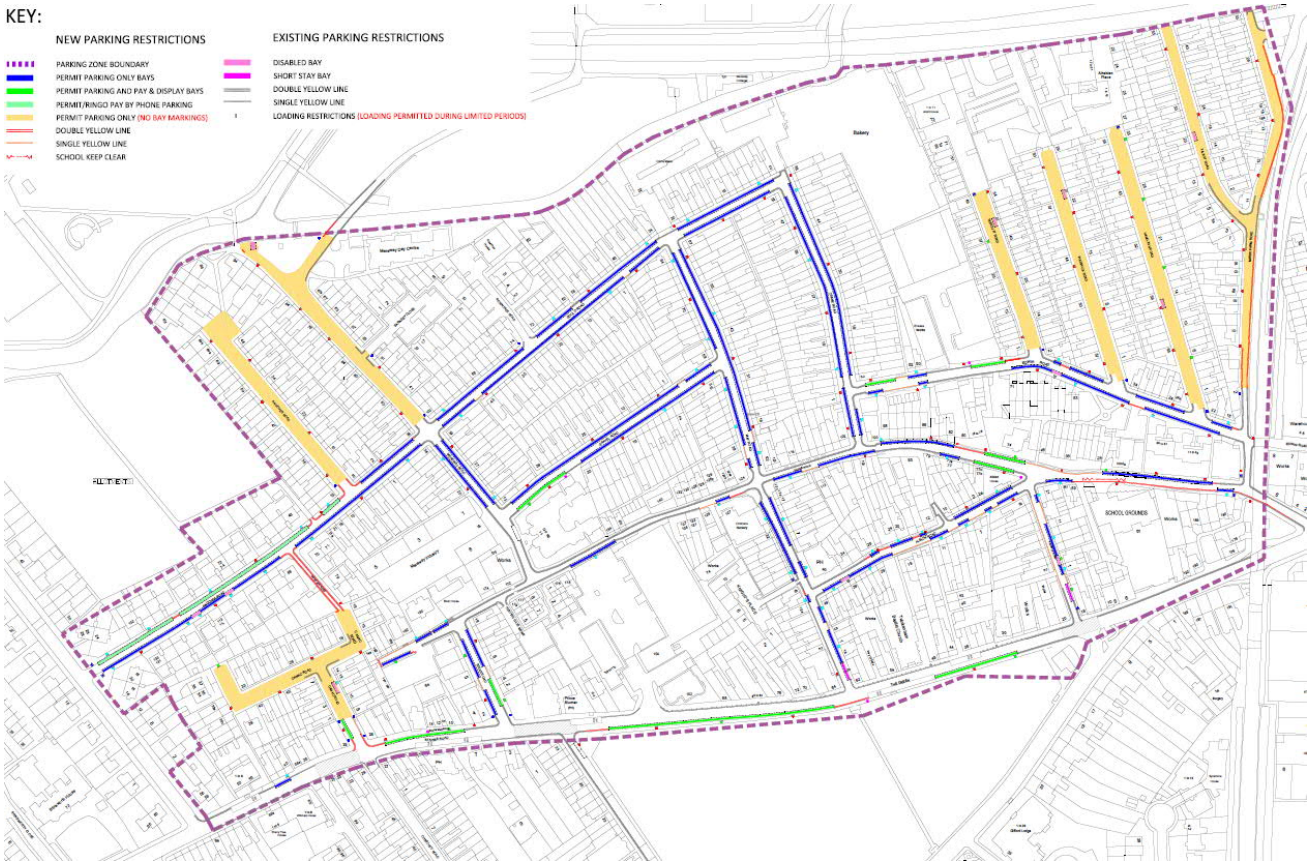
4.8.5. The main causes of all the remaining accidents were recorded to be resultant of “a failure to look properly”, “poor turn or manoeuvre” or “slippery road due to weather”.

4.8.6. In summary, the analysis outlined the PIAs identified were largely resultant of human error of the drivers, cyclists and pedestrians, indicating that there are no underlying issues with highway safety in the vicinity of the site.

4.9 PARKING CONTEXT

4.9.1. The parking on surrounding roads is predominantly residential, with Edwin Road, Crane Road and Gould Road now within Controlled Parking Zone (CPZ) “WT”, which operates Monday to Friday 0830-1830, excluding public and bank holidays. CPZ “WT” has only been recently introduced to the area, which took effect in June 2018. A map of the Zone is indicated in Figure 4-7 illustrating that the site is predominantly surrounded by private parking bays.

Figure 4-7 - Controlled Parking Zone "WT"



4.9.2. Controlled Parking Zone “D” is also within proximity of the site, which starts and continues East from Lion Road.

4.10 CAR CLUB BAY PROVISION

4.10.1. As outlined in the introduction, the development proposals include plans to provide an additional car club bay within the area which would be available for both the new residential development and surrounding residential dwellings.

4.10.2. The location of extant car club bays within the surrounding area are indicated in Figure 4-8.

Figure 4-8 - Extant Car Club Bays

4.10.3. LBRuT state that on the borough website that research has shown car club cars replace between 6 and 20 privately owned vehicles.

5 TRIP GENERATION

5.1 INTRODUCTION

5.1.1. Given the site has not been operational since 2016, it is not possible to undertake surveys to provide clear trends in traffic. However, it is important to assess the proposals not just in the context of the extant baseline conditions, but with consideration to the previous industrial use at the site, and comparative trends in trip-generation were the site to be operational under the extant permitted industrial use or an alternative industrial use.

5.1.2. This section therefore provides an assessment of the travel characteristics associated with the extant industrial site, before outlining a comparative assessment of the proposed residential-led development.

5.2 PERMITTED USE

SITE CONTEXT

5.2.1. One of the key benefits in transport terms of delivering a residential scheme on this site compared to its previous use as an industrial factory, is a substantive reduction in the number of HGV movements.

