Figure 4-9: Journey 2 - worst point at the May Road junction with Colne Road

4.3.23 This area of the journey has been assessed against the eight healthy streets indicators below:

- Easy to cross – This section of the journey lacks tactile paving, making crossing Colne Road difficult to navigate for the visually impaired. Tactile paving could be provided on all arms of the May Road/Colne Road priority junction to improve crossing for all.
- People feel safe – The one-way road is lightly trafficked and is overlooked by residential properties, providing passive surveillance, strengthening perceptions of safety.
- Things to see and do – There are a number of shops, cafes and restaurants a short walk from this section of the route on The Green.
- Places to stop and rest – The journey lacks places to stop and rest. However, there are plenty of seating opportunities at The Green which is a short walk away.
- People feel relaxed – The lack of vehicular traffic during peak periods associated with the school makes this link a more attractive route for pedestrians and cyclists.
- Not too noisy – This journey is lightly trafficked and considered quiet.

- Clean air – According to the London Air Quality Network,[2] this section of the journey passes the annual mean objective for NO2 pollution.
- Shade and shelter – This journey has no shade or shelter. Street trees could be planted where the width of the footway permits.

KEY JOURNEY 3 - TWICKENHAM STATION

4.3.24 Key journey three connects the site with Twickenham Station, and National Rail services. This route is likely to be used regularly by prospective residents and employees of the proposed development.

4.3.1 The worst section of the journey, shown in Figure 4-10, was identified as the end of Marsh Farm Road. The lack of legibility creates a confusing environment for pedestrians and cyclists. There is no footway provided on the eastern side of Marsh Farm Road. The pedestrian bridge over the railway lines lacks step-free access and this section of this journey lack street lighting.

Figure 4-10: Journey 3 - the worst point at the end of Marsh Farm Road

[2] http://www.londonair.org.uk/london/asp/annualmaps.asp

4.3.2 This area of the journey has been assessed against the eight healthy streets indicators below:

- Easy to cross – This section of the journey is not easy to cross for all; the pedestrian bridge lacks step-free access; therefore, cyclists, those with mobility issues, wheelchair users, people with pushchairs cannot continue the journey. A wheeling ramp adjacent to the staircase (i.e., a Dutch wheeling staircase) could be provided to facilitate access for cycles over the railway lines.
- People feel safe – Marsh Farm Road is lightly trafficked, creating a safer environment for pedestrians and cyclists. Figure 4-11 shows cyclists travelling along Marsh Farm Road towards Colne Road.

  Whilst Marsh Lane Road is ideal for cyclists. Figure 4-11 shows the footway on the western side is uneven, and the provision of bollards reduces the width. The forecast reduction of HGVs in the vicinity of the site will improve safety for pedestrians and cyclists in the area.
- Things to see and do – Figure 4-10 shows there is a lack of things to see and do on this journey. This route facilitates access to/from the station where there are local retailers (i.e., coffee shops etc) located providing things to see and do along a person's commute.
- Places to stop and rest – There are no places to sit provided along this journey. New benches could be provided adjacent to the pedestrian bridge where space permits.
- People feel relaxed – People may not feel relaxed along this journey due to the lack of visibility and legibility. The provision of additional street lighting and wayfinding signage on Marsh Farm Road would improve safety perceptions, particularly during evening hours where daylight is reduced.
- Not too noisy – This journey is lightly trafficked and considered quiet.
- Clean air – According to the London Air Quality Network,[3] this section of the journey passes the annual mean objective for NO2 pollution.
- Shade and shelter – Street trees provide shade and shelter along this journey.

[3] http://www.londonair.org.uk/london/asp/annualmaps.asp

Figure 4-11: Cyclists travelling along Marsh Farm Road towards Colne Road

SUMMARY

4.3.3 There are several small interventions that could be implemented to improve the key routes to local destinations for existing residents of the area and future residents and employees of the proposed development. A reduction of HGVs is forecast as a result of the proposed development which will improve the environment surrounding the site, improving safety for all road users as well as pedestrians and cycles.

4.3.4 It is not expected that the Applicant will need to contribute to or implement all potential improvements that are identified through the ATZ assessment, especially because the proposed development would not be the only party to benefit from these changes. Improvements identified in this assessment should be investigated further and, if deemed appropriate, secured through a suitable channel such as through future development CIL contributions or LBRuT's local walking/cycling improvement programmes (i.e., Richmond's Active Travel Strategy).

5 EMPLOYMENT FLOOR SPACE ASSESSMENT & HIGHWAY SAFETY

5.1 INTRODUCTION

5.1.1 This Chapter provides a review and assessment of the acceptable quantum of employment uses on the site based on highway safety grounds. This has been carried out in the context of the site's previous use as a Greggs factory and the evidence of instances where the safety of road users, especially pedestrians and cyclists, was regularly put at risk. An in-depth analysis of highway safety, including assessments of the probability of vehicular conflicts is contained within the appended Technical Notes.

5.1.2 Using a conflict probability assessment, the Technical Notes identify a maximum quantity of non-residential land uses which could be accommodated on the site based purely on highway safety.

5.2 DEFINITIONS

5.2.1 It is important to set out the definitions used in the assessment which help define a vehicle conflict and the threshold of acceptability.

Access Route – Due to the limited vehicle access options to the Site for HGVs, The Access Route is defined as the journey between The Green (A305) and the Site via Colne Road, Marsh Farm Lane and Edwin Road.

Industrial Use – Defined as Planning Uses Classes E(g)(iii) (previously B1(c)), B2 or B8.

TRICS® is the survey-based system of trip generation analysis for the UK and Ireland. It is a comprehensive database of traffic and multi-modal transport surveys, covering a wide range of development types. The system allows its users to establish potential levels of trip generation for their development scenarios using a series of database filtering processes. For the purpose of this exercise the following TRICS land use definitions have been used:

<u>TRICS Definitions used to calculate trip rates:</u>

- Use Class B1c (Now E(g)(iii)) (Light industry appropriate in a residential area) – Industrial Estate where B1(c) is the predominant use on the site.
- Use Class B2 (General Industry) – Industrial Unit where B2 is the predominant use on the site.
- Use Class B8 (Storage) – Commercial Warehousing
- Use Class B8 (Distribution) – Parcel Distribution Centre

Conflict Point – Where the paths of an HGV and any other vehicle, through a turning manoeuvre or the through route; where one party needs to stop, reverse, mount the footway or change direction from their route.

Road User - anyone who uses a road, such as a pedestrian, cyclist or motorist.

Light Goods Vehicle (LGV) - a commercial motor vehicle with a total gross weight of 3,500kg or less. Usually, vehicles up to approx. 6.0m in length.

Any use on the site would generate a number of LGVs but for the conflict assessment LGVs have been excluded. An LGV can be easier to manoeuvre and does not need to mount the footway to pass existing vehicles. Therefore, the LGV risk to highway safety along the access route is less.

Heavy Goods Vehicle (HGV) - a commercial motor vehicle with a total gross weight of over 3,500kg. Usually, vehicles over approx. 6.0m in length.

Anecdotal evidence suggested that the vehicles used by Gregg's were reduced in size following complaints by local residents. Greggs reduced their fleet vehicle size to an 8.0m long 7.5T HGV.

HGV Conflict – an incidence when another vehicle of any size meets an HGV generated by the development along the length of Edwin Road between the site access junction and the Marsh Farm Road/Colne Road junction.

Any use of the site will result in the occasional HGV movement from refuse collection or larger rigid vehicles, but the concentration of HGVs associated with employment use has historically caused safety issues.

Highway/Road Safety Improvements – methods and measures aimed at reducing the likelihood or the risk of persons using the road network getting involved in a collision or an incident that may cause property damages, injuries and/or death.

Acceptable HGV Conflict - Velocity have defined an Acceptable HGV Conflict as one inevitable conflict that would occur between an HGV (usually a refuse collection vehicle (RCV)) and existing vehicular traffic in each direction on Edwin Road. The RCV is a standard vehicle on the road, it undertakes a regular route and is a vehicle that drivers are familiar with.

The refuse vehicle is associated with servicing existing residential properties in the area. Residential development on the site would not change this condition since it too would be serviced by the same refuse collection vehicle.

If an additional employment use were proposed on the site, it will generate its own vehicular traffic including HGVs and therefore there will be an increased risk of an HGV conflict. This is the subject of the assessments contained within the Technical Notes.

As noted above, if one conflict in each direction for the residential use of the Site is an acceptable HGV conflict and any additional employment use on the site would generate HGV movements, it follows that one HGV conflict in each direction for the employment use would be acceptable.

Therefore, one HGV conflict in each direction generated by the industrial or commercial use on the site would be an acceptable HGV conflict. Any further conflicts over and above this baseline level increase the risk to other road users and should therefore be avoided.

5.3 LIGHT INDUSTRIAL FLOOR AREA ASSESSMENT

5.3.1 Technical Note 1 contained in APPENDIX E was produced to calculate HGV trip rates for alternative industrial uses on the site (E(g)(iii), B2 and B8 storage and B8 warehousing) based on an incremental range of floor areas. From that, Velocity created a probability matrix that showed the likelihood of a generated

HGV coming into conflict with the existing traffic on the access route between The Green (A305) and the Site.

5.3.2 Technical Note 1 considered the quantum of HGVs that each industrial use, and floor area scenario would likely give rise to, which was used to identify the maximum range of industrial floor area (based purely on transport grounds) that the site can accommodate without detriment to the local area and highway safety.

5.3.3 The 'tipping' point was approx. 885sqm of Use Class E (g)(iii), where the 85th percentile chance of an HGV conflict rose from one in each direction to two HGV conflicts in each direction per day. It was determined that 885sqm of E(g)(iii) use was the maximum floor area the site can accommodate without detriment to the local area and highway safety.

5.4 VEHICLE ROUTES TO THE DEVELOPMENT SITE

5.4.1 Due to the site's residential setting, the adjoining network of roads does not lend itself well to frequent HGV movements. The carriageways are narrow, often flanked by parked cars and there have been regular instances of vehicles mounting the kerbs and footways.

5.4.2 The route HGVs use to access the site from The Green (A305) is via Colne Road, Marsh Farm Lane and Edwin Road and is reinforced by signage identifying Colne Road and other routes as being unsuitable for HGVs.

5.4.3 Access to the Site from Medway Road/Andover Road to the west is also signposted as being unsuitable for HGVs. Therefore, any HGV access to the site is through the residential roads to the south of the site from The Green (A305) from May Road, Knowle Road or Colne Road.

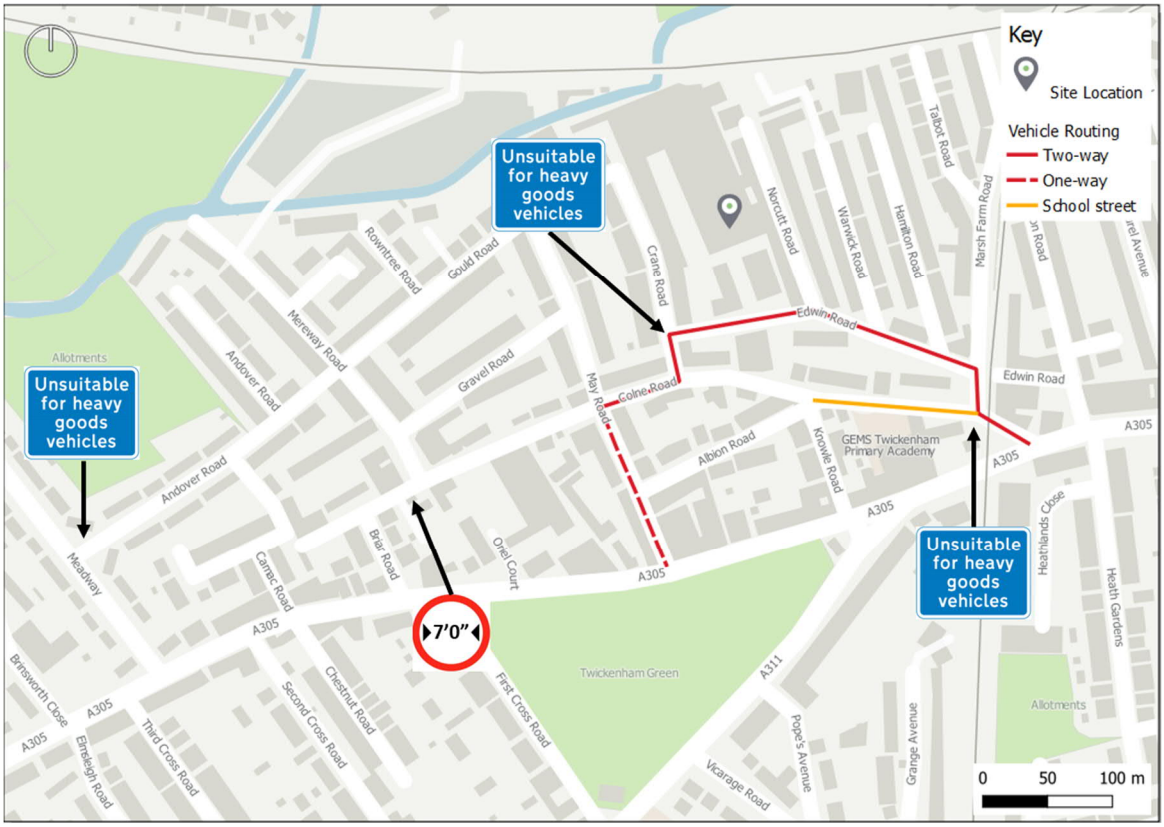
5.4.4 May Road is one-way northbound from The Green (A305) and could provide access to the development via Colne Road and Crane Road.

5.4.5 Figure 5-1 below shows the limited access that HGVs have to the Site. Two-way access can be gained via Colne Road, Marsh Fam Lane and Edwin Road and there is an inbound route via May Road, Colne Road and Crane Road with vehicles having to egress to the east via Edwin Road.

5.4.6 There are a number of conflict points on the Access Route, which include:

- Colne Road/Marsh Farm Lane junction;
- Marsh Farm Lane;
- Marsh Farm Lane/Edwin Road junction;
- Edwin Road;
- May Road/Colne Road junction; and
- Colne Road/Crane Road junction.

Figure 5-1: HGV Routes & local restrictions



5.4.7 Due to the restricted nature of the site within a residential setting it would be very difficult to improve or widen the roads and junctions and therefore the existing constrained routes are the only access options for HGVs to the development site.

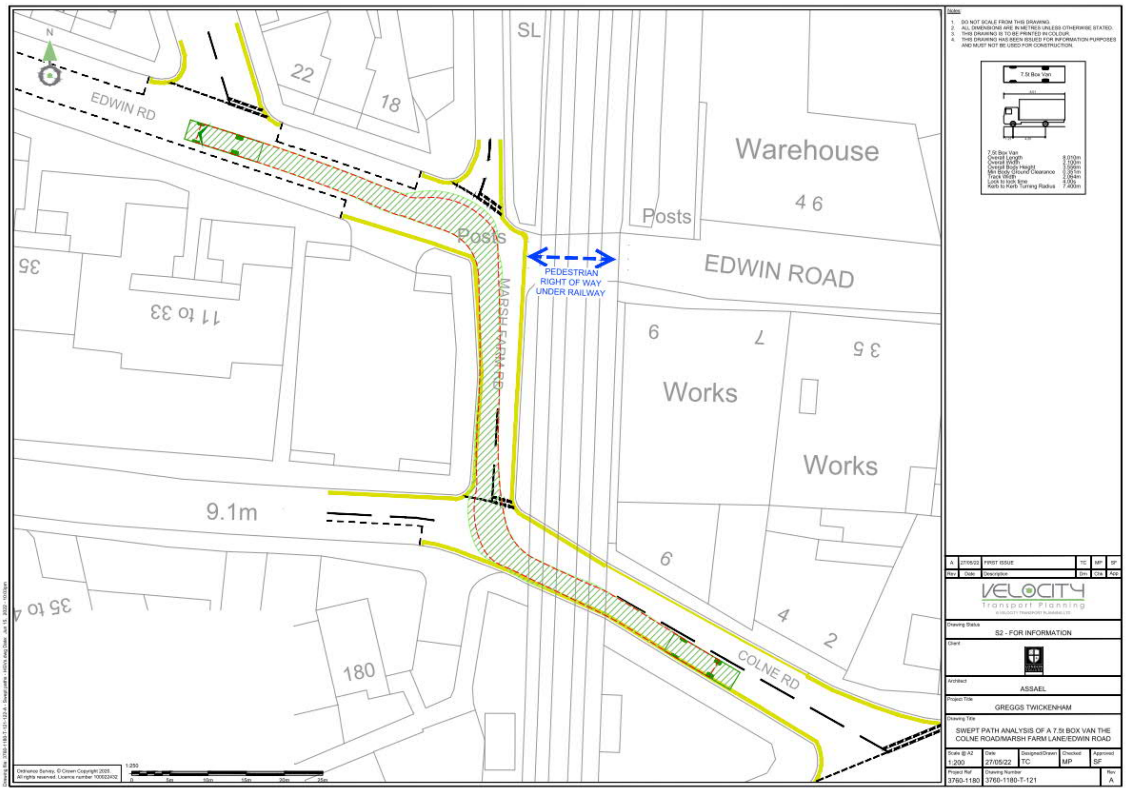
5.4.8 These findings are echoed by the views of the independent Road Safety Auditor who has carried out the Road Safety Assessment contained within Appendix E.

5.5 SWEPT PATH ANALYSIS

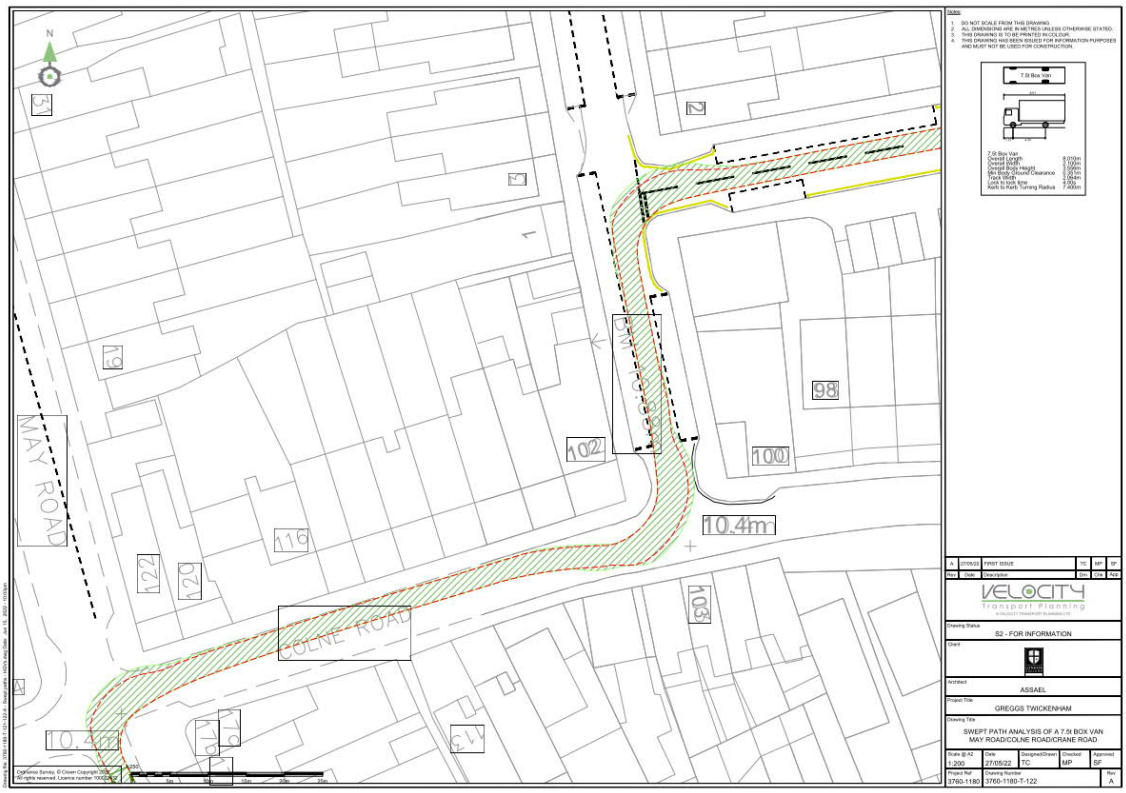
5.5.1 A swept path analysis has been undertaken to consider the vehicle types that would access the development site and to review how these vehicles interact at the various conflict points along the route.

5.5.2 APPENDIX C contains a full set of the Swept Path Analysis, and the conflict points are highlighted below.

COLNE ROAD/MARSH FARM LANE/EDWIN ROAD



MAY ROAD/COLNE ROAD/CRANE ROAD



5.6 HISTORICAL SAFETY ISSUES

5.6.1 Whilst the site was operational as Greggs Bakery, it generated a number of regular daily HGV movements, with instances of conflict where large vehicles were passing other vehicles on Edwin Road or Marsh Farm Lane.

5.6.2 Highway safety was compromised when the site was occupied, primarily because of the conflicts created by the number of HGVs accessing the site via the Access Route and conflicting with other road users.

5.6.3 On the A305 The Green, this is not an issue, but on the residential roads surrounding the site, this has led to:

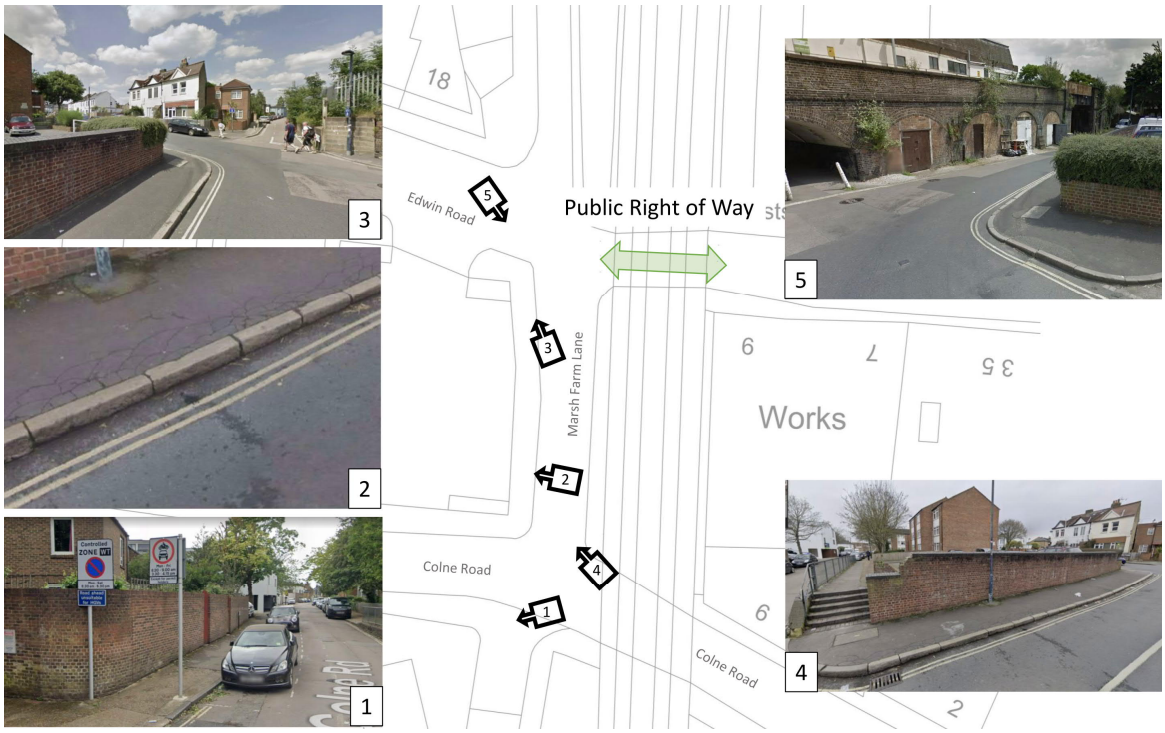
- Damaged footways and kerbs;
- Concerns about safety for other road users and pedestrians; and
- Damage to parked cars.

PHOTOGRAPHIC EVIDENCE

5.6.4 There are a number of photographs and images from Google Streetview that demonstrate the damage to footways, over-running of footways and historical photos of Greggs HGVs attempting to pass each other along the route.

5.6.5 Evidence of footway damage and vehicles over-running the footway on Marsh Farm Lane is shown in Figure 5-2: Colne Road Restrictions and footway damage and a copy of the photos are contained within APPENDIX G.

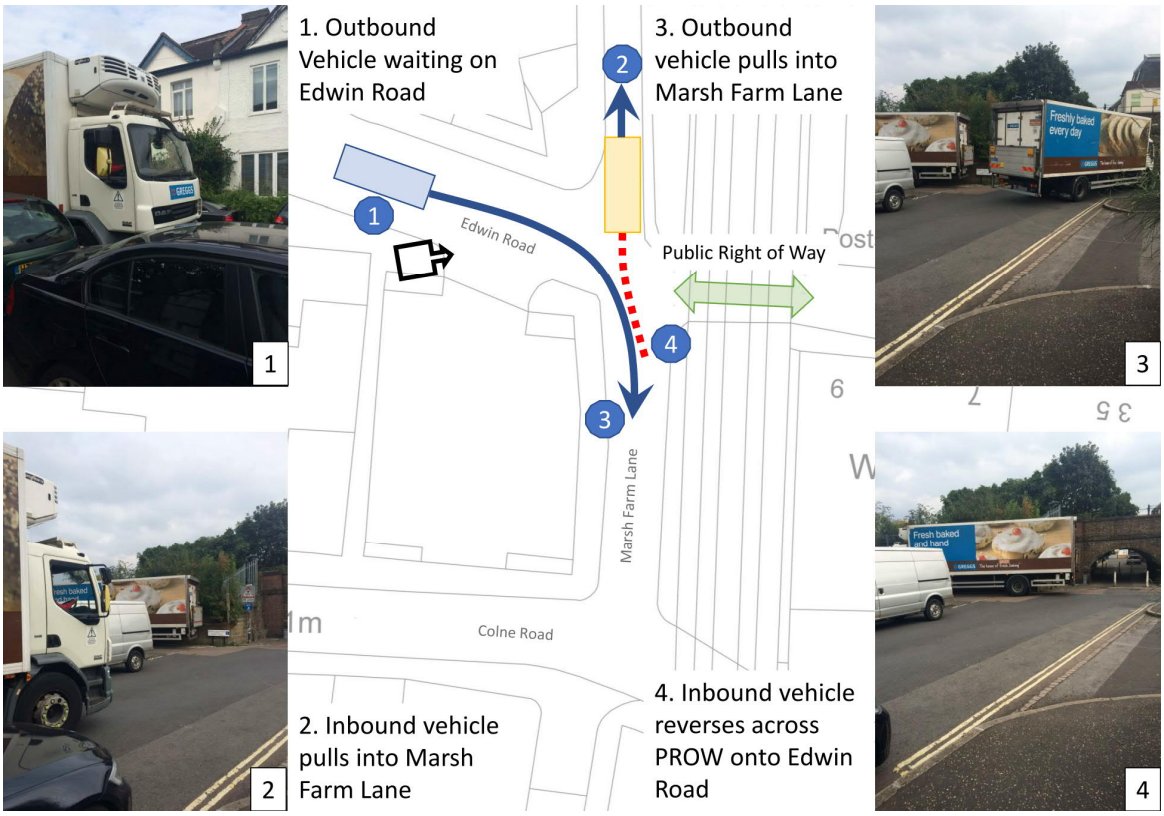
Figure 5-2: Colne Road Restrictions and footway damage



5.6.6 Whist the former Greggs factory was operational the bakery generated a number of HGV movements which travelled from The Green to the site via Edwin Road. There are several locations along the route where two lorries cannot pass and vehicles either have to mount the footway or make unsafe manoeuvres.

5.6.7 As demonstrated by the photo's below, Gregg's vehicles undertook a reversing manoeuvre on the public highway to allow other vehicles to pass. As shown in the collection of photos below, the inbound Greggs vehicle can be seen reversing across the pedestrian link underneath the railway.

Figure 5-3: Historical Photo - Greggs Lorries Passing on Edwin Road/Marsh Farm Lane junction



PUBLIC COMMENTS – PLANNING APPLICATION (19/0646/FUL)

5.6.8 Below are extracts from public comments received in support of the previous planning submission (19/0646/FUL) which reference the issues with Greggs' vehicles and damage to residents' cars. A summary of the public comments is contained within APPENDIX H. Many of the objections to the previous scheme sight traffic issues

Type of comment: Support the proposal

Comment: The site needs to be developed and it needs to be in keeping with the surrounding area. The residents have for years been concerned about safety and security due to the flow of traffic in and out of the site as well as the size and amount of vehicles. There are a few things that need to be considered.

1 The access to the site for works vehicles during and after the development. The roads are unsuitable for lorries. Greggs had to change the size of their lorries as parked car were routinely damaged by their deliveries. Personally, my car was written off by a Gregg's vehicle and though they helped to get it repaired rather than replaced, it was an ongoing issue and will be a current problem for lorries using Gould and Crane Roads. What are the council and developer going to do to protect our cars?

Comments

Type of comment: Support the proposal

Comment: I support this application wholeheartedly. The site was inappropriate for its previous industrial use, with noise, traffic and associated large vehicles regularly navigating narrow residential roads in the area. The scheme makes use of the highest quality design, which will open up land alongside the river crane walk which is currently inaccessible and of poor appearance. As a local resident I regularly walk in this area and it would be a real shame if the site was left in its current sad state and longer than necessary. With the impact Covid has had on Twickenham and the wider area its seems imperative that sites such as this are converted to much needed homes which will no doubt aid the local economy significantly.

Type of comment: Make a general observation

Comment: Having read the objections to this proposed development I can understand the concerns of the residents in Crane and Gould road in respect of the height and density of the block of flats. However I would like to reassure them in respect of disruption we had major building works whilst the new houses and flats were constructed in Norcutt Road. All vehicles had to pass by our existing houses. The developers were extremely considerate and most of the heavy vehicles were limited to set hours. I would foresee that this development would be accessed for the main part from Edwin Road rather than the tight corner of Crane and Gould. The residents in Crane Road are also concerned about lack of privacy. The existing roads ie Norcutt, Hamilton, Warwick etc have always been back to back terraces and it encourages a good community atmosphere due to interaction between neighbours beyond our immediate road. I understand that many residents are concerned also by insufficient parking but this is assuming that every house will have more than one car or even a car at all. The existing CPZ leaves spaces even at night in Edwin Rd but am unsure if the new residents would be entitled to visitor permits if they are not allowed a parking permit for their own vehicle. I agree that access over the Crane would be beneficial and potentially a larger open space for children should be encouraged. Overall I am glad that the site is mainly residential and it is an improvement on the previous design which was far more industrial and would have generated far more traffic issues. Finally I am led to believe that the remaining plot behind the flats at the end of Norcutt Road has been offered to the developers. If this is so what plans are there for it and could it be used to create a play area?