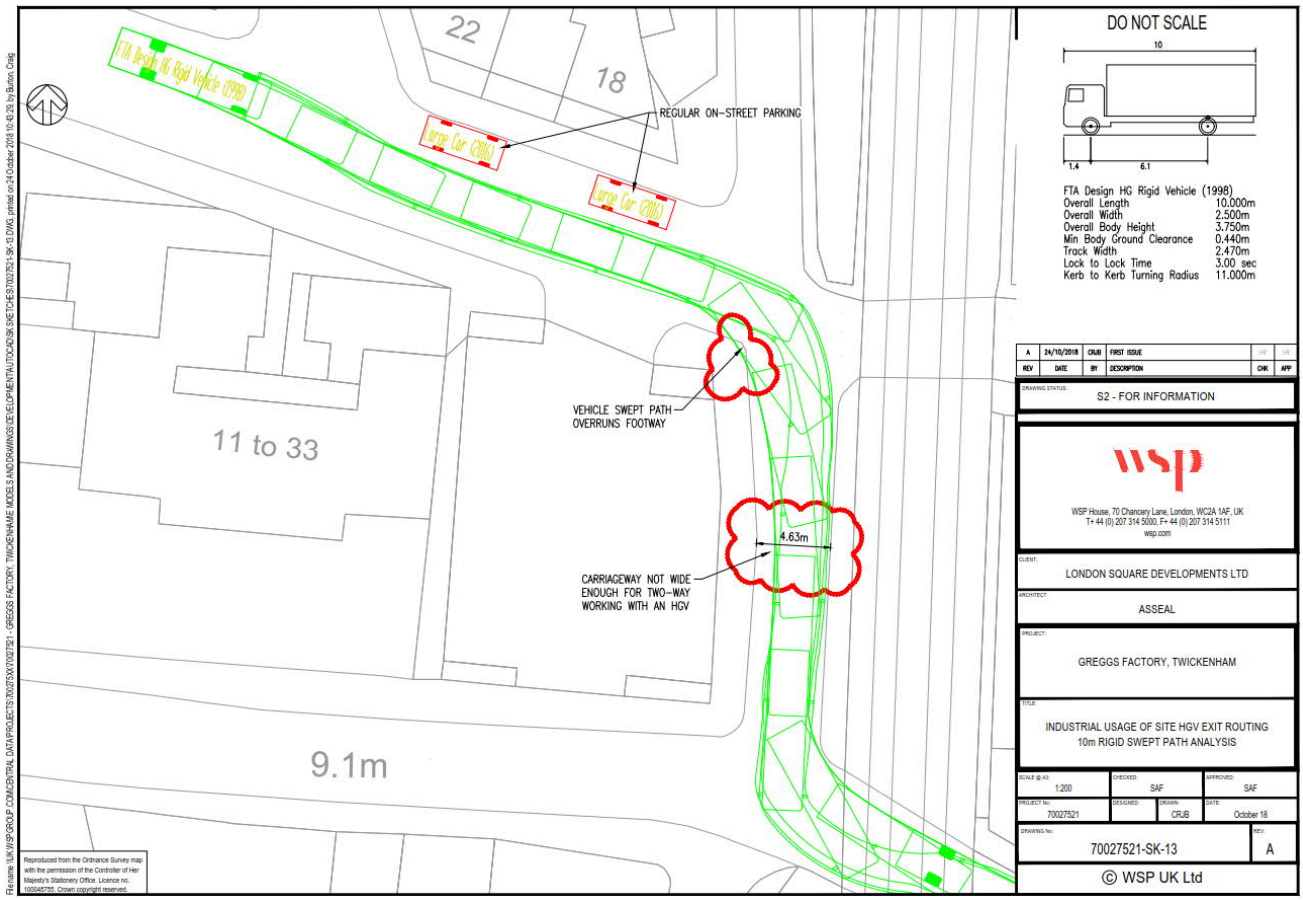
5.2.2. Whilst the site was operational as Greggs Bakery, the site generated a number of regular daily HGV movements, with instances of conflict where large vehicles were passing each other. On the A305 The Green this is not an issue but on the roads surrounding the site this can, and has led to:

- Damaged footways and kerbs;
- Concerns about safety for other road users and pedestrians;
- Local complaints of noise and poor air quality (particularly important as the site is not subject to any restrictions and can operate 24 hours a day); and
- Damage to parked cars.

5.2.3. Due to the site's residential setting, the adjoining network of roads do not lend themselves to high-volume HGV movements. Carriageways are in parts narrow and often flanked by parked cars. There have been regular instances of vehicles mounting the kerb, as illustrated by the condition of the pavement and kerb along Marsh Farm Road (which is the route HGVs used to take between the site and the A305 and is indeed reinforced by signage identifying other routes as being unsuitable for HGVs).

5.2.4. These identified issues are illustrated by some the swept path analysis (indicated in Figure 5-1) showing that an HGV (of the kind typically associated with the site) cannot safely navigate the turn from Edwin Road right into Marsh Farm Road.

Figure 5-1 - Swept-path Analysis – previous HGV Conflict



5.2.5. The historic damage to kerbside and street furniture is further evidenced through site photographs, indicated in Figure 5-2.

Figure 5-2 - Illustration of damage, previous HGV movement

5.2.6. Local residents have on a number of occasions voiced their concerns about the impact of HGVs associated with the site, with several local news reports citing residents complaining of damage, pollution and safety concerns. A selection of local concerns comprises:

- HGVs waiting in Gould Road with engines idling at 6:30am;
- Factory staff contributing to local on-street parking stress;
- Street furniture, including a bollard on the corner of Crane Road and Gould Road being knocked over; and
- Factory staff 'bumping' parked vehicles out of the way on local roads to allow HGVs to get through.

5.2.7. During the site's operation as a factory for Greggs, the Edwin Road access received around 20 HGV deliveries per day, the first of which occurred before 07:00 and the remainder generally occurring during the morning peak hour. Parking for HGVs on site is limited to five and as such most vehicles had to leave the site immediately after unloading. It is likely that this is the cause of some of the historic conflicts and concerns.

5.2.8. The regular presence of HGV's on a narrow residential road network also poses heightened risk of conflict with emergency service vehicles and refuse trucks.

5.2.9. Given the historic problems with HGV's associated with the extant site, it is pertinent to include an assessment of comparative HGV vehicle trips for both an industrial estate permitted use and a mixed-use residential-led development.

5.3 TRIP-GENERATION METHODOLOGY

5.3.1. The TRICS database has been consulted and reviewed in order to find trip data for comparable development sites. TRICS is a database that holds transport-related surveys from sites across the UK. It is the industry-standard tool used to estimate the effect of proposed change in land use on transport travel patterns.

5.3.2. The following selection criteria was used to ensure a suitability of comparable survey data sets:

- Comparable location (outer London boroughs)
- Comparable Public Transport Access Level (within reason and where possible)
- Comparable on-site parking provision
- Comparable development type in terms of use class

5.3.3. The same approach has been applied to both an assessment of the extant permitted B2 industrial use, and the proposed residential-led mixed use development, comprising both C3 residential and B1 office developments.

5.3.4. The following sections apply data from comparable TRICS sites to assess the extant and proposed site and establish:

- Trip-rates based on "total person" trip rates
- Trip-generation mode share based on "travel to work census data" for the specific ward in Richmond"
- Multi-modal trip-generation based on "total person" trip data

5.4 PERMITTED USE TRIP GENERATION

INDUSTRIAL ESTATE TRIP GENERATION

5.4.1. The TRICS database of B1/B2/B8 surveyed sites contains one outer-London borough site which is deemed to be reasonably comparable to the permitted use.

5.4.2. This can be used to form a useful proxy for an alternative industrial use on the site. Details of the site are summarised in Table 5-1.