Comments

Type of comment: Support the proposal

Comment: Supporttheproposal
Comment: The site needs to be developed and it needs to be in keeping with the surrounding area. There are a few things that need to be considered.
1 The access to the site for works vehicles during and after the development. The roads are unsuitable for lorries. Greggs had to change the size of their lorries as parked car were routinely damaged by their deliveries. What are the council and developer going to do to protect our cars?
2 The site entrance on Gould/Crane Road is very limited. The traffic flow out of the site will increase with the amount of residents on the site as well as service vehicles and visitors. The entrance needs to have road calming measures to slow down vehicles as they enter and exit the site.

ONLINE NEWS ARTICLES

5.6.9 Several online news articles were published whilst the former Greggs site was operational which demonstrate the local resident issues with Greggs' vehicles and highlight their safety concerns.

- Richmond & Twickenham Times – Bunfight breaks out over Greggs Twickenham Depot – February 2012

  https://www.richmondandtwickenhamtimes.co.uk/news/9553609.bunfight-breaks-out-over-greggs-twickenham-depot/

Neighbours have complained about the noise caused by HGV lorries that often lined Edwin Road, where the industrial-scale bakery is situated.

he was so incensed by problems the lorries were causing, including noise and congestion, which he said made a young mother dodge through each vehicle. I saw out the window one of the mums with a pushchair avoiding the trucks. I went out to her, and she said she was used to it.

The battle between Edwin Road residents and Greggs has been long-running, with one person stating at the meeting on Wednesday that he had been fighting against these problems for 50 years.

Mr Martin said: "I think that they have outgrown their premises because they have trucks queuing on the road – whereas they should be in the depot.

- Richmond & Twickenham Times – Bakery lorries 'causing havoc' to residents – July 2004

  https://www.richmondandtwickenhamtimes.co.uk/news/514089.bakery-lorries-causing-havoc-to-residents/

  pavement bollard, he claims, was knocked over by a lorry delivering to Greggs Bakery in Gould Road. Another picture shows a group of bakery staff 'bumping' a private parked car aside to make way for a delivery lorry.

  He claims the council have 'given up' replacing the pavement bollard on the corner of Gould Road and Crane Road, as it has been continuously knocked over by large lorries trying to turn the corner.

- Richmond & Twickenham Times – Bakery lorries 'causing havoc' to residents – April 2012

  https://www.yourlocalguardian.co.uk/news/9623257.twickenham-greggs-depot-counts-cost-of-pasty-tax/

  It comes after the Greggs depot, in Edwin Road, Twickenham, came under attack from neighbours who complained about its vehicles lining the street and causing too much noise.

LONDON BOROUGH OF RICHMOND

5.6.10 The site constraints are well documented within various studies produced by LBRuT. A summary of the comments related to the vehicular access are set out below:

LONDON BOROUGH OF RICHMOND, EMPLOYMENT SITES & PREMISES STUDY - 2017 UPDATE

The site is bounded by residential uses. Crane Road is primarily residential road which means that operating hours, types of industrial activity and access are constrained. The current use experiences issues with HGV access".

Access in/out of the site is constrained for the large bakery lorries – As part of the site assessment, Access is scored as 1 – Poor;

Local access is poor for the bakery via residential roads used for residents' parking on both sides - As part of the site assessment, Local access by road is scored as 1 – Poor.

Greggs bakery may be available for redevelopment within the short term. Mixed use redevelopment a likely probability. Intensification and extension of the cluster may be difficult given the proximity of residential uses and the constrained access. Unlikely to support general industry, but hybrid space may be better suited.

The site is hemmed in by residential uses which restricts the extent to which the sites can be redeveloped and intensified. Access to the cluster is also constrained (especially at Greggs Bakery) and is unlikely to significantly improve given the surrounding residential uses.

Access is constrained especially for HGVs, & surrounded by residential areas

EMPLOYMENT LAND AND PREMISES NEEDS ASSESSMENT 2021

"…that density may be limited due to nearby residential property, and also that access will limit the number and possibly the type of vehicles that can access the site. However, there is a wide range of industrial type activities – including light industrial and workshops that are compatible with the nearby environment. Given that it was an operational bakery this demonstrates that some HGV movements are possible…"

5.7 TECHNICAL NOTES

5.7.1 A number of Technical Notes have been produced which analyse the potential employment floor space that could be accommodated on the Site before highway safety was compromised.

5.7.2 A copy of the Technical Notes is appended and a summary of each, and their findings are set out below.

TECHNICAL NOTE 1

5.7.3 Technical Note 1 was produced to analyse a series of incremental HGV trip generation forecasts associated with industrial uses that could be accommodated on Site. The analysis was used to identify the maximum industrial floorspace ranges that the former Greggs factory site could accommodate before highway safety is compromised.

5.7.4 Any use of the site will certainly result in the occasional HGV movement from refuse collection or larger rigid vehicles, but the concentration of HGVs associated with an industrial use on the Site has historically caused highway safety issues. It is likely that if the site were brought into industrial use again, this issue with highway safety would likely continue.

5.7.5 There is an existing regular conflict between a refuse vehicle on Edwin Road and other vehicles. This conflict is deemed as acceptable, and the refuse vehicle is associated with servicing existing residential properties in the area. Residential development on the site would not change this condition since the it too would be serviced by the same refuse collection vehicle.

5.7.6 If an additional industrial use is proposed on the site, it will generate its own vehicular traffic including HGVs and therefore there will be an increased risk of an HGV conflict on the access route.

5.7.7 As noted above, if one conflict in each direction for the residential use of the Site is an acceptable HGV conflict and any additional industrial use on the site would generate HGV movements, it follows that one HGV conflict in each direction for the industrial use would be acceptable.

5.7.8 Therefore, one HGV conflict in each direction generated by the industrial or commercial use on the site would be an acceptable HGV conflict.

5.7.9 Table 5-1 below shows the industrial use floor area ranges that can be accommodated on the Site before the number HGV conflicts is greater than those generated by the residential development and above the Acceptable Conflict limit.

Table 5-1: Maximum Floor Area Range for Industrial Uses

INDUSTRIAL USE CLASS	MAXIMUM FLOOR AREA
B2	790sqm
E(g)(iii)	890sqm
B8 Warehousing & Storage	735sqm
B8 Distribution	555sqm

TECHNICAL NOTE 2

5.7.10 Technical Note 2 assessed an E(g)(i) scheme on the former Greggs factory site. The note considered if the transport impacts of a commercial development could be adequately mitigated and whether such schemes might be acceptable from a highway safety and capacity perspective.

5.7.11 An E(g)(i) commercial scheme would result in a reasonably high vehicular trip generation and parking demand generated by the number of employees due to the site's modest PTAL.

5.7.12 The higher trip generation and parking demand have the potential to result in localised congestion during the morning and evening peak hours, as well as generating overspill parking on surrounding streets if sufficient parking supply is not provided on-site. Parking provision on-site would be in accordance with the London Plan Parking Standards.

5.7.13 The immediate area surrounding the site is within a CPZ, but there are roads slightly further away which do not have any form of parking control. People are willing to park further away from their workplace than they do to their home, so the potential impact on these uncontrolled streets is likely to be worse with a commercial scheme than a residential scheme.

5.7.14 A copy of Technical Note 2 is contained within APPENDIX F.

TECHNICAL NOTES SUMMARY

5.7.15 It is clear through the trip-generation assessment undertaken that a commercial or industrial use on the site would generate a considerable number of vehicle trips and would not alleviate the historical issues of HGV trips associated with the industrial use of the site.

5.7.16 Commercial (Class Use E(g)(i)) developments do not generate the need for many HGVs, and therefore the highway safety issues compared to those associated with industrial uses on the site are reduced.

5.7.17 An office development would generate significantly more car trips than industrial uses, which are associated with employees and visitors to the site and therefore, the highway impacts could be caused by congestion and overspill parking issues rather than HGV conflicts.

5.7.18 The introduction of the CPZ highlights residents have previously suffered from parking pressures when the Greggs site was operational and increasing the parking capacity on local residential streets is extremely difficult and often impossible.

5.7.19 In summary, the re-introduction of significant employment uses on the site from a highway's perspective would be unacceptable, unsafe, and very difficult, if not impossible, to mitigate.

5.8 POSSIBLE MITIGATION

5.8.1 Physical mitigations could be considered to improve the access route and reduce the potential HGV conflicts generated an industrial development.

5.8.2 An industrial use would generate a number of HGVs which could not be mitigated or remediated through design. The impacts of multiple HGVs using the local roads are also very difficult to mitigate where there is no scope to widen roads or remove parking, and dedicated HGV routes are already signed.

WIDEN CARRIAGEWAYS

5.8.3 There is limited scope to widen carriageways without impacting on the current footway widths. The only option to widen the carriageways to create more available road space would be through the removal of on-street parking.

5.8.4 Marsh Farm Lane only has a footway on the western side which shows signs of damage from vehicles mounting the footway. There is no scope to widen the carriageway to the east due to the railway and third party land constraints.

REMOVE EXISTING PARKING

5.8.5 The Site is currently within a CPZ which highlights residents have previously suffered from parking pressures when the Greggs site was operational. Therefore, removing or relocating parking on local residential streets where a CPZ has been recently introduced is extremely difficult and often impossible.

5.8.6 Parking Beat Surveys were undertaken on the roads surrounding the site and as set out in Section 7.6 the parking occupancy of the local roads is between 80-85% which represents parking stress levels.

WIDEN JUNCTIONS

5.8.7 There is limited scope to widen the junctions on the access route without compromising footway widths or removing parking spaces. There are also existing infrastructure and third party land restrictions that would limit any physical works.

5.8.8 A number of junctions in the area have been narrowed to improve pedestrian visibility due to on-street parking.

SUMMARY

5.8.9 The mitigation measures set out above would be very difficult, if not impossible, to implement and physical measures would be very limited.

6 LONDON-WIDE NETWORK

6.1.1 This section provides information on the proposed use of the wider transport network, including how people are predicted to travel and their anticipated mode of travel. The London-Wide network is the public transport and highways networks beyond the site and its surroundings. The Transport for London Road Network (TLRN) is some distance from the proposed development, and therefore highways implications have been considered within a specific Richmond analysis.

6.2 PUBLIC TRANSPORT NETWORK

PUBLIC TRANSPORT ACCESS LEVEL

6.2.1 Public Transport Access Level (PTAL) is used to assess the connectivity of a site to the public transport network in consideration of the access time and frequency of services. It considers rail stations within a 12-minute walk (960m) of the site and bus stops within an eight-minute walk (640m) and is undertaken using the AM peak hour operating patterns of public transport services. An Access Index (AI) score is calculated that is used to define a PTAL score.

6.2.2 TfL's online WebCAT tool shows the site AI is 8.97 indicating a PTAL of 2 (poor). The WebCAT PTAL output is summarised in Figure 6-1 and Table 6-1.

Figure 6-1: Site PTAL mapping

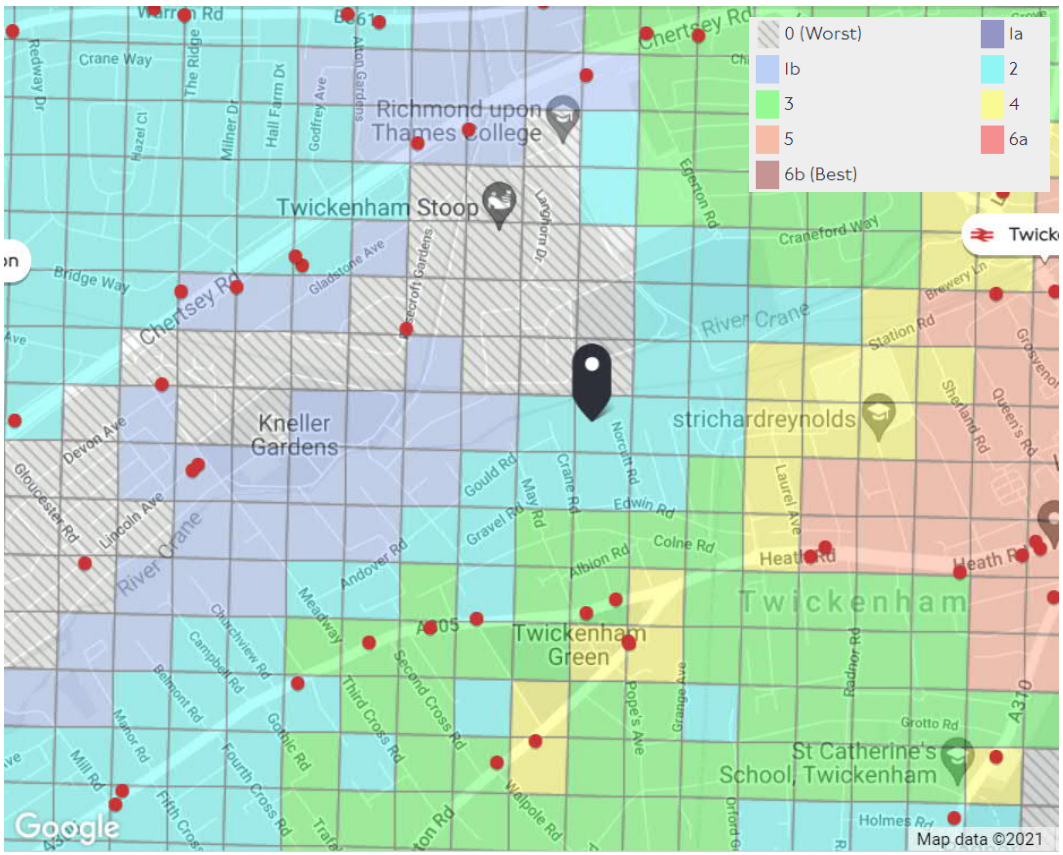


Table 6-1: Summary of PTAL

SERVICE	SERVICES	KEY STOPS / STATIONS (WALK TIME)	PTAL ACCESS INDEX
Bus	290 ,281, R70, 267, 110, 490, H22	Twickenham Green (5 minutes)	8.97
Total			8.97 (PTAL 2)

6.2.3 The site has a PTAL of 2; however, this only accounts for two local bus stops (providing access to seven routes) and not the nearby railway stations, i.e., Strawberry Hill Station and Twickenham Station. The stations are situated just outside the 12-minute PTAL walking catchment but are still within reasonable walking distance.

6.2.4 Walking and cycling are generally accepted as important alternatives to the private car and should also be encouraged to form part of a longer journey via public transport. The Chartered Institute of Highways and Transportation (CIHT) has prepared several guidance documents that provide advice with respect to the provision of sustainable travel in conjunction with new developments. Within these documents, it is suggested that:

- Most people will walk to a destination that is less than one mile (circa 1.6km) – Planning for Walking, 2015;
- The National Travel Survey notes that walking is the most frequent travel mode used for short-distance trips (within 1 mile / 1.6km) - National Travel Survey, 2017;
- Walking can replace short car trips, particularly those under 2km – Manual for Streets, 2007; and
- Walking distances to bus stops should not exceed 400m, whilst people are prepared to walk twice as far to rail stations, Planning for Walking, 2015.

6.2.5 In this respect, PTAL is not considered the most representative measure of the site's accessibility. Moving just 200m to the east closer to the centre of Twickenham, and the PTAL levels increase to 4 and 5, which would indicate good to very good access to public transport services.

BUS NETWORK

6.2.6 The site benefits from a number of bus routes in the area, with the closest bus routes situated along Twickenham Green (stops GC, GL, GT and GM), all of which are situated within a six-minute walk to the south of the site. There are additional stops on Heath Road Grove Avenue (Stop GS, an eight-minute walk) to the southeast of the site providing services towards Hounslow, Fulwell, Tolworth and Heathrow Airport.

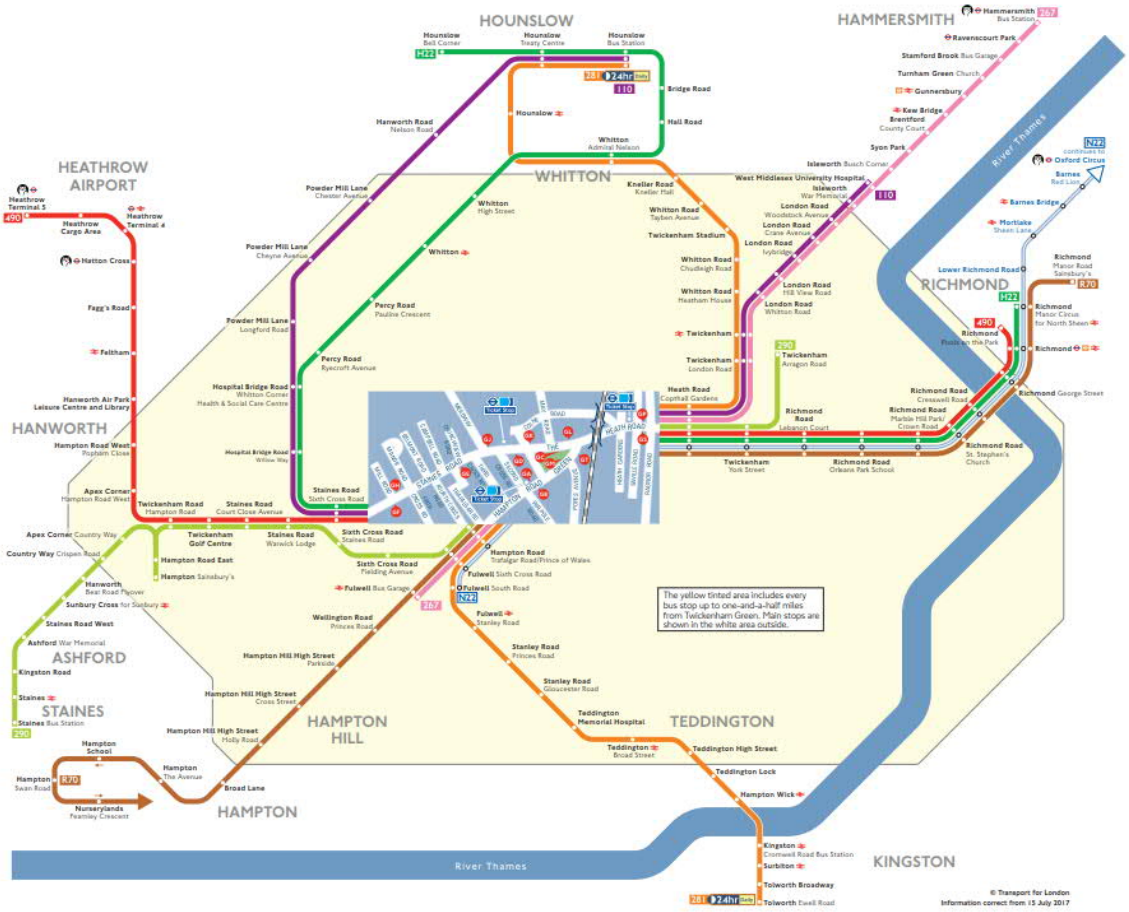
6.2.7 Table 6-2 provides details of these routes, including peak hour frequencies, and Figure 6-2 shows their routing.

Table 6-2: Bus service frequencies

SERVICE NO.	ROUTE	PEAK HOUR FREQUENCY (SERVICES PER HOUR)		OPERATOR
		AM	PM	
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

SERVICE NO.	ROUTE	PEAK HOUR FREQUENCY (SERVICES PER HOUR)		OPERATOR
		AM	PM	
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/Nursery lands (circular) - Hampton Hill - Fulwell - Twickenham - Richmond	16	19	Abellio London

Figure 6-2: Local bus routes



RAIL NETWORK

6.2.8 The closest railway station to the site is Strawberry Hill, situated a 13-minute walk (1.1km) to the south of the site. Twickenham Railway Station, located approximately 1.6 km to the east of the site along Station Road, provides more train services.

6.2.9 The station is operated by Southwest Railway, providing access to destinations including London Waterloo, Reading, Clapham Junction, Chiswick and Wimbledon.

6.2.10 A network map illustrating the rail connectivity from Twickenham Station is shown in Figure 6-3 and Figure 6-4

Figure 6-3: Rail network map

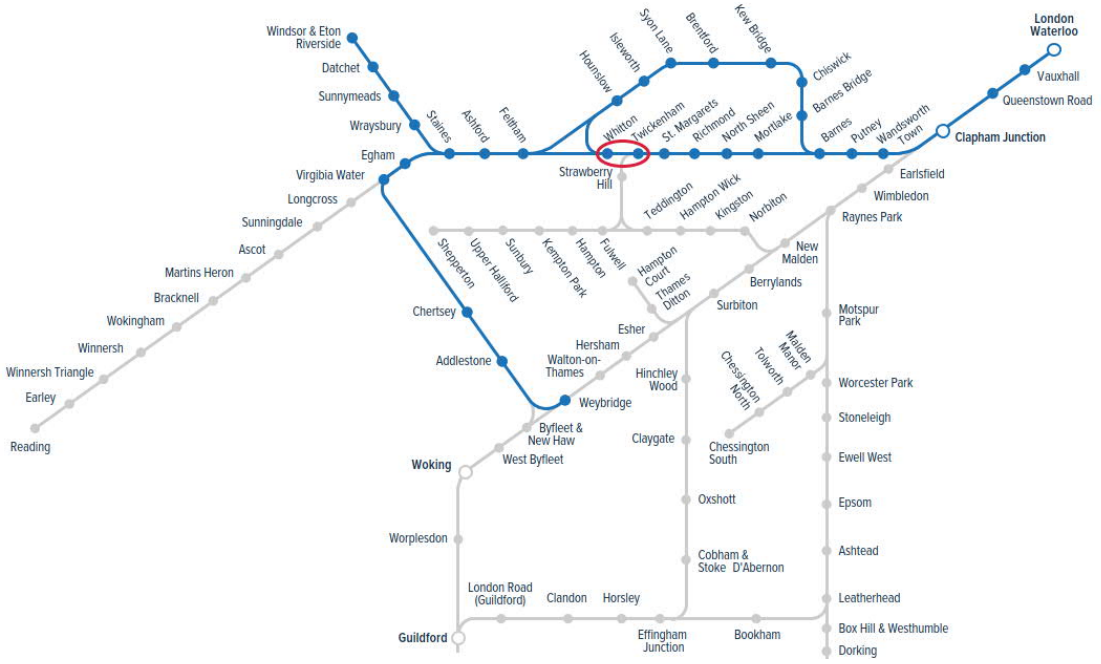
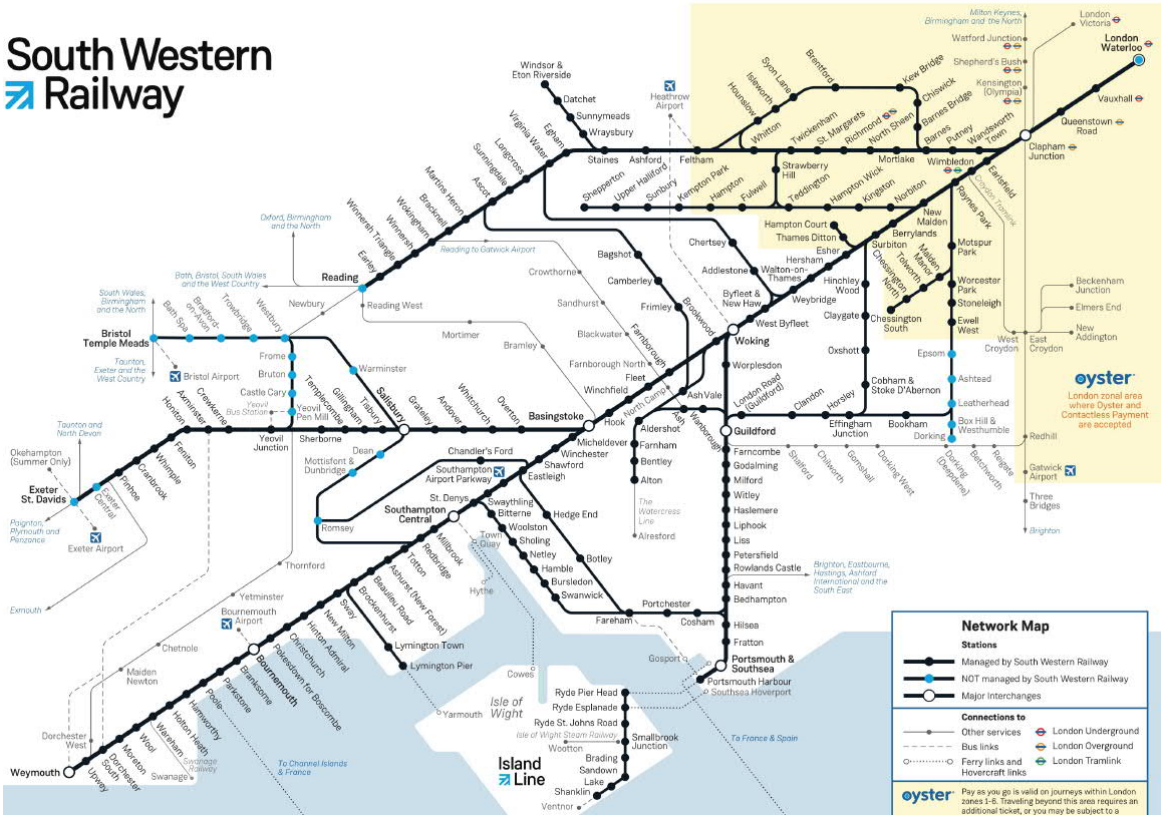


Figure 6-4: Southwestern Railway network map



6.2.11 The rail service and their frequencies are outlined in Table 6-3.

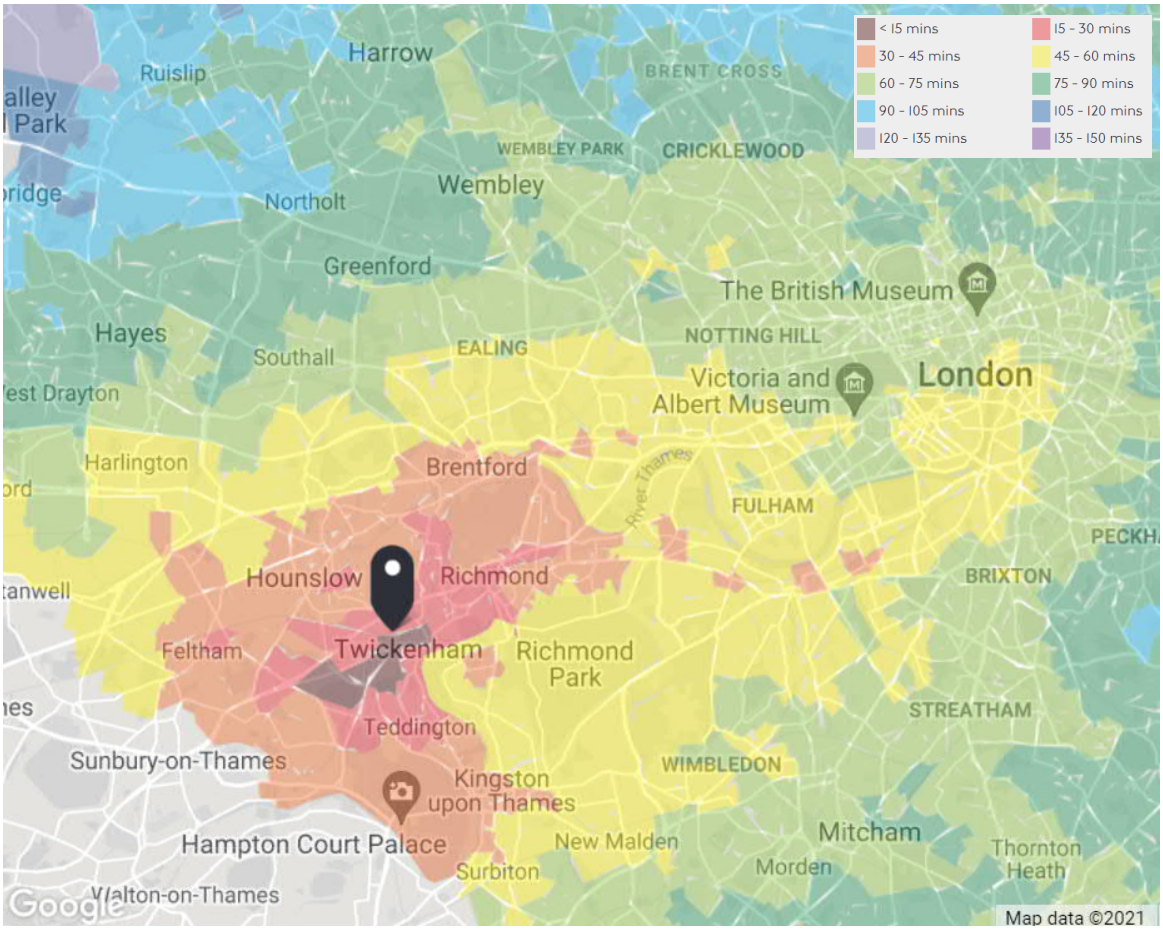
Table 6-3: Summary of Rail Services from Twickenham Station

DIRECTION	FIRST/LAST TRAIN	PEAK SERVICES 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

PUBLIC TRANSPORT TIME MAPPING

6.2.12 Time Mapping (TIM) is a tool developed by TfL within their WebCAT suite of tools to assess connectivity in terms of travel times, taking account of public transport service ranges and interchange opportunities. Time Mapping for the site, travelling by public transport during the AM peak, is presented in Figure 6-5.

Figure 6-5: TIM Mapping



6.2.13 Significant employment opportunities locally and in Central London can be accessed within 45 minutes.

6.3 EXISTING TRIP GENERATION

6.3.1 Given the site is not operational and has been vacant since 2018, it is not possible to undertake surveys to understand the previous levels of traffic generated by the site. 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 use or alternative industrial use.

SITE CONTEXT

6.3.2 When previously operational as Greggs Bakery, the site generated a moderate number of regular daily HGV movements, with instances of conflict where vehicles were passing each other. On the A305 The Green, this is not an issue, but on the residential roads surrounding the site, this 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.

6.3.3 Due to the site's residential setting, the adjoining network of roads does not lend itself to a moderate-volume of HGV movements generated by an industrial use. Carriageways are narrow at certain points and often flanked by parked cars. There have been regular instances of vehicles mounting the kerb, which is evident 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).

COLNE ROAD – SCHOOL STREET

6.3.4 In September 2021 the School Street scheme was approved and made permanent for Twickenham Primary Academy for part of Colne Road between the junction of March Farm Road and Albion Road.

6.3.5 School Streets do not operate during school holidays or at weekends and the signs will be closed when not operational for holidays and half term breaks.

6.3.6 Th operating hours for Colne Road are Monday to Friday 08:20 to 09:00 and 15:30 to 16:15.

6.3.7 People walking, scooting, using wheelchairs, mobility scooters and cycles (including adapted cycles) are not restricted. All other motor vehicles are restricted during the operating times displayed on the signs, subject to exemptions.

6.3.8 The following motorised vehicles are automatically exempt:

- Emergency vehicles
- Council waste trucks serving properties within the School Street zone
- Postal service vehicles serving post boxes within the School Street zone
- Statutory undertakers (such as water and gas companies) attending emergency works within the School Street zone
- School buses serving the school or properties within the School Street zone
- Public transport and taxis (Hackney Carriage) serving properties within the School Street zone

6.3.9 The following vehicles are also exempt, but they must apply for exemption using LBRuTs online exemption form or contact LBRuT:

- Residents and businesses within the School Street zone

- Blue badge holders (when their destination is within the School Street zone)
- Carers and healthcare workers serving properties within the School Street zone
- Private hire taxis serving properties within the School Street zone
- Tradespeople/service providers serving properties within the School Street
- Delivery vehicles serving properties within the School Street

6.3.10 The introduction of the School Street at Colne Road has led to more vehicles accessing Edwin Road during the closure times.