Table 5-1 - TRICS Site Selection - Industrial Estate Use

Name/Location	Site Code	Survey Year	GFA (sqm)	Parking Spaces
Abbeydale Road, Alperton, BRENT	BT-02-C-02	2014	6100	156

5.4.3. The above site, situated in West London is also a food production facility, similar to the permitted use of the Greggs Bakery Site.

5.4.4. The TRICS output showing the weighted average total person trip generation from these sites is available in Appendix D, with the total person hourly trip rates summarised in Table 5-2. An indicative trip generation based on a mixed B1/B2/B8 industrial use with a GFA of 7,228sqm (the floor area of the existing buildings on site) is also indicated, with the peak hour trip rates and trip generation highlighted for the AM peak (0800-0900) and PM peak (1700-1800).

Table 5-2 - TRICS Industrial Trip Rates & Generation

Time Period	Total Person Trip Rate (per 100sqm)			Trip Generation (7228sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
600	2.672	0.098	2.77	193	7	200
700	0.344	0.262	0.606	25	19	44
800	0.131	0.066	0.197	9	5	14
900	0.164	0.098	0.262	12	7	19
1000	0.279	0.279	0.558	20	20	40
1100	0.311	0.23	0.541	22	17	39
1200	0.115	0.148	0.263	8	11	19
1300	0.18	0.197	0.377	13	14	27
1400	0.148	0.164	0.312	11	12	23
1500	0.295	0.18	0.475	21	13	34
1600	1.885	0.18	2.065	136	13	149
1700	0.066	3.311	3.377	5	239	244
TOTAL	6.59	5.213	11.803	476	377	853

Note: Some minor errors occur in the table due to roundings

5.4.5. In order to provide a robust assessment comparison between the residential morning peak hour 0800-0900, peak hour trips from the industrial site will be compared during the same time period. However, it is important to note as shown by the total person trip rates across the day that an industrial use comparable to the previous use is characterised by shift working, and will generate a significant number of trips earlier in the morning, and across a longer PM peak. This must be considered when analysing the comparative trip-generation for the proposed residential site.

5.4.6. Looking more specifically at modes of travel, it is important to consider the larger vehicle trips a fully operational industrial site would generate.

5.4.7. With regard to employee parking provision at the site when operational as an industrial site, the limited amount of parking resulted in employees parking within the surrounding roads which prior to 2018 were not part of a Controlled Parking Zone, thus causing issues of high parking stress and conflict with residential car owners in neighbouring streets. Any industrial redevelopment at the site would need to take into account the new CPZ implementation, prohibiting additional parking within the surrounding area, potentially compromising the size of industrial floorspace on-site as a result of a need to provide adequate on-site parking.

5.4.8. As outlined in Section 5.2, HGV trips have been a clear source of neighbourhood conflict for the previous site use. As such, it is pertinent to review the projected HGV trips for a similar industrial use at the site to consider the impact of an alternative fully operational industrial site.

5.4.9. A key generator of traffic for industrial sites is OGV/HGV trips. Taking the weighted average OGV/HGV trip rates from these sites and applying these to a notional developable area on the site of 7228sqm (roughly equivalent to the existing buildings) for an alternative Industrial Use produces the OGV/HGV trips in Table 5-3.

Table 5-3 - TRICS OGV/HGV Trip-Generation Projections - Industrial Use

Time Period	Vehicle Trip Rate (per 100sqm)			Proposed Trip Rate (7228sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
600	0.016	0	0.016	1	0	1
700	0.049	0.033	0.082	4	2	6
800	0.016	0.049	0.065	1	4	5
900	0.066	0.033	0.099	5	2	7
1000	0.066	0.115	0.181	5	8	13
1100	0.066	0.066	0.132	5	5	10
1200	0.016	0.033	0.049	1	2	4
1300	0.066	0.033	0.099	5	2	7
1400	0.066	0.098	0.164	5	7	12
1500	0	0.016	0.016	0	1	1
1600	0.016	0	0.016	1	0	1
1700	0.016	0	0.016	1	0	1
TOTAL	0.459	0.476	0.935	33	34	68

Note: Some minor errors occur in the table due to roundings

5.4.10. As the table suggests, the permitted use could be expected to generate around 68 HGV trips during a typical day, notwithstanding further HGV trips prior to 0600 and beyond 1800 and smaller LGV trips not indicated in the TRICS assessment. This is considered to be similar to the former Greggs use where HGV's were used for the distribution of goods throughout the day. The forecast also shows the concentration of HGV movements tends to be in the morning and over lunchtime. As with the previous uses on site this has the potential to result in the conflicts which are well-documented.

5.4.11. It is therefore reasonable to assume that bringing the site back into industrial use with an alternative tenant or activities does not necessarily overcome any of the historic issues associated with HGVs on the local road network.

CENSUS DATA – JOURNEY TO WORK

5.4.12. 2011 Census data 'WD703EW - Method of travel to work (2001 specification) for the middle super output area (MSOA) "Richmond ward 14" has been used to disaggregate the trips to the site by mode.

5.4.13. It should be noted that the application of Census data represents a simplified but robust assessment of public transport trips as this only accounts for employment journey purposes. However, this is deemed appropriate for this assessment given travel to an industrial site would be for employment.

5.4.14. The modal share has been adjusted to remove those "not in employment" or "working from home", with the percentage share adjusted across the travel modes accordingly.

5.4.15. The mode share is shown in Table 5-4.

Table 5-4 - Adjusted Mode Share - Industrial (source: Census WP703EW)

Richmond Ward 014	Count	Percentage
Underground, metro, light rail, tram	320	4.6%
Train	1,286	18.3%
Bus, minibus or coach	1,172	16.7%
Taxi	11	0.2%
Motorcycle, scooter or moped	73	1.0%
Driving a car or van	2,745	39.1%
Passenger in a car or van	140	2.0%
Bicycle	491	7.0%

On foot	761	10.8%
Other method of travel to work	27	0.4%
ALL CATEGORIES	7,026	100.0%

5.4.16. The estimated multi-modal residential peak hour travel demand based on an industrial use of 7228sqm is outlined in Table 5-5.

Table 5-5 - Industrial Site Peak Hour Travel Demand

Richmond Ward 014	AM			PM		
	In	Out	2 way	In	Out	2 way
Underground, metro, light rail, tram	0	0	1	0	11	11
Train	2	1	3	1	44	45
Bus, minibus or coach	2	1	2	1	40	41
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0	2	3
Driving a car or van	4	2	6	2	94	95
Passenger in a car or van	0	0	0	0	5	5
Bicycle	1	0	1	0	17	17
On foot	1	1	2	1	26	26
Other method of travel to work	0	0	0	0	1	1
ALL CATEGORIES	9	5	14	5	239	244

5.5 PROPOSED USE

RESIDENTIAL TRIP GENERATION

5.5.1. Following the application of the selection criteria as identified in the trip-generation methodology, details of the TRICS sites selected as comparator sites for the proposed residential land-use at the site is summarised in Table 5-6.

Table 5-6 - TRICS Site Selection - Proposed Residential Use

Name/Location	Site Code	Survey Year	No. Dwellings	Parking Spaces	PTAL
Bollo Bridge Road, Acton, EALING	EG-03-M-04	2017	167	62	1b
Bollo Bridge Road, Acton, EALING	EG-03-M-05	2017	106	33	3
Featherstone Road, Southall, EALING	EG-03-M-06	2017	143	91	3

Christchurch Way, GREENWICH	GR-03-M-02	2016	455	287	1b
Uxbridge Road, Hayes, HILLINGDON	HD-03-M-04	2016	45	40	3
Judge Heath Lane, Hayes, HILLINGDON	HD-03-M-04	2017	261	299	1b

5.5.2. The TRICS output reporting the weighted average total person trip generation from these sites is available in Appendix E, with the total person hourly trip rates summarised in Table 5-7. An indicative trip generation based on a C3 residential scheme with a total of 116 dwellings is also indicated, with peak hour trip rates and trip generation highlighted for the AM (0800-0900) and PM (1700-1800) peaks.

Table 5-7 - TRICS Residential Trip Rates & Generation

Time Period	Total Person Trip Rate (per dwelling)			Proposed Trip Rate (116 dwellings)		
	Arrive	Depart	Total	Arrive	Depart	Total
700	0.053	0.347	0.4	6	40	46
800	0.108	0.541	0.649	13	63	75
900	0.116	0.196	0.312	13	23	36
1000	0.081	0.128	0.209	9	15	24
1100	0.132	0.152	0.284	15	18	33
1200	0.127	0.16	0.287	15	19	33
1300	0.159	0.144	0.303	18	17	35
1400	0.119	0.174	0.293	14	20	34
1500	0.387	0.165	0.552	45	19	64
1600	0.302	0.155	0.457	35	18	53
1700	0.259	0.166	0.425	30	19	49
1800	0.302	0.155	0.457	35	18	53
TOTAL	2.145	2.483	4.628	249	288	537
Note: Some minor errors occur in the table due to roundings						

RESIDENTIAL TRIP-PROJECTIONS

5.5.3. By comparison to an industrial use, a residential-led scheme on the site will almost entirely eliminate daily HGV trips which have been identified as a source of great conflict in a largely residential area. The proposed residential element of the scheme comprising 116 dwellings would likely only generate one HGV movement associated with refuse collection, which would not be new to the network, already serving the adjoining residential streets. Occasional deliveries of white goods and furniture for example, or indeed removals lorries, may add an additional HGV onto the local network. However, this would not be at a level anywhere near comparable to that generated by the site's former use and would only be occasional.

5.5.4. 2011 Census data 'location of usual residence and place of work by method of travel to work' for the middle super output area (MSOA) Richmond Ward 14 has been used to disaggregate the trips by mode.

5.5.5. The application of Travel to Work Census data represents a simplified but robust assessment of public transport trips as this only accounts for employment journey purposes. Journeys for non-work purposes, such as education or retail, would be more likely to be made on foot or by bicycle, given that the proximity of the site to both Richmond and Twickenham High Streets. As such the forecast car, railway and bus mode shares would realistically be lower than that projected and the walking and cycling trips higher.

5.5.6. The modal share has been adjusted to remove those "not in employment" or "working from home", with the percentage share adjusted across the travel modes accordingly.

5.5.7. The mode share is shown in Table 5-8.

Table 5-8 - Adjusted Mode Share - Residential (source: Census QS701EW)

Richmond Ward 014	Count	Percentage
Underground, metro, light rail, tram	287	7.1%
Train	1,427	35.1%
Bus, minibus or coach	338	8.3%
Taxi	5	0.1%
Motorcycle, scooter or moped	54	1.3%
Driving a car or van	1,211	29.8%
Passenger in a car or van	44	1.1%
Bicycle	254	6.2%
On foot	419	10.3%
Other method of travel to work	28	0.7%
ALL CATEGORIES	4,067	100.0%

5.5.8. The estimated multi-modal residential peak hour travel demand based on 116 dwellings is outlined in Table 5-9.

Table 5-9 - Residential Peak Hour Travel Demand

Residential Travel Demand	AM			PM		
	In	Out	2 way	In	Out	2 way
Light Rail/Underground	1	4	5	2	1	3

Train	4	22	26	11	7	17
Bus, minibus or coach	1	5	6	2	2	4
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	0	1	1	0	0	1
Driving a car or van	4	19	22	9	6	15
Passenger in a car or van	0	1	1	0	0	1
Bicycle	1	4	5	2	1	3
On foot	1	6	8	3	2	5
Other method of travel to work	0	0	1	0	0	0
TOTAL	13	63	75	30	19	49
Note: Summation errors due to rounding						

OFFICE TRIP GENERATION

5.5.9. Whilst the B1 office development to the south of the site forms only a small element of the site's overall area, it is pertinent to consider any vehicle trips generated by a proposed B1 office development, to ensure trip-generation for the proposed site in entirety is considered.

5.5.10. Following the application of the selection criteria as identified in the trip-generation methodology, details of the TRICS sites selected as comparator sites for the proposed residential land-use at the site is summarised in Table 5-10. Important to note, whilst these comparable office sites are clearly much larger than the proposed office development, the trip-rates are approximated in relation to floor area.

Table 5-10 - TRICS Site Selection - Proposed Office Use

Name/Location	Site Code	Survey Year	GFA (sqm)	PTAL
Millington Road, Hayes, HILLINGDON	HD-02-A-09	2018	12100	4
Syon Lane, Isleworth, HOUNSLOW	HO-02-A-01	2017	114000	1b

5.5.11. The TRICS output reporting the weighted average total person trip generation from these sites is available in Appendix F, with the total person hourly trip rates summarised in Table 5-11. An indicative trip generation based on a B1 Office scheme with a GIA of 175sqm is also indicated, with peak hour trip rates and trip generation highlighted for the AM (0800-0900) and PM (1700-1800) peaks.

Table 5-11 - TRICS Office Trip-Generation Projections - Proposed Office Use

Time Period	Total Person Trip Rate (per 100sqm)			Proposed Trip Rate (175sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
700	0.838	0.102	0.94	1	0	2
800	1.723	0.065	1.788	3	0	3

900	1.216	0.07	1.286	2	0	2
1000	0.339	0.094	0.433	1	0	1
1100	0.174	0.118	0.292	0	0	1
1200	0.288	0.301	0.589	1	1	1
1300	0.259	0.236	0.495	0	0	1
1400	0.184	0.191	0.375	0	0	1
1500	0.108	0.36	0.468	0	1	1
1600	0.094	0.95	1.044	0	2	2
1700	0.089	1.83	1.919	0	3	3
1800	0.08	0.922	1.002	0	2	2
TOTAL	5.392	5.239	10.631	9	9	19
Note: Summation errors due to rounding						

5.5.12. As the table illustrates, the number of total person trips expected to be generated by a B1 office use of this size would be minimal and would be of no material impact to the highway and public transport network.