TRIP GENERATION METHODOLOGY

6.3.11 The existing site, when previously operational, would have generated demand for travel by:

- Employees and visitors – office or site-based; and
- Delivery and servicing-related trips.

6.3.12 The industrial site's travel demand has been forecasted using data extracted from the TRICS database. 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 the proposed change in land use on transport travel patterns.

6.3.13 The following selection criteria were used to ensure the suitability of comparable survey data sets:

- Comparable location (outer London boroughs);
- Comparable Public Transport Accessibility Level, i.e., PTAL 1 – 4 (within reason and where possible);
- Comparable on-site parking provision; and
- Comparable development type in terms of use class.

6.3.14 The same approach has been applied to both an assessment of the extant permitted Class B2 industrial use and the proposed residential/employment development, comprising both C3 residential and Class E (formerly B1c) light industrial development.

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

- Trip rates are 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.

6.3.16 In order to provide a robust assessment comparison between the residential morning peak hour 08:00-09:00, 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 a comparable industrial use to the previous 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 element of the site.

6.3.17 Looking more specifically at modes of travel, it is important to consider the larger vehicle trips that a fully operational industrial site would generate. These HGV trips have been a clear source of neighbourhood conflict for the extant site use.

6.3.18 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.

6.3.19 As outlined in Section 5.3.2, HGV trips have been a clear source of neighbourhood conflict for the extant site use. As such, it is pertinent to review the projected HGV trips for similar industrial use at the site to consider the impact of an alternative fully operational industrial site.

EXTANT INDUSTRIAL USE TRIP GENERATION

6.3.20 As the trip generation and modal split methodology for the extant was accepted for the for the previous application. The same methodology has been used within this analysis.

6.3.21 The TRICS database of B1/B2/B8 surveyed sites contains one outer-London borough site, shown in Table 6-4, which is deemed to be reasonably comparable to the permitted use.

Table 6-4: TRICS Site Selection – Industrial estate use (existing site)

REFERENCE	LOCATION	SURVEY YEAR	GFA (SQM)	PARKING SPACES
BT-02-C-02	Brent	2014	6100	156

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

EMPLOYEE TRAVEL DEMAND

6.3.23 The corresponding TRICS output showing the weighted average total person trip rates (per 100sqm) has been applied to the extant site's GFA of 7,371sqm (the floor area of the existing buildings on-site) and the forecast total person trips during the AM peak (08:00-09:00), and PM peak (17:00-18:00) are summarised in Table 6-5.

Table 6-5: Existing site – Industrial total person trip rates and trip generation

TIME PERIOD	TOTAL PERSON TRIP RATE (PER 100 SQM)			TOTAL PERSON TRIP GENERATION (7,371 SQM)		
	Arrive	Depart	Total	Arrive	Depart	Total
06:00	2.672	0.098	2.77	193	7	200
07:00	0.344	0.262	0.606	25	19	44
08:00	0.131	0.066	0.197	9	5	14
09:00	0.164	0.098	0.262	12	7	19
10:00	0.279	0.279	0.558	20	20	40
11:00	0.311	0.23	0.541	22	17	39
12:00	0.115	0.148	0.263	8	11	19
13:00	0.18	0.197	0.377	13	14	27
14:00	0.148	0.164	0.312	11	12	23

TIME PERIOD	TOTAL PERSON TRIP RATE (PER 100 SQM)			TOTAL PERSON TRIP GENERATION (7,371 SQM)		
	Arrive	Depart	Total	Arrive	Depart	Total
15:00	0.295	0.18	0.475	21	13	34
16:00	1.885	0.18	2.065	136	13	149
17:00	0.066	3.311	3.377	5	239	244
TOTAL	6.59	5.213	11.803	476	377	853

6.3.24 Whilst the TRICS site is comparable in terms of land use and likely OGV/HGV trip generation, the selected site is located in northwest London (Brent) with a different level of public transport accessibility.

6.3.25 The public transport mode share is dependent on the local transport network, which is more accurately obtained from local Census data. The use of 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 total person (i.e. employee or visitor) trips (shown in Table 6-5) by mode.

6.3.26 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. The mode share is shown in Table 6-6.

Table 6-6: 2011 Census data - mode share

RICHMOND WARD 014	PERCENTAGE*
Pedestrians	11%
Cyclists	7%
Bus	17%
Underground	5%
Rail	18%
Taxi	0%
Motorcycle	1%
Vehicle drivers (no servicing)	39%
Vehicle occupants (including taxi passengers)	2%
Total	100%*

(source: WP703EW)

*Rounding has occurred

6.3.27 The estimated multi-modal industrial peak hour travel demand based on industrial use of 7,371sqm is outlined in Table 6-7.

Table 6-7: Industrial Site Peak Hour Travel Demand

RICHMOND WARD 014	AM PEAK			PM PEAK		
	Arrive	Depart	Total	Arrive	Depart	Total
Pedestrians	1	1	2	1	26	27
Cyclists	1	0	1	0	17	17
Bus	2	1	2	1	40	41
Underground	0	0	1	0	11	11
Rail	2	1	3	1	44	45
Taxi	0	0	0	0	0	0
Motorcycle	0	0	0	0	2	3
Vehicle drivers (no servicing)	4	2	5	2	94	96
Vehicle occupants (including taxi passengers)	0	0	0	0	5	5
Total	9	5	14	5	239	244

DELIVERIES AND SERVICING TRAVEL DEMAND

6.3.28 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 7,371sqm (equivalent to the existing buildings) for an alternative Industrial Use produces the OGV/HGV trips in Table 6-8.

Table 6-8: Existing site – Industrial HGV trip rates and trip generation

TIME PERIOD	HGV TRIP RATE (PER 100 SQM)			HGV TRIP GENERATION (7,371 SQM)		
	Arrive	Depart	Total	Arrive	Depart	Total
06:00	0.016	0	0.016	1	0	1
07:00	0.049	0.033	0.082	4	2	6
08:00	0.016	0.049	0.065	1	4	5
09:00	0.066	0.033	0.099	5	2	7
10:00	0.066	0.115	0.181	5	8	13
11:00	0.066	0.066	0.132	5	5	10
12:00	0.016	0.033	0.049	1	2	4
13:00	0.066	0.033	0.099	5	2	7
14:00	0.066	0.098	0.164	5	7	12
15:00	0	0.016	0.016	0	1	1
16:00	0.016	0	0.016	1	0	1
17:00	0.016	0	0.016	1	0	1
TOTAL	0.459	0.476	0.935	34	35	69

6.3.29 As the table suggests, the permitted use could be expected to generate around 69 HGV trips during a typical day, notwithstanding further HGV trips prior to 06:00 and beyond 18:00 and smaller LGV trips not indicated in the TRICS assessment. This is considered to be similar to the former Greggs use where HGVs 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 vehicle conflicts on the local highway network which are well-documented.

6.3.30 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 historical highway safety issues associated with HGVs on the local road network.

6.4 FUTURE TRIP GENERATION – HOW WILL PEOPLE TRAVEL?

6.4.1 As the trip generation and modal split methodology for the proposed use was accepted for the for the previous application. The same methodology has been used within this analysis.

6.4.2 The proposed development is expected to generate demand for travel by:

- Residents;
- Employees; and
- Visitors.

6.4.3 Delivery and servicing travel demand has been forecast for the proposed development and is set out in Section 6.7.

RESIDENTS

6.4.4 The forecast trip generation for the residential units has been established from surveys of comparable sites within the TRICS database, using the following criteria:

- Location: Greater London;
- Survey date range: <6 years old (2016-2019);
- Parking ratio: 0.5 – 1.15 spaces per unit; and
- PTAL: 1b - 3.

6.4.5 Table 6-9 summarises the selected sites, the year the site was surveyed, their respective PTALs and parking ratios.

Table 6-9: TRICS site selection – residential use

REFERENCE	LOCATION	SURVEY YEAR	NUMBER OF DWELLINGS	PTAL	PARKING SPACES	PARKING RATIO
BE-03-M-01	BEXLEY	2019	343	1b	317	0.92
EG-03-M-06	EALING	2017	143	3	91	0.64
EN-03-M-01	ENFIELD	2017	220	1B	234	1.06
GR-03-M-02	GREENWICH	2016	455	1B	287	0.63
HD-03-M-04	HILLINGDON	2016	45	3	40	0.89
HD-03-M-05	HILLINGDON	2017	261	1B	299	1.15
H0-03-M-01	HOUNSLOW	2019	336	2	388	1.15

6.4.6 The associated network peak hour trip generation rates are summarised in Table 6-10.

Table 6-10: Proposed development - residential total person trip rates and trip generation

TIME	TOTAL PERSON TRIP RATES (PER DWELLING)			TOTAL PERSON TRIPS FORECAST (97 DWELLINGS)		
	In	Out	Total	In	Out	Total
AM Peak hour (0800-0900)	0.123	0.575	0.698	12	56	68
PM Peak hour (1700-1800)	0.286	0.156	0.442	28	15	43

6.4.7 The site is expected to generate a total of 68 trips in the AM peak hour and 43 in the PM peak hour.

6.4.8 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, shown in Table 6-6, has been used to disaggregate the trips by mode.

6.4.9 The resulting proposed residential travel demand by all modes is shown in Table 6-11.

Table 6-11: Forecast Residential Travel Demand

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Pedestrians	1	6	7	3	2	5
Cyclists	1	4	5	2	1	3
Bus	2	9	11	5	3	7
Underground	1	3	3	1	1	2
Rail	2	10	12	5	3	8
Taxi	0	0	0	0	0	0

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Motorcycle	0	1	1	0	0	0
Vehicle drivers (no servicing)	5	22	27	11	6	17
Vehicle occupants (including taxi passengers)	0	1	1	1	0	1
Total	12	56	68	28	15	43

*Rounding has occurred

6.4.10 It is expected that journeys for non-work purposes, outside of the peak hours, such as education or retail, would be more likely to be made on foot or by bicycle, given the proximity of the site to both Richmond and Twickenham High Streets. As such, the forecasted car, railway and bus mode shares would realistically be lower than that projected, and the walking and cycling trips higher throughout the day and outside of the peak hours (i.e., 08:00–09:00 and 17:00–18:00).

EMPLOYEES - INDUSTRIAL

6.4.11 The forecast trip generation for the industrial unit has been established from surveys of comparable sites within the TRICS database, using the following criteria:

- Land Use: 02-Employment D – Industrial Estate;
- Location: Greater London;
- Survey date range: <7 years old (2015-2019);
- PTAL: 1b - 3.

6.4.12 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 industrial land-use at the site are summarised in Table 6-12. Important to note whilst these comparable industrial sites are clearly much larger than the proposed industrial development, the trip rates are averaged in relation to floor area.

Table 6-12: TRICS Site Selection – Industrial use

REFERENCE	LOCATION	SURVEY YEAR	GFA(SQM)	PTAL
BE-02-D-01	Bexley	2018	3,300	1b
BT-02-D-01	Brent	2018	5,565	3
HD-02-D-03	Hillingdon	2015	8,310	1b

6.4.13 As Table 6-13 illustrates, the number of total person trips expected to be generated by the proposed industrial use of this size would be very low and would be of no material impact to the highway and public transport network.

Table 6-13: Proposed development – Industrial total person trip rates and trip generation

TIME	TOTAL PERSON TRIP RATES (PER 100SQM)			TOTAL PERSON TRIPS FORECAST 883 SQM INDUSTRIAL UNIT		
	In	Out	Total	In	Out	Total
AM Peak hour (0800-0900)	1.328	0.741	2.069	12	7	18
PM Peak hour (1700-1800)	0.425	0.928	1.353	4	8	12
Daily	10.949	10.724	21.673	97	95	191

Rounding has occurred

6.4.14 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.

6.4.15 The resultant mode share, shown in Table 6-6, has been applied to the proposed 883sqm of industrial use. The resultant non-residential travel demand by mode is shown in Table 6-14.

Table 6-14: Proposed development - industrial unit travel demand

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Pedestrians	1	1	2	0	1	1
Cyclists	1	0	1	0	1	1
Bus	2	1	3	1	1	2
Underground	1	0	1	0	0	1
Rail	2	1	3	1	2	2
Taxi	0	0	0	0	0	0
Motorcycle	0	0	0	0	0	0
Vehicle drivers (no servicing)	5	3	7	1	3	5
Vehicle occupants (including taxi passengers)	0	0	0	0	0	0
Total	12	7	18	4	8	12

EMPLOYEES – COMMERCIAL - AFFORDABLE WORKSPACE

6.4.16 At the request of LBRuT following pre-app discussions, an additional 117sqm of affordable workspace has been assessed as a separate unit to the industrial use assessed above.

6.4.17 Whilst the Class E element of the proposed development to the south of the site forms only a very small element of the site's overall area, it is pertinent to consider any vehicle trips generated by a proposed commercial use, to ensure trip-generation for the proposed development in its entirety is considered.

6.4.18 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 commercial land-use at the site is summarised in Table 6-15. It is important to note, whilst these comparable commercial sites are clearly much larger than the proposed commercial development; the trip-rates are averaged in relation to floor area.

Table 6-15: TRICS site selection – commercial use

REFERENCE	LOCATION	SURVEY YEAR	GFA(SQM)	PTAL
HD-02-A-09	Hillingdon	2018	12,100	4
HO-02-A-01	Hounslow	2017	120,000	1b

6.4.19 As Table 6-16 illustrates, the number of total person trips expected to be generated by a commercial use of this size would be minimal and would be of no material impact to the highway and public transport network.

Table 6-16: Proposed development – commercial total person trip rates and trip generation

TIME	TOTAL PERSON TRIP RATES (PER 100SQM)			TOTAL PERSON TRIPS FORECAST 117 SQM COMMERCIAL UNIT		
	In	Out	Total	In	Out	Total
AM Peak hour (0800-0900)	1.645	0.062	1.707	2	0	2

PM Peak hour (1700-1800)	0.085	1.747	1.832	0	2	2
Daily	5.754	5.832	11.586	7	7	14

6.4.20 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. The mode share shown in Table 6-6 has been adjusted to account for the car-free nature of the proposed commercial unit:

- The proposed commercial unit will be car-free with the exception of one Blue Badge Bay.
- The proposed commercial unit will not provide motorcycle parking.
- Bus, underground and rail trips have been uplifted proportionally to reflect the reduction in car and motorcycle trips.
- Cycle and walking trips have not been adjusted.

6.4.21 The resultant mode share, shown in Table 6-17, has been applied to the proposed 117sqm of commercial use.

Table 6-17: Mode share (adjusted) - commercial use

RICHMOND WARD 014	PERCENTAGE*
Pedestrians	11%
Cyclists	7%
Bus	35%
Underground	9%
Rail	38%
Taxi	0%
Motorcycle	Car-free
Vehicle drivers (no servicing)	
Total	100*

*Rounding has occurred

6.4.22 The resultant non-residential (commercial use) travel demand by mode is shown in Table 6-18.

Table 6-18: Proposed development - commercial unit travel demand

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Pedestrians	0	0	0	0	0	0
Cyclists	0	0	0	0	0	0
Bus	1	0	1	0	1	1
Underground	0	0	0	0	0	0
Rail	1	0	1	0	1	1
Taxi	0	0	0	0	0	0
Total	2	0	2	0	2	2

6.5 PROPOSED DEVELOPMENT - TOTAL TRAVEL DEMAND

6.5.1 The resultant total trip generation for the proposed development is shown in Table 6-19.

Table 6-19: Proposed development - Total trip generation

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Pedestrians	2	7	9	3	3	6
Cyclists	2	4	6	2	2	4
Bus	5	10	15	6	5	11
Underground	2	3	4	1	1	3
Rail	5	11	16	6	5	12
Taxi	0	0	0	0	0	0
Motorcycle	0	1	1	0	0	0
Vehicle drivers (no servicing)	10	25	34	12	9	22
Vehicle occupants (including taxi passengers)	0	1	1	1	0	1
Total	26	65	8	32	25	57

6.6 NET CHANGE

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

6.6.2 Table 6-20 and Table 6-21 set out the difference in AM and PM peak hour trips, based on the respective census data sets for the existing industrial use, and the proposed employment use and the adjusted census data for the residential use.

Table 6-20: AM Peak Hour – Net Change

MODE	EXISTING		PROPOSED		NET CHANGE	
	In	Out	In	Out	In	Out
Pedestrians	1	1	2	7	1	6
Cyclists	1	0	2	4	1	4
Bus	2	1	5	10	3	9
Underground	0	0	2	3	2	3
Rail	2	1	5	11	3	10
Taxi	0	0	0	0	0	0
Motorcycle	0	0	0	1	0	1
Vehicle drivers (no servicing)	4	2	10	25	6	23
Vehicle occupants (including taxi passengers)	0	0	0	1	0	1
Total	9	5	26	65	+17	+60

6.6.3 Table 6-20 shows the proposed residential and employment will result in an increase in trips during the AM peak hour. The majority of the additional trips will be outbound journeys travelling for work (commute) or school, which is reflective of the LTDS data set out in Section 2. Six additional inbound and 23 additional outbound car trips are forecast to be generated by the proposed development during the AM peak hour (08:00-09:00).

Table 6-21: PM Peak Hour – Net Change

MODE	EXISTING		PROPOSED		NET CHANGE	
	In	Out	In	Out	In	Out
Pedestrians	1	26	3	3	2	-23
Cyclists	0	17	2	2	2	-15
Bus	1	40	6	5	5	-36
Underground	0	11	1	1	1	-10
Rail	1	44	6	5	5	-40
Taxi	0	0	0	0	0	0
Motorcycle	0	2	0	0	0	-2
Vehicle drivers (no servicing)	2	94	12	9	10	-85
Vehicle occupants (including taxi passengers)	0	5	1	0	1	-5
Total	5	239	32	25	27	-214

6.6.4 Table 6-21 shows the proposed residential and employment development will result in an overall reduction of 187 trips during the PM peak hour, which will be made up of an increase in 27 inbound trips and a reduction of 216 outbound trips.

6.6.5 The proposed development will result in a reduction of 75 car trips (i.e., an additional ten inbound and a reduction of 85 outbound car trips) during the PM peak hour.

6.7 SERVICING TRIP GENERATION

EXTANT SITE USE

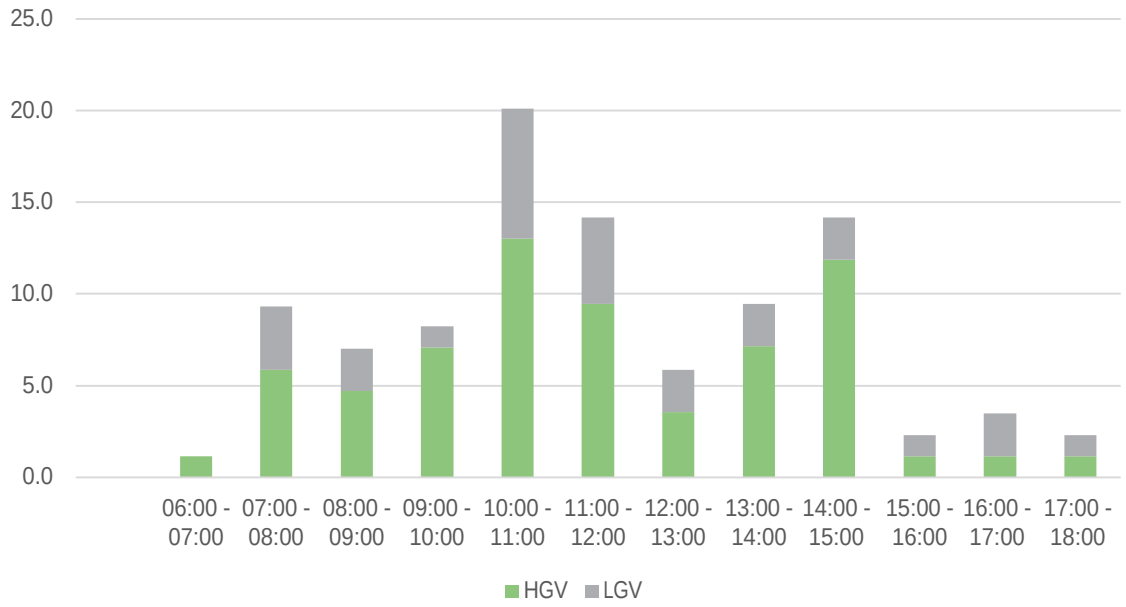
6.7.1 Given the site has been vacant and not operational since 2018, it is not possible to undertake surveys to understand the previous levels of traffic generated by the site.

6.7.2 Table 6-22 shows the likely number of delivery and servicing (LGV/HGV) trips forecast to have been generated by the Greggs Bakery site when previously operational.

Table 6-22: Delivery and servicing trip rates for the existing site

Time Period	HGV			LGV		
	Arrive	Depart	Total	Arrive	Depart	Total
06:00 - 07:00	0.016	0.000	0.016	0.000	0.000	0.000
07:00 - 08:00	0.049	0.032	0.081	0.032	0.016	0.048
08:00 - 09:00	0.016	0.049	0.065	0.016	0.016	0.032
09:00 - 10:00	0.066	0.032	0.098	0.016	0.000	0.016
10:00 - 11:00	0.065	0.115	0.180	0.049	0.049	0.098
11:00 - 12:00	0.066	0.065	0.131	0.033	0.032	0.065
12:00 - 13:00	0.016	0.033	0.049	0.016	0.016	0.032
13:00 - 14:00	0.066	0.033	0.099	0.016	0.016	0.032
14:00 - 15:00	0.066	0.098	0.164	0.016	0.016	0.032
15:00 - 16:00	0.000	0.016	0.016	0.016	0.000	0.016
16:00 - 17:00	0.016	0.000	0.016	0.000	0.032	0.032
17:00 - 18:00	0.016	0.000	0.016	0.000	0.016	0.016
TOTAL	0.458	0.473	0.931	0.210	0.209	0.419

Figure 6-6: Existing site - servicing demand



6.7.3 Whilst the site was operational as Greggs Bakery, the site generated a moderate number of regular daily HGV movements, with instances of conflict where vehicles were passing each other along Marsh Farm Road and along Edwin Road. On the A305 The Green, this is not an issue, but, on the residential 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.

6.7.4 The regular presence of HGVs on a narrow residential road network poses a heightened risk of conflict with pedestrian and other road users. The residential-led scheme produces a substantive reduction in the number of HGV movements to and from the site which leads to a reduction in conflicts.

PROPOSED DEVELOPMENT

6.7.5 Technical Note 1 considered the quantum of HGVs that each industrial use, and floor area scenario would likely give rise to, which was used to identify the maximum range of industrial floor area (based purely on transport grounds) that the site can accommodate without detriment to the local area and highway safety.

6.7.6 The 'tipping' point was approx. 885sqm of Use Class E (g)(iii), where the 85th percentile chance of an HGV conflict rose from one in each direction to two HGV conflicts in each direction per day. It was determined that 885sqm of E(g)(iii) use was the maximum floor area the site can accommodate without detriment to the local area and highway safety.

6.7.7 At the request of LBRuT, an additional 117sqm of employment space has been assessed as a separate unit in addition to the 883sqm of industrial floorspace.

6.7.8 One of the key benefits in transport terms of delivering a residential-led scheme including a provision of employment on this site, compared to its previous use as an industrial factory, is a substantive reduction in the number of HGV movements and the associated highway safety benefits of this on the surrounding residential streets.

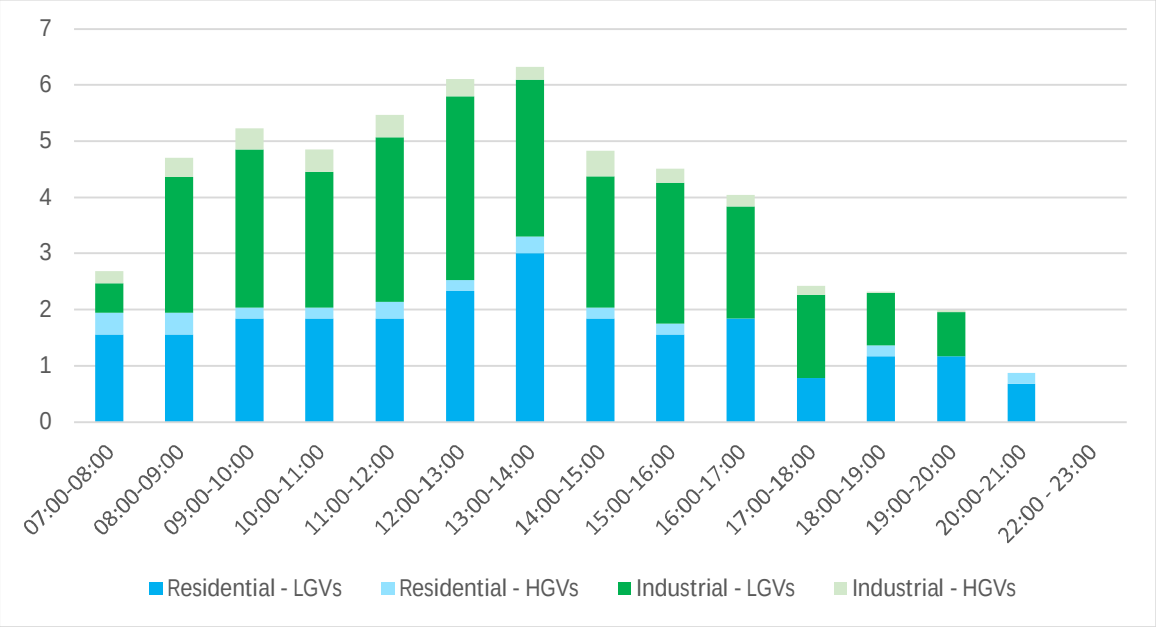
6.7.9 The TRICS database has been used to forecast servicing demands. Daily servicing trip generation rates are set out within Figure 6-7.

6.7.10 Table 6-23 and a daily profile of the exacted servicing demands at the proposed development is provided in Figure 6-7.

Table 6-23: Delivery and servicing trip rates for the residential and employment uses – Two-way

HOUR	RESIDENTIAL - TRIP RATES PER DWELLING		INDUSTRIAL TRIP RATES PER 100 SQM		COMMERCIAL TRIP RATES PER 100 SQM	
	LGV	HGV	LGV	HGV	LGV	HGV
07:00-08:00	0.016	0.004	0.016	0.016	0.022	0.004
08:00-09:00	0.016	0.004	0.022	0.022	0.019	0.004
09:00-10:00	0.019	0.002	0.019	0.019	0.013	0.005
10:00-11:00	0.019	0.002	0.013	0.013	0.042	0.004
11:00-12:00	0.019	0.003	0.042	0.042	0.025	0.001
12:00-13:00	0.024	0.002	0.025	0.025	0.028	0
13:00-14:00	0.031	0.003	0.028	0.028	0.016	0
14:00-15:00	0.019	0.002	0.016	0.016	0.018	0
15:00-16:00	0.016	0.002	0.018	0.018	0.014	0
16:00-17:00	0.019	0.000	0.014	0.014	0.025	0
17:00-18:00	0.008	0.000	0.025	0.025	0.008	0
18:00-19:00	0.012	0.002	0.008	0.008	0.004	0

Figure 6-7: Proposed development - forecast servicing demand



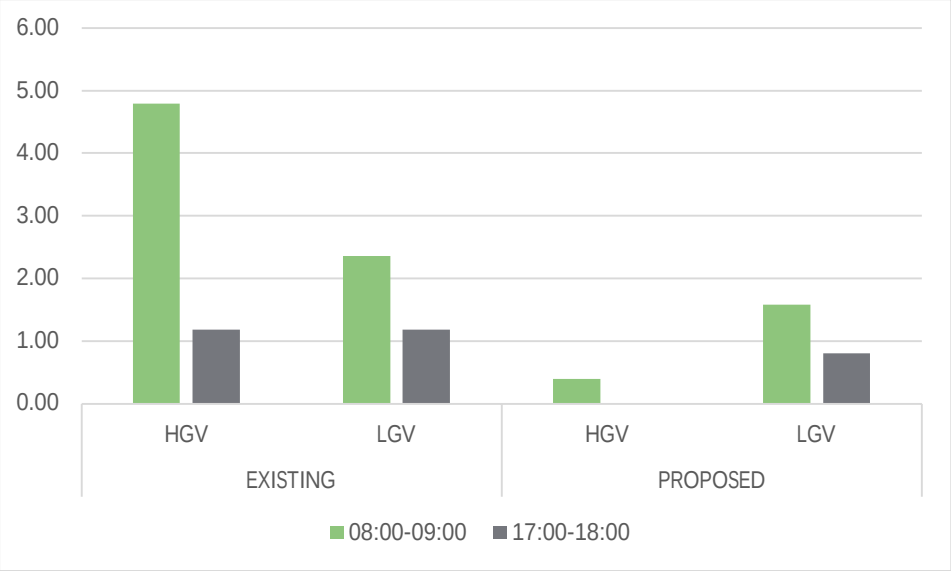
6.7.11 On average, a total of 56 LGV and eight HGV two-way vehicles movements per day are expected to be generated by the residential units and light industrial unit, with up to seven two-way movements in a given hour.

6.7.12 The additional employment use on the site is expected to generate one delivery per day.

NET DIFFERENCE – SERVICING TRIPS

6.7.13 Figure 6-8 shows the servicing demand generated in the peak hours by the existing and proposed development sites.

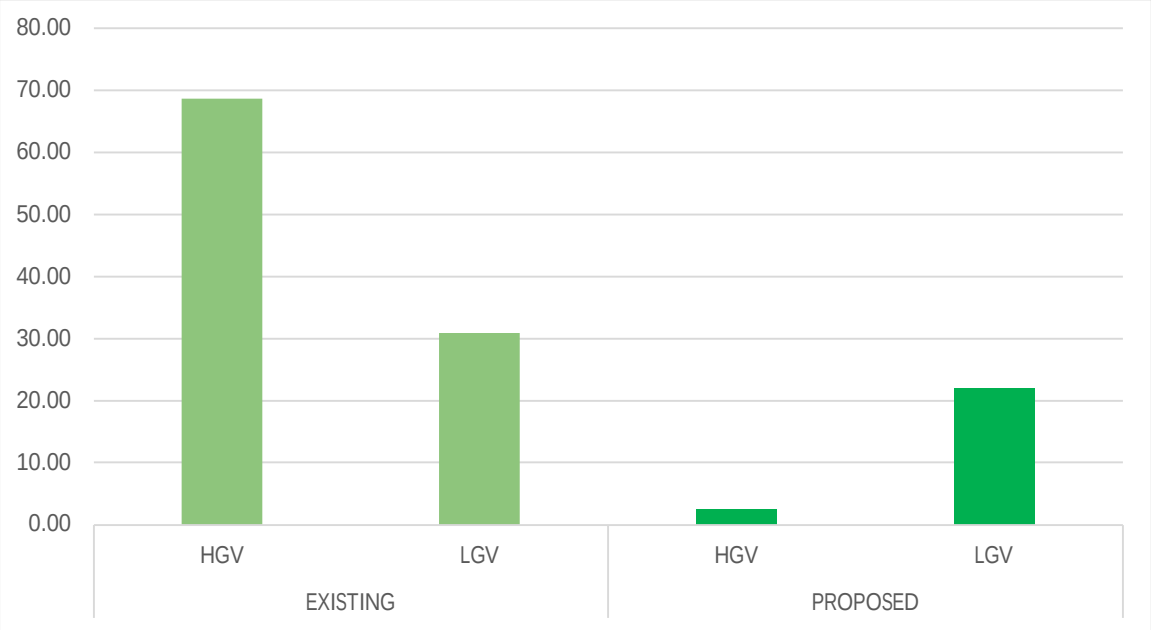
Figure 6-8: Existing vs proposed development servicing demand – peak hours



6.7.14 Figure 6-8 shows the proposed development will result in a reduction of four HGVs in the AM peak hour and one HGV in the PM peak hour.