5.5.13. However, in the interests of providing a robust assessment, the 2011 Census data 'WD703EW - Method of travel to work (2001 specification) for the middle super output area (MSOA) "Richmond ward 14" has been used to disaggregate the trips to the site by mode, using the same method as for the industrial use.

5.5.14. The modal share has been adjusted to remove those "not in employment" or "working from home", with the percentage share adjusted across the travel modes accordingly.

5.5.15. The mode share is shown in Table 5-12.

Table 5-12 - Adjusted Mode Share - Office (source: Census WP703EW)

Richmond Ward 014	Count	Percentage
Underground, metro, light rail, tram	320	4.6%
Train	1,286	18.3%
Bus, minibus or coach	1,172	16.7%
Taxi	11	0.2%
Motorcycle, scooter or moped	73	1.0%
Driving a car or van	2,745	39.1%
Passenger in a car or van	140	2.0%
Bicycle	491	7.0%

On foot	761	10.8%
Other method of travel to work	27	0.4%
ALL CATEGORIES	7,026	100.0%

5.5.16. The estimated multi-modal residential peak hour travel demand based on a commercial office of 175sqm is outlined in Table 5-13.

Table 5-13 - Office Peak Hour Travel Demand

Richmond Ward 014	AM			PM		
	In	Out	2 way	In	Out	2 way
Underground, metro, light rail, tram	0	0	0	0	0	0
Train	1	0	1	0	1	1
Bus, minibus or coach	1	0	1	0	1	1
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0	0	0
Driving a car or van	1	0	1	0	1	1
Passenger in a car or van	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0
On foot	0	0	0	0	0	0
Other method of travel to work	0	0	0	0	0	0
ALL CATEGORIES	3	0	3	0	3	3
Note: Summation errors due to rounding						

5.6 NET CHANGE

5.6.1. An assessment has been undertaken based on the respective mode shares for the existing industrial scheme, and the proposed residential and commercial schemes combined.

5.6.2. The following two tables illustrate the difference in AM and PM peak hour trips, based on the respective census data sets for the existing industrial use, and proposed commercial and residential use.

Table 5-14 - AM Peak (0800-0900) Net Change based on Census Data

Richmond Ward 014	Existing		Proposed		Net change	
	In	Out	In	Out	In	Out
Underground, metro, light rail, tram	0	0	1	4	+1	+4

Train	2	1	5	22	+3	+21
Bus, minibus or coach	2	1	2	5	0	+4
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	0	0	0	1	0	+1
Driving a car or van	4	2	5	19	+1	+17
Passenger in a car or van	0	0	0	1	0	+1
Bicycle	1	0	1	4	0	+4
On foot	1	1	2	6	+1	+6
Other method of travel to work	0	0	0	0	0	0
ALL CATEGORIES	9	5	16	63	+6	+58
Note: Some minor errors occur in the table due to roundings						

Table 5-15 - PM Peak (1700-1800) Net Change based on Census Data

Richmond Ward 014	Existing		Proposed		Net change	
	In	Out	In	Out	In	Out
Underground, metro, light rail, tram	0	11	2	2	+2	-9
Train	1	44	11	7	+10	-36
Bus, minibus or coach	1	40	3	2	+2	-38
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	0	2	0	0	0	-2
Driving a car or van	2	94	9	7	+7	-86
Passenger in a car or van	0	5	0	0	0	-4
Bicycle	0	17	2	1	+2	-15
On foot	1	26	3	2	+3	-24
Other method of travel to work	0	1	0	0	0	-1
ALL CATEGORIES	5	239	30	22	+25	-217
Note: Some minor errors occur in the table due to roundings						

5.7 TRIP GENERATION SUMMARY

5.7.1. The trip generation assessment has reviewed the trip rates and expected trip generation for an industrial use, as per the extant permitted land use, and contrasted this with the trip generation for a 116-unit residential scheme with a small 175sqm office development.

5.7.2. The TRICS site assessment has demonstrated that the proposed office and residential use is expected to generate significantly fewer HGV and car trips than the permitted use on site across the day as a whole. This has been further assessed through the application of modal split based on the 2011 Census datasets which has reviewed in more detail the travel characteristics of the working population within the specific ward of the development site.

5.7.3. It is reasonable to assume through the assessment undertaken, that a residential-led mixed-use scheme with a small office development, is expected to generate fewer significantly fewer daily car and trips than a large industrial use as per the consented site use.

5.7.4. Looking at the 0800-0900 peak hour comparison, there is expected to be an increase of around 18 two-way car trips in the AM peak, however this is based only on the comparative peak hour of 0800-0900. Looking at two-way total person trip generation for 0600-0700 and 0700-0800 for an industrial use would generate in the order of 200 and 44 two-way total person trips. Applying the adjusted mode share of 39.1% car or driver trips and it is clear that the number of morning trips associated with an industrial use is significant when looking across the peak as a whole.

5.7.5. Looking at the 1700-1800 PM peak, there will be a net reduction of around 79 car or van trips in the PM peak, a significant reduction in the number of vehicles joining the road network surrounding the site.

5.8 SENSITIVITY TEST - ALTERNATIVE COMMERCIAL SCHEME

5.8.1. To further assess the impact of alternative development at the site, the scheme architects have prepared an indicative scheme comprised of 100% B1 commercial units at the site, to assess the potential transport and trip-generation impacts that such a development would have at the site and upon the surrounding network.

5.8.2. The comparative 100% commercial scheme comprises the 6,223sqm (GIA) of commercial units with associated parking spaces and commercial loading bays.

5.8.3. In order to assess the impact of a B1 commercial scheme of 6,223sqm, the same trip-generation methodology and approach for the proposed residential and office use has been undertaken.

5.8.4. Following the application of the selection criteria as identified in the trip-generation methodology, details of the TRICS sites selected as comparator sites for a 100% commercial land-use at the site is summarised in Table 5-16. The TRICS reports are contained within Appendix F.

Table 5-16 - TRICS Site Selection - Proposed B1 Commercial Use

Name/Location	Site Code	Survey Year	GFA (sqm)	PTAL
Millington Road, Hayes, HILLINGDON	HD-02-A-09	2018	12100	4
Syon Lane, Isleworth, HOUNSLOW	HO-02-A-01	2017	114000	1b

5.8.5. TRICS site selection as was applied to the 6,223sqm commercial scheme at the site, to consider any vehicle trips generated by a proposed B1 office development, to ensure trip-generation for the proposed site in entirety is considered.

5.8.6. The total person hourly trip rates summarised in Table 5-17. An indicative trip generation based on a B1 commercial scheme with a GIA of 6,223 is also indicated, with peak hour trip rates and trip generation highlighted for the AM (0800-0900) and PM (1700-1800) peaks.