6.7.15 Figure 6-9 shows the daily two-way servicing demand generated by the existing and proposed development sites.

Figure 6-9: Existing site vs proposed development servicing demand – daily



6.7.16 One of the key benefits in transport terms of delivering a residential and light industrial scheme on this site compared to its previous use as a Greggs bakery/factory is a substantial reduction in the number of HGV movements. This is evident in Figure 6-9, which shows the proposed development will result in a reduction of 60 HGVs but an increase of 43 LGVs across the day.

6.7.17 Due to the size of the proposed employment unit (117sqm) the TRICs database does not estimate any servicing trips. In reality there will be at least one servicing vehicle trip per day likely to be undertaken by an LGV and a weekly/bi-weekly refuse collection undertaken by an HGV. Although the servicing vehicle generation will be very low, the unit will generate serving vehicle trips.

6.7.18 By comparison to a full industrial/food production use on the site, a residential/employment scheme will significantly reduce daily HGV trips by nearly 90%, which have been identified as a source of great conflict in the area largely residential road network.

6.7.19 Occasional deliveries of white goods and furniture, for example, or indeed removals lorries may add an additional HGV onto the local network, but these would not be regular occurrences.

6.8 WHAT IMPACT WILL THERE BE?

PEDESTRIANS

6.8.1 The site is readily accessible on foot, as detailed through the Active Travel review in Section 4 of this report. In terms of the development proposals, connectivity throughout the site will be enhanced by the delivery

of the internal site road, which will act as a shared space, facilitating a safe, viable and cohesive arrangement between vehicles, cycles and pedestrians.

6.8.2 The development is forecast to generate around eight and five two-way main-mode pedestrian trips in the AM and PM peak hours, respectively. It will generate a number of other walk trips associated with people walking (as a secondary mode trip), to and from other public transport stations and stops (i.e., their main mode), 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.

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

CYCLE IMPACT

6.8.4 The development is forecast to generate around five and three 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 previous industrial use.

HIGHWAYS IMPACT

6.8.5 The proposals will provide a number of associated on-site parking spaces for residents and the industrial use. Table 6-24 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 6-24: Forecast peak hour car trips (residential) - proposed development

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Existing site – Car trips*	4	2	5	2	94	96
Proposed residential – Car trips*	5	22	27	11	6	17
Proposed industrial – Car trips*	5	3	7	1	3	5
Proposed Total – Car trips*	10	26	34	12	9	22
Net difference	+6	+24	+29	+10	-85	-74

*Excluding servicing trips

6.8.6 Based on the 2011 Census data for 'travel to work', the proposed development could expect to add around 29 two-way car trips in the morning peak and reduce car trips by 74 cars in the evening peak.

6.8.7 This level of car or van trips generated by the proposed residential/industrial development is not deemed to represent a significant or detrimental level of increase that would compromise the local road network.

PUBLIC TRANSPORT IMPACT

6.8.8 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 6-25.

Table 6-25: Forecast additional public transport trips in the peak hours

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Bus	4	10	14	5	4	9
Underground	2	3	5	1	2	3

MODE	AM PEAK HOUR			PM PEAK HOUR		
	In	Out	Total	In	Out	Total
Rail	5	12	17	6	5	11

6.8.9 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.

6.8.10 In order to assess distribution, an assessment has been made for each travel mode 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 the proximity of the site and also both stations within a reasonable walking distance.

6.8.11 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 on future capacity as a result of the development.

6.8.12 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.

BUS DISTRIBUTION

6.8.13 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.

6.8.14 Table 6-26 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 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 6-26: Bus Peak Hour Service & Direction – Trip Distribution

SERVICE	DIRECTION	OUTBOUND			INBOUND		
		Direction Split (%)	AM	PM	Direction Split (%)	AM	PM
Eastbound (EB)		80%	8	4	20%	2	1
Westbound (WB)		20%	2	1	80%	2	3
110	EB	10%	1	0	5%	0	0
	WB	5%	0	0	10%	0	0
490	EB	40%	4	2	10%	0	0
	WB	10%	1	1	40%	1	2
H22	EB	30%	3	2	5%	0	0
	WB	5%	0	0	30%	1	1

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

RAIL DISTRIBUTION

6.8.16 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 08:00-09:00 on a weekday.

6.8.17 Based on the proposed public transport trip-generation, there are expected to be 11 outbound train trips and three outbound London Underground trips, which are likely to travel by train as their first mode of transport in the AM peak hour. This equates to 16 trips by train (first mode) in the AM peak and ten trips (first mode) in the PM peak.

6.8.18 Assessing a "worst-case" scenario, whereby all 12 additional AM peak hour person train trips and three London Underground trips will be travelling eastbound towards Waterloo, would equate to an average of 0.75 person trips (i.e. less than one person) per service during the AM peak, with less than one person per service (0.40 person trips 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.

SUMMARY

6.8.19 The impacts of the development on the London-wide network are expected to be negligible. The proposed development is located in an area with public transport routes and high-frequency services, which can accommodate the relatively low number of development trips without perceptible impact. No changes to the public transport network are proposed or necessary as part of the proposed development.

6.8.20 The Covid-19 crisis had profound effects on travel patterns. The precise impacts of this are not known at this time, but the following changes are expected over the medium and long term:

- A sustained increase in the proportion of the population who will work from home; and
- More flexible working hours to allow more people who need to travel to work to do so outside of the peak hours.

6.8.21 These elements are likely to reduce, perhaps significantly, the trips made in the network peak hours.

6.9 MANAGEMENT MEASURES AND PLANS

6.9.1 Several management plans are proposed to enable the proposed development's safe, sustainable, and efficient operation.

ACCESS MANAGEMENT

6.9.2 The management of the site's access will be essential to minimise the unnecessary presence of vehicles on-site and prevent idling vehicles on Crane Road/Gould Road and Edwin Road.

6.9.3 The following measures are proposed to aid the management of, and reduce the number of delivery and servicing trips generated by the development:

- Addressing (i.e., for the different blocks);
- Wayfinding signage to encourage the use of safe pedestrian and cycle routes through the sites;
- The layout of the development site could facilitate deliveries by cargo bike which would help to reduce the number and presence of delivery and servicing vehicles accessing the site;

- Resident welcome packages (including information on deliveries for new tenants and employees); and
- A Delivery and Servicing Plan (DSP) has been prepared, including a package of measures which is submitted alongside this TA.

DELIVERY AND SERVICING PLAN

6.9.4 An outline DSP has been produced to support the planning application as a standalone document to manage refuse, delivery, and service vehicle arrangements. The DSP sets out a range of management strategies and measures to ensure the site can be serviced efficiently and safely without inconveniencing others.

6.9.5 A section of the outline DSP includes information on the proposed waste management strategy for the site, which describes the waste arisings and provisions for storage per land use along with the details of collection arrangements.

PARKING DESIGN AND MANAGEMENT PLAN

6.9.6 A Parking Design and Management Plan (PDMP) has been prepared to describe the proposed car parking, Blue-Badge parking provision, long-stay cycle parking and short-stay cycle parking that the proposed development will deliver. The PDMP will set out the access arrangements and enforcement measures to prevent vehicle and cycle parking misuse across the site.

FRAMEWORK TRAVEL PLAN

6.9.7 A Framework Travel Plan (FTP) has been prepared, which sets out a range of preliminary management strategies and measures to support and encourage sustainable travel.

6.9.8 The overall objective is to minimise the impact of travel and to promote sustainable travel choices.

6.9.9 A vital measure of the Framework Travel Plan is implementing an on-site car club, allowing residents occasional access to a car when required, but avoiding the encouragement of private car trips. It is expected that residents will be offered free membership of the car club for five years.

CONSTRUCTION LOGISTICS PLAN

6.9.10 Further information about construction is provided in the Outline Construction Logistics Plan (CLP), contained within Section 8 of this TA. Ahead of demolition and construction, a contractor will be appointed to prepare a full/detailed CLP to discharge relevant planning conditions.

7 RICHMOND UPON THAMES – LOCAL BOROUGH ANALYSIS

7.1 INTRODUCTION

7.1.1 This section sets out how the development delivers local planning policy and addresses specific local issues such as on-street parking and the operation of the local highway network.

7.2 LOCAL POLICY DELIVERY

7.2.1 The statutory development plan for the London Borough of Richmond upon Thames consists of:

- The London Plan (March 2021);
- The London Borough of Richmond upon Thames Local Plan (July 2018)

7.2.2 In addition to the Development Plan, the following planning policy and guidance documents are material considerations in the determination of the application:

- The National Planning Policy Framework (NPPF);
- The National Planning Policy Guidance (NPPF);
- London Borough of Richmond upon Thames Supplementary Planning Guidance.

LB RICHMOND LOCAL PLAN (JULY 2018)

7.2.3 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.

7.2.4 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

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

7.2.6 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:

> 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

7.2.7 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:

> 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.
>
> 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.

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

> 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.

7.2.9 The relevant transport policies set in the Local Plan are as follows:

POLICY LP 44 - SUSTAINABLE TRAVEL CHOICES STATES:

7.2.10 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.

POLICY LP45 - PARKING STANDARDS AND SERVICING STATES:

7.2.11 The Council will require new development to make provision for the accommodation of vehicles 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:

> Requiring new development to provide for car, cycle, 2 wheels and, where applicable, lorry parking and electric vehicle charging points. Opportunities to minimise car parking through its shared use will be encouraged.

7.2.12 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 uses within fairly densely developed 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.

7.2.13 The maximum car parking and minimum cycle parking standards for the Class E (formerly B1c) industrial and C3 (residential) use classes as outlined in the Local Plan are indicated in Table 7-1.

Table 7-1: - 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 parking conditions will need to be assessed	As per London Plan
General/Special Industrial	Parking and servicing requirement to be demonstrated and provided off street but not below London Plan maximum	As per London Plan

7.2.14 The local plan advises that cycle parking standards are to comply with the London Plan, March 2021.

LB RICHMOND 'TRANSPORT' SUPPLEMENTARY PLANNING DOCUMENT (JUNE 2020)

7.2.15 LBRT'S 'Transport SPD' was published in June 2020 to assist in promoting "best practice in transport provision and highway design".

7.2.16 The SPD confirms that Transport Assessments and Travel Plans should be submitted in accordance with Transport for London guidance. A suggested by the SPD, the scope of this TA has been discussed with TfL through pre-application discussions.

7.2.17 In terms of scope of assessment, all development should demonstrate its sustainable credentials and provide high quality walking and cycling permeability, and connectivity within the surrounding highway and transport network. All development should be designed with a hierarchy of streets that ensures priority is given to non-car pedestrians, cyclists and those with disabilities.

7.2.18 The proposed development seeks to implement a scheme with pedestrian priority, with all streets providing shared use with no priority to car traffic. The proposals include a low level of parking provision to discourage car use, with excellent connections to be provided to existing pedestrian/cycle infrastructure in all directions.

7.2.19 The following additional key aspects should be considered as part of all development proposals:

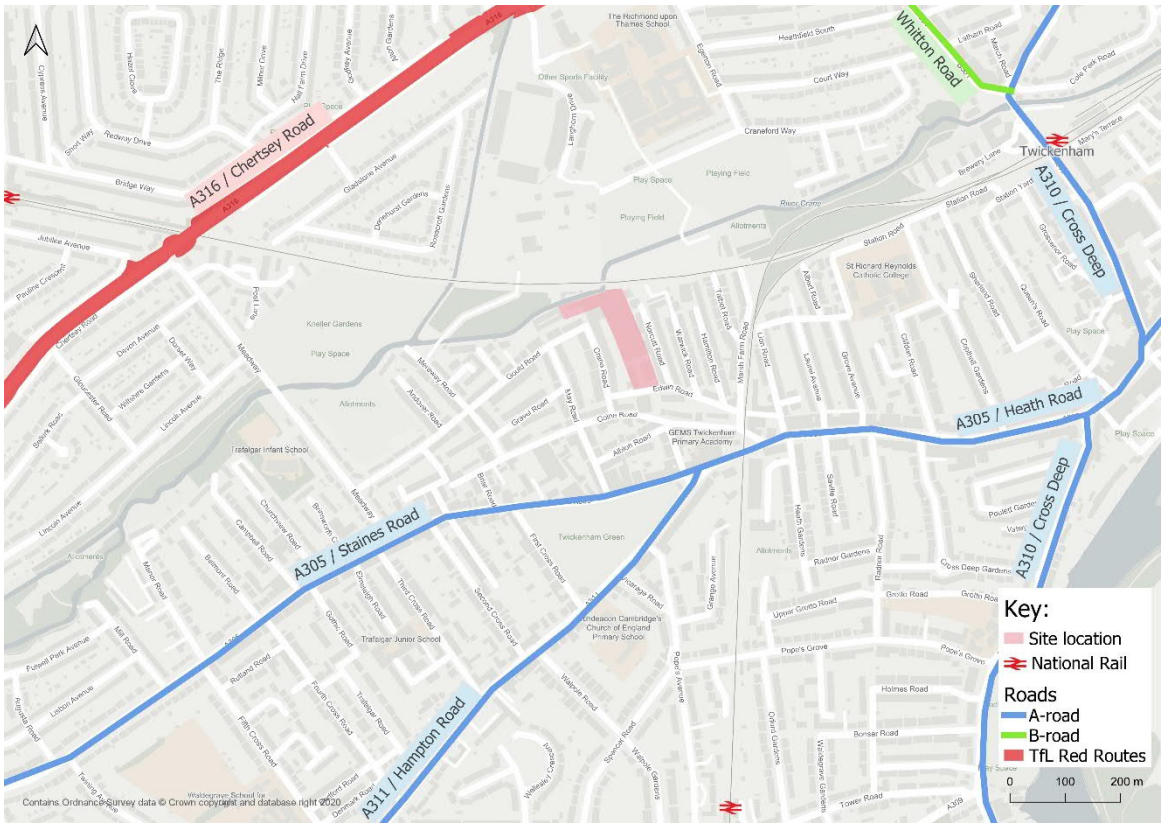
- Cycle parking to be provided in accordance with the London Plan, with consideration on the London Cycle Design Standards in forming the layout and connectivity by bike. Cycle parking should include provisions for inclusive cycles, cargo bikes and tricycles;
- The Council encourages the use of car clubs as an alternative to private car ownership and the provision of car club parking and/or enrolling new occupants of development into a car club will help reduce the site parking requirement;
- Car parking should be provided in accordance with the London Plan standards. Development should make provision for a future of 100% 'active' electric vehicle charging provisions.

7.2.20 In addition to the above considerations, the internal layout of the site has been considered in line with the SPD's guidance on vehicle crossovers, parking layouts and front gardens and visibility and sightlines.

7.3 LOCAL HIGHWAY NETWORK

7.3.1 The local highway network in the vicinity of the site is shown in Figure 7-1.

Figure 7-1: Local Highway Network



7.3.2 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 HGVs associated with the site's former industrial use, with the latter generally used for employee and visitor parking.