Table 5-17 – Trip-Generation Projections – Alternative Commercial Scheme

Time Period	Total Person Trip Rate (per 100sqm)			Proposed Trip Rate (6,223sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
700	0.838	0.102	0.94	52	6	58
800	1.723	0.065	1.788	107	4	111
900	1.216	0.07	1.286	76	4	80
1000	0.339	0.094	0.433	21	6	27
1100	0.174	0.118	0.292	11	7	18
1200	0.288	0.301	0.589	18	19	37
1300	0.259	0.236	0.495	16	15	31
1400	0.184	0.191	0.375	11	12	23
1500	0.108	0.36	0.468	7	22	29
1600	0.094	0.95	1.044	6	59	65
1700	0.089	1.83	1.919	6	114	119
1800	0.08	0.922	1.002	5	57	62
TOTAL	5.392	5.239	10.631	336	326	662
Note: Some minor errors occur in the table due to roundings						

5.8.7. As the table illustrates, the number of total person trips expected to be generated by a B1 commercial use of this size would be larger in comparison to a residential-led mixed-use development.

5.8.8. As per the methodology for the proposed site, the 2011 Census data 'WD703EW - Method of travel to work (2001 specification) for the middle super output area (MSOA) "Richmond ward 14" has been used to disaggregate the trips to the site by mode, using the same method as for the industrial use.

5.8.9. The modal share has been adjusted to remove those "not in employment" or "working from home", with the percentage share adjusted across the travel modes accordingly.

5.8.10. The mode share is shown in Table 5-18.

Table 5-18 - Adjusted Mode Share - Office (source: Census WP703EW)

Richmond Ward 014	Count	Percentage
Underground, metro, light rail, tram	320	4.6%

Train	1,286	18.3%
Bus, minibus or coach	1,172	16.7%
Taxi	11	0.2%
Motorcycle, scooter or moped	73	1.0%
Driving a car or van	2,745	39.1%
Passenger in a car or van	140	2.0%
Bicycle	491	7.0%
On foot	761	10.8%
Other method of travel to work	27	0.4%
ALL CATEGORIES	7,026	100.0%

5.8.11. The estimated multi-modal residential peak hour travel demand based on commercial scheme of 6,223sqm is outlined in Table 5-19.

Table 5-19 - Commercial Peak Hour Travel Demand

Richmond Ward 014	AM			PM		
	In	Out	2 way	In	Out	2 way
Underground, metro, light rail, tram	5	0	5	0	5	5
Train	20	1	20	1	21	22
Bus, minibus or coach	18	1	19	1	19	20
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	1	0	1	0	1	1
Driving a car or van	42	2	43	2	44	47
Passenger in a car or van	2	0	2	0	2	2
Bicycle	7	0	8	0	8	8
On foot	12	0	12	1	12	13
Other method of travel to work	0	0	0	0	0	0
ALL CATEGORIES	107	4	111	6	114	119
Note: Some minor errors occur in the table due to roundings						

5.8.12. The assessment clearly demonstrates that the number of trips generated by a prospective commercial use will be larger than a residential use at the site, with a significantly larger number of inbound trips during the AM peak and outbound trips during the PM peak in comparison to the residential use.

5.8.13. In particular, the site would generate a much larger number of inbound and outbound car trips during the AM and PM peaks respectively, associated with employee travel to work.

5.8.14. It is considered that an entirely commercial development will increase vehicle traffic, total person trip-rates and impact the wider public transport network far more significantly than a residential-led mixed-use development at the scale of the development proposals.

6 IMPACT ASSESSMENT

6.1 INTRODUCTION

6.1.1. This section considers the forecast trip generation in the context of the existing baseline and the scale of the effect that the proposed scheme may lead to. As outlined in the trip-generation assessment, it has been established that the previous site use generated a large number of HGV trips in addition to employee trips, particularly during the peak hours.

6.1.2. The impact of the proposed development is considered against the existing baseline through this section, whilst taking into consideration the prospective impacts were the site to return to full operation as an industrial unit as per the permitted use.

6.2 PEDESTRIAN

6.2.1. The Site is readily accessible on foot, as detailed through the site accessibility review. In terms of the proposals, connectivity throughout the site will be enhanced by the implementation of the internal site road which will act as a shared surface, facilitating a safe, viable and cohesive arrangement between vehicles, cycles and pedestrians.

6.2.2. The development is forecast to generate around 7 and 5 two-way main-mode pedestrian trips in the AM and PM peak hours respectively. It will of course generate a number of other walk trips associated with people walking to and from other public transport nodes, with around 37 and 24 two-way associated walking trips in the AM and PM peak hours respectively. This is considered to be a negligible number of trips from the existing baseline, irrespective of comparison to a permitted industrial use.

6.2.3. The local pedestrian infrastructure is considered to be of good quality. The shared surface within the site will encourage walking trips and enhance connectivity to the surrounding residential streets.

6.3 CYCLE IMPACT

6.3.1. The development is forecast to generate around 5 and 3 two-way main-mode cycling trips in the AM and PM peak hours respectively. This is considered to be a negligible number of trips and does not represent a significant increase from the existing baseline, irrespective of comparison to a permitted industrial use.

6.4 HIGHWAYS IMPACT

6.4.1. The proposals will provide a number of associated on-site parking spaces for residents. Table 6-1 outlines the projected number of car trips compared against the existing baseline, notwithstanding the number of car trips associated with the previous site when fully operational, or indeed a similar industrial use.

Table 6-1 - Proposed Development Car or Van Trip-Generation

Richmond Ward 014	Proposed AM (0800-0900)			Proposed PM (1700-1800)		
	In	Out	TOTAL	In	Out	TOTAL
Driving a car or van	5	19	24	9	7	16

Note: Some minor errors occur in the table due to roundings

6.4.2. Based on the 2011 Census data for travel to work, the proposed development could expect to add around 24 and 16 total trips to the surrounding network during the morning and evening peak.

6.4.3. The figure is not largely dissimilar to the numbers generated by the TRICS assessment for total car trips during the peak hour. However, the census data has been considered to give a more accurate projection for trips within the ward.

6.4.4. This level of car or van trips generated by the proposed residential-led mixed use development is not deemed to represent a significant or detrimental level of increase which would compromise the local road network.

6.4.5. Furthermore, any car trips generated by the residential development would also be offset by reduction of vehicle trips to site previously generated by employees when the factory was fully operational, as illustrated by the number of total person trips, particularly from 0600-0800 in the morning peak, and again departing the site between 1600-1800. Through assessing the total person trips 0600-0700 and 0700-0800 for an industrial use would generate in the order of 200 and 44 two-way total person trips. Applying the adjusted mode share of 39.1% car or driver trips, it is clear that the number of morning trips associated with an industrial use is significant when looking across the peak as a whole.

6.5 PUBLIC TRANSPORT IMPACT

6.5.1. The impact of passengers per service for the total public transport trips associated with the proposed development has been considered. The public transport trips per mode are shown in Table 6-2.

Table 6-2 - Proposed Development Public Transport Trip-Generation

Richmond Ward 014	Proposed AM (0800-0900)			Proposed PM (1700-1800)		
	In	Out	TOTAL	In	Out	TOTAL
Underground, metro, light rail, tram	1	4	5	2	2	4
Train	5	22	27	11	7	18
Bus, minibus or coach	2	5	7	3	2	5

Note: Some minor errors occur in the table due to roundings

6.5.2. The projected number of trips during the AM and PM peak hours are considered to be minimal and do not merit a comprehensive distribution assessment.

6.5.3. In order to assess distribution, an assessment has been made for each travel mode by to project the number and direction of trips onto the network during the AM and PM peak periods as a result of the proposals. Based on the travel to work census projections for the ward, the train is expected to be the most commonly used mode of public transport, with residents able to access both Strawberry Hill and Twickenham Station, which are connected to bus routes in proximity of the site and also within a reasonable walking distance.

6.5.4. For robustness, the distribution for buses (the nearest travel mode to the site) and trains (the projected majority mode of travel) have been forecast to assess the prospective impact to future capacity as a result of the development.

6.5.5. Trips generated by the proposed development have been distributed across the nearby public transport network. As is the case with any trip distribution exercise, a number of assumptions and limitations apply which vary depending on the method employed and source data. In this case, given the scale of the development and trip distribution it is deemed appropriate not to use strategic transport models to help inform the trip distribution.

RAILWAY DISTRIBUTION

6.5.6. Twickenham Railway Station serves several major stations, including both London Waterloo and Reading. As outlined in the site accessibility, the majority of peak hour trains travel to London Waterloo with up to 17 services between 0800-0900 on a weekday.

6.5.7. Based on the proposed public transport trip-generation, there are expected to be 22 outbound train trips in the hour, with an additional 4 trips on the London Underground as a main mode of travel, which are likely to first use the train. Taking a “worst-case” scenario, whereby all 22 additional person train trips and 4 London Underground trip will be travelling eastbound towards Waterloo, would equate to an average of 1.56 person trips per service during the AM peak, with less than 1 person per service during the PM peak. This is clearly a negligible impact and in reality several people could be travelling Westbound from Twickenham towards Reading, Windsor and Wimbledon.

BUS DISTRIBUTION

6.5.8. The proposed residential development is expected to generate bus trips. In order to assess future projected distribution, data from the 2011 Census has been used to inform the distribution of residents.

6.5.9. Table 6-3 provides a summary of bus trips onto the network. The expectation is that the majority of bus trips in the morning peak will be Eastbound (EB) towards Richmond, Twickenham and Richmond Station, with the 110, 490 and H22 the bus services operating from stops to the north of Twickenham Green, nearest to the site. As such, the bus trip distribution, based on census calculations have been split accordingly across these three bus routes, taking into account the number of peak hour services for each route.

Table 6-3 – Bus Peak Hour Service & Direction Trip-Distribution

Service	Direction	Outbound			Inbound		
		Direction Split (%)	AM	PM	Direction Split (%)	AM	PM
Eastbound (EB)		80%	4	2	20%	0	1

Westbound (WB)		20%	1	0	80%	1	2
110	EB	10%	1	0	5%	0	0
	WB	5%	0	0	10%	0	0
490	EB	40%	2	1	10%	0	0
	WB	10%	1	0	40%	1	1
H22	EB	30%	2	0	5%	0	0
	WB	5%	0	0	30%	0	1
Note: Some minor errors occur in the table due to roundings							

6.5.10. As the calculations show, the number of additional bus passenger trips generated is clearly negligible.

7 DELIVERY & SERVICING

7.1 OVERVIEW

7.1.1. This chapter provides details on the servicing strategy for the proposed development.

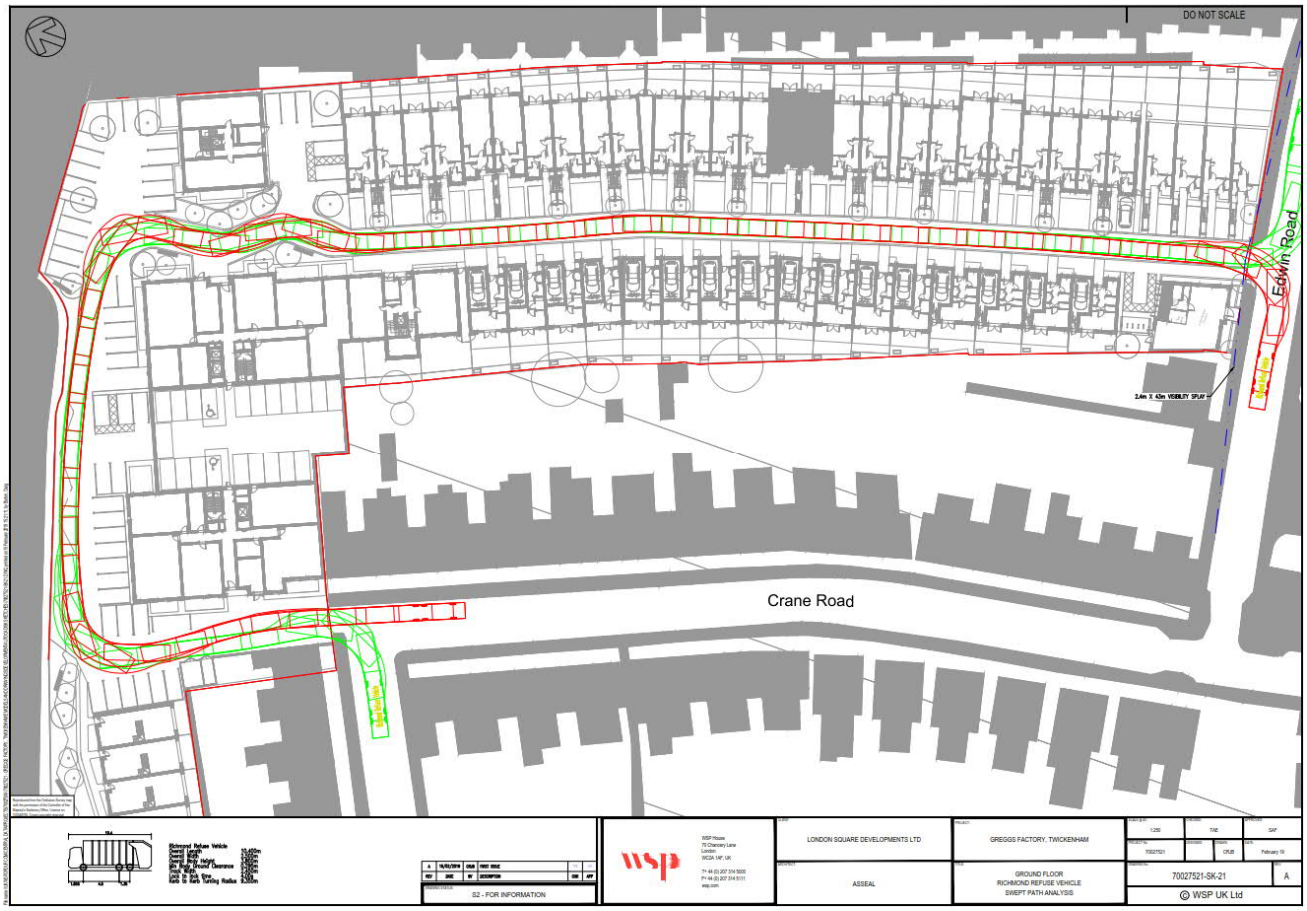
7.2 SERVICING AND REFUSE VEHICLE ACCESS

7.2.1. The development proposals provide for all servicing, deliveries and waste collection to occur within the boundary of the site along the internal road.

7.2.2. Delivery vehicles will be able to access the site from both Edwin Road and Gould Road entrances. It is expected that the majority of residential deliveries such as Supermarket deliveries will be made by transit vans or 7.5tonne box vans. Vehicles will be able to pull alongside the residential dwellings and driveways to deliver, without compromising a flow of traffic along the shared surface. The road width has been assessed and tested through swept-path analysis to ensure there is viable distance for passing vehicles to move around any temporarily parked vehicle, as illustrated in Appendix B.

7.2.3. In order to assess the feasibility for occasional manoeuvres for larger vehicles to the site, a swept-path analysis assessment has been undertaken. Figure 7-1 shows the servicing strategy for residential refuse collection, which would be undertaken by LBRuT waste services, as well as deliveries to the site.

Figure 7-1 - Servicing & Refuse Collection Strategy



7.2.4. The swept-path illustrates the feasibility for a large refuse vehicle accessing and egressing the site in a forward gear. With regard to the waste strategy for the houses along the mews street, the refuse vehicle will collect waste from outside the residential properties on allocated collection days, which is in keeping with the existing procedure for residential properties in the neighbouring streets.

7.2.5. Looking more specifically at the apartment blocks and dwelling houses towards the northern end of the site (Including blocks E, F, and G), communal refuse stores have been provided within immediate proximity of the internal road and within a safe and viable trundle distance of the refuse vehicle. Refuse vehicles will be able to pull alongside the respective stores and collect waste, without needing to reverse or turn within the site.

7.2.6. The swept-path analysis illustrates that a large refuse vehicle can access and egress the site without overhang to parking bays or property boundaries, and without impeding or compromising pedestrian safety or neighbouring amenity.

7.2.7. Commercial refuse for the office development to the south of the site will be collected by private contractors along Edwin Road which is in-keeping with the strategy for commercial and industrial premises already located along the road.

7.3 DELIVERY & SERVICING TRIP GENERATION

7.3.1. To forecast residential servicing trip rates, WSP conducted focussed surveys at new residential developments in London (Bow Quarter) in 2016 as a result of the increase in online deliveries over recent years. The number of servicing vehicle trips associated with the proposed development has been forecast using delivery and servicing trip rates obtained from this research. The raw data associated with this survey is presented in Appendix G with the resultant trip rates being applied to the 116 units associated with the redevelopment of the Greggs Bakery Site. A summary of the findings is presented in Table 7-1.

Table 7-1 - Proposed Servicing/Delivery Trip Rates by Land Use

Mode	AM (0800-0900)			PM (1700-1800)		
	In	Out	Total	In	Out	Total
LGVS	0	0	1	1	1	2
HGVS	0	0	0	0	0	0
Total	1	1	1	1	1	2

7.3.2. It should be noted that over the course of a typical day, it is expected that this number of residential units would generate 13 LGV trips, and a single HGV trip.

7.3.3. When taking into the account the extant site when fully operational and indeed alternative industrial uses, it is clear that the site would be expected to generate significantly fewer HGV trips, with the only regular HGV trip likely to be weekly refuse collection undertaken by the council. The majority of servicing trips would be undertaken in transit and panel vans.

7.3.4. In summary, the number of servicing trips as a result of the proposed development are expected to be minimal and insignificant.

8 SUMMARY & CONCLUSIONS

8.1 SUMMARY

8.1.1. WSP has been appointed by London Square Developments Limited (the applicant), to provide transport advice and a Transport Assessment (TA) in support of a full planning application for the redevelopment of the Former Greggs Bakery Site on Gould Road, Twickenham, TW2 6RT.

8.1.2. This Transport Assessment has considered the relevant transport matters associated with the redevelopment of the site which will comprise of a residential-led scheme providing 116 dwellings with associated parking spaces and a B1 commercial unit of 175 sqm.

8.1.3. The site measures approximately 1.1 hectares and is currently occupied as a single industrial unit by the Former Greggs Bakery, which ceased commercial operation in 2016. The site is situated between two residential terraced streets, Crane Road and Norcutt Road, bordered by Edwin Road to the south, and wrapping around Crane Road to the north.

8.1.4. The site benefits from good footpath connectivity to the A305 The Green, Twickenham Railway Station and Twickenham Centre and is in close proximity to several bus stops. In addition to a range of public transport options, the site is also within walking distance of several local amenities and services, thus reducing the need for residents to travel by private car.

8.1.5. The key transport and access principles associated with the proposals are as follows:

- Provides a compliant car parking scheme, within the requirements of both the Richmond and London Plan maximum standards
- Provides a communal car club bay which is a communal benefit for both the development site and surrounding residential network
- Utilises the extant site entrances to provide an internal access road and two-way vehicular use
- Provides an internal on-site servicing and delivery strategy with residential refuse collection in keeping with the surrounding residential streets
- Provides secure, internal cycle parking in accordance with the emerging draft London Plan standards
- Provides convenient short-stay cycle parking spaces across the site within easy access of the apartment core / entrance
- Provides a shared surface through the site to encourage low vehicle speeds, open up the site and facilitate harmony between residents and vehicles
- Provides a new communal landscaped area to the north of the site, opening up the frontage to the River Crane
- Removes the regular daily HGV trips associated with the existing industrial site, and the previous issues of employee parking within the surrounding area.

8.1.6. The trip generation assessment has illustrated that whilst there will be a small increase in total person trips during the AM peak as a result of the proposals, there will be a decreased number of total person trips generated during the PM and peak, and across the day as a whole, when compared to both an entirely industrial scheme as per the previous use or an entirely commercial scheme, which has been assessed for viability.

8.1.7. In conclusion, it is considered that the proposals will not impact negatively upon the area or create conditions prejudicial to the transport network, highway safety or neighbouring amenity.