7.3.3 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.

7.4 EXISTING TRAFFIC FLOWS

7.4.1 An automatic traffic count survey (ATC) was undertaken on Edwin Road between Crane Road and Norcutt Road for seven days in February 2022. Table 7-2 shows the average weekday eastbound and westbound vehicle flows on Edwin Road over a 12-hour period between 0700 – 1900.

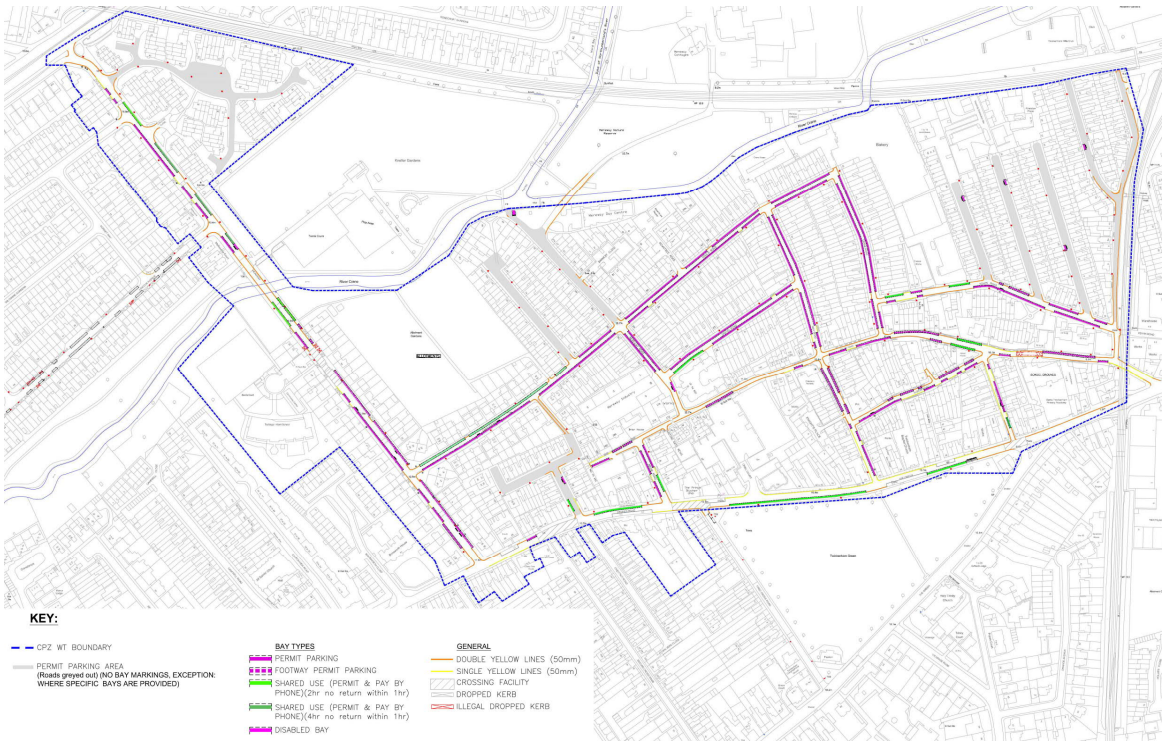
Table 7-2: ATC weekday data – Edwin Road

DIRECTION OF TRAVEL	0700-1900 (12 HOUR FLOW)
Eastbound	302
Westbound	214
Total	516

7.5 OFF SITE PARKING AND LOADING

7.5.1 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" took effect in June 2018. A map of the Zone is indicated in Figure 7-2, illustrating that the site is predominantly surrounded by private parking bays.

Figure 7-2: Controlled Parking Zone WT

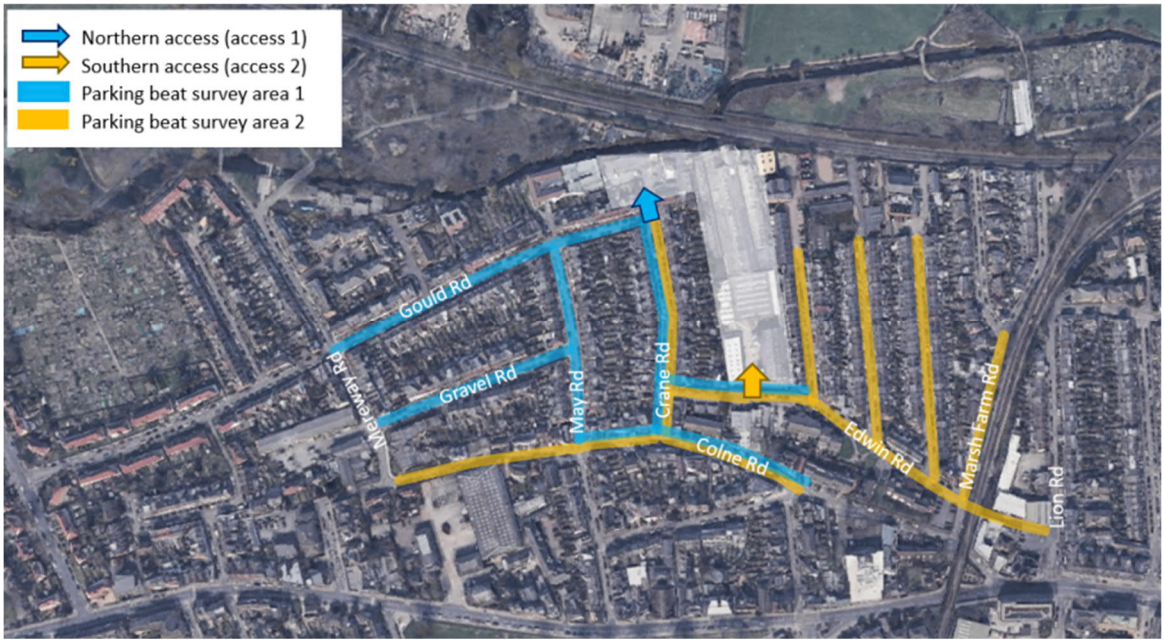


7.5.2 CPZ "D" is also within proximity of the site, which starts and continues east from Lion Road.

7.6 PARKING BEAT SURVEYS

7.6.1 Parking beat surveys were undertaken in accordance with LBRuT's Parking Beat Survey Criteria (2018). A survey specification was issued to Transport Officers at LBRuT to agree the scope of the proposed parking beat surveys. Figure 7-3 sets out the extent of the parking beat surveys undertaken.

Figure 7-3: Parking Beat Survey Extent



7.6.2 It is highlighted that no unrestricted parking is available around the site and therefore all bays are either permit holder or pay and display bays. In addition, sections of single and double yellow lines have been excluded from the calculations.

OVERNIGHT PARKING OCCUPANCY

7.6.3 Snapshot parking surveys were undertaken overnight at 01:00 on Tuesday 22nd, Wednesday 23rd and Sunday 27th February.

7.6.4 LBRuT guidance considers a percentage occupancy of 85% to represent parking stress. Although a number of roads surrounding the site, including Crane Road and Gould Road, experience an average parking stress across the three days above 85%, some roads have an average parking stress below this level. For example, Edwin Road experiences an average parking stress of 80%, below the 85% threshold, with an average of 10 spaces available during the overnight period.

7.6.5 Although the total parking saturation levels on all roads within 200m of the site are above 85% across the three survey days, the proposed development provides 0.89 car parking spaces per dwelling which is within the 0.75 – 1 space per dwelling requirements of the London Plan (2021). In addition, residents will be exempt from applying for any parking permits in the CPZ. As such, it is deemed that the proposed development will not add to the parking stress of the surrounding streets during the overnight period.

DAYTIME PARKING OCCUPANCY

7.6.6 Snapshot parking surveys were undertaken during the day at 10:00 and 16:00 on Tuesday 22nd and Wednesday 23rd February.

7.6.7 The parking occupancy during the day is below that experienced overnight with an average parking stress of 72% and a peak of 77% on the roads within 200m of the site. Therefore, it is not deemed that there are issues with parking saturation, highway safety or neighbour amenity on nearby roads.

7.6.8 As the employment unit will be provided with 18 car parking spaces, including five Blue Badge parking spaces, it is deemed the level of parking provision is suitable in line with London Plan (2021) requirements and will not add to on-street parking stress. In addition, as residents and employees will be exempt from applying for any parking permits in the CPZ, the proposed development will not increase on-street parking stress during the daytime.

SUMMARY

7.6.9 LBRuT guidance considers a percentage occupancy of 85% to represent parking stress. Although a number of roads surrounding the site, including Crane Road and Gould Road, experience an average parking stress across the three days above 85%, some roads have an average parking stress below this level. For example, Edwin Road experiences an average parking stress of 80%, below the 85% threshold, with an average of 10 spaces available during the overnight period.

7.6.10 Although the total parking saturation levels on all roads within 200m of the site are above 85% across the three survey days, the proposed development provides 0.86 car parking spaces per dwelling which is within the 0.75 – 1 space per dwelling requirements of the London Plan (2021). In addition, residents will be exempt from applying for any parking permits in the CPZ. As such, it is deemed that the proposed development will not add to the parking stress of the surrounding streets during the overnight period.

7.7 CAR OWNERSHIP

7.7.1 Table 7-3 provides a summary of car ownership in the area the site is located within.

Table 7-3: Car ownership (2011 Census data) for the site's immediate surrounding area

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%

7.7.2 The local car ownership data 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.

7.7.3 The percentages (shown above) have been applied to the proposed development's residential accommodation schedule (unit number) to calculate the likely car ownership at the proposed development, which has resulted in a forecast ownership of 87 vehicles. Whilst this is in line with the number of spaces

provided, the census data is now ten years old, and the projection does not consider declining car ownership trends, changes to travel behaviour or the reduction in reliance on cars/parking through the proposed implementation of a car club bay for the site.

7.7.4 It is expected that the site's accessibility to good bus and railway links in conjunction with the circulation and implementation of a Residential Travel Plan and Workplace Travel Plan will also assist in encouraging travel by active and sustainable modes over vehicle trips.

7.8 TRAVEL, CAR OWNERSHIP AND PARKING BEHAVIOUR AND TRENDS

7.8.1 This section reviews mode share data trends, car ownership and travel behaviour changes/trends. This is based on the findings of research undertaken by Transport for London (TfL), the Department for Communities and Local Government (DCLG) and TRICS, the industry used database of trip rates for developments used in the United Kingdom for transport planning purposes, specifically to quantify the trip generation of new developments.

DECIDE AND PROVIDE APPROACH

7.8.2 The 'Decide and Provide' approach to transport planning is both a more current approach to considering appropriate car parking provision and also aligns with planning policy associated with car parking for London. TRICS published a document[4] on this matter in February 2021 and states "Decide and Provide is a planning paradigm that is vision-led, rather than forecast-led (Predict and Provide). At its heart is deciding on a preferred future and providing a development path best suited to achieving it, "The proposals are made in accordance with The London Plan (March 2021) 2021 Policy T6 Part B, which states that "Car-free development should be the starting point for all development proposals" and that where not appropriate to be fully car-free development should be "designed to provide the minimum necessary parking ('car-lite')".

CENSUS DATA – MODE SHARE TRENDS

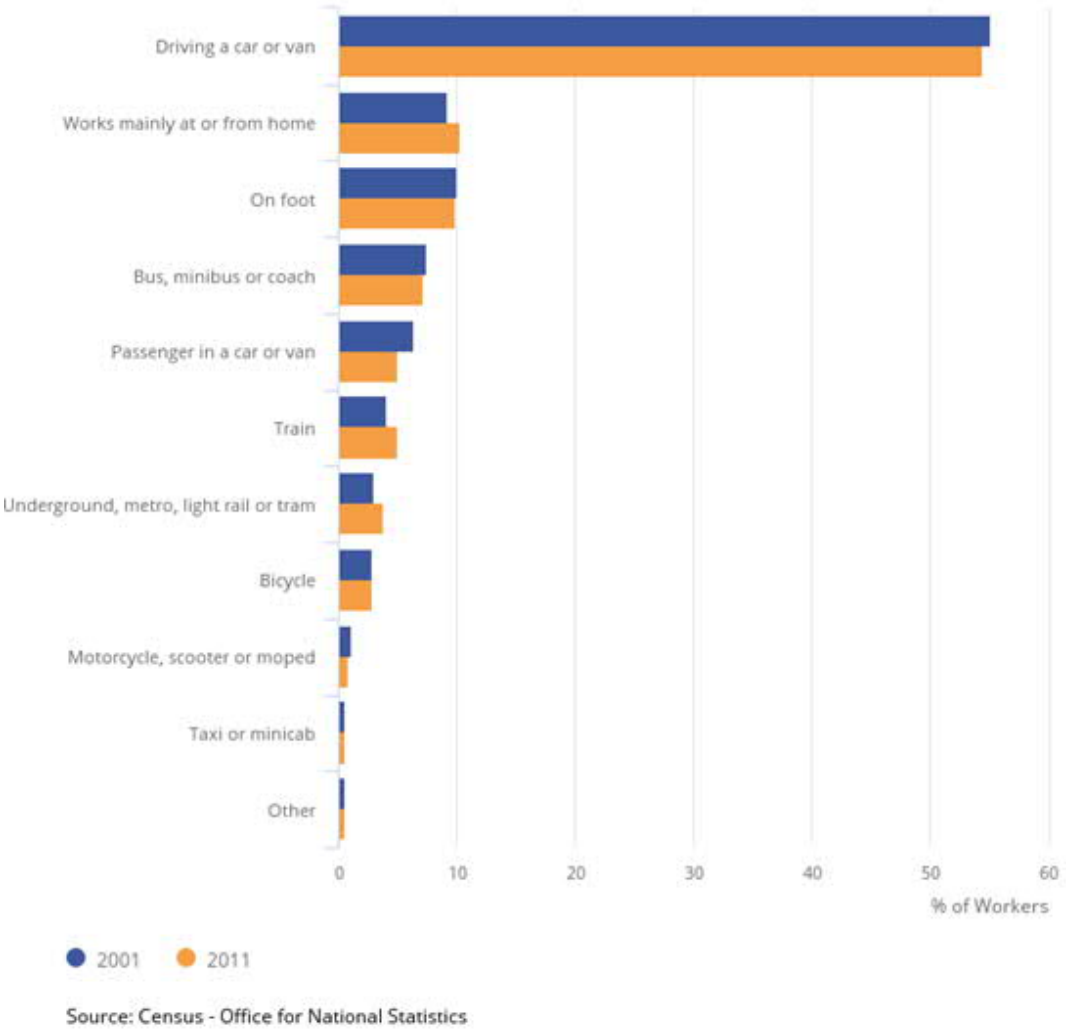
7.8.3 Typically, 2011 Census data for method of travel to work is used to establish the likely mode share and proportion of prospective residents that will travel by car for a Transport Assessment.

7.8.4 At the time of writing this Transport Assessment the latest available Census data is ten years old. In the meantime, method of travel to work data collected for 2001 and 2011 has been compared to understand the trends of change per mode, which will inform the design of the proposed development including car parking provision.

7.8.5 At the highest level, a summary of national method of travel to work patterns between Census 2001 and 2011 is shown in Figure 7-4, and indicates the change in mode share between the two data sets.

[4] http://www.trics.org/decideandprovideguidance.html

Figure 7-4: 2001 & 2011 changes in mode share



Source: Census - Office for National Statistics

7.8.6 The graph (shown in Figure 7-4) demonstrates that there has been a slight reduction in all vehicle trip generating modes, i.e., driving a car or van, being a passenger, traveling by motorcycle and by taxi. There has been an increase in use of public transport modes such as train and the underground, as well as an increase in people who mainly work from home. It is anticipated that the trend of declining car use has continued and will continue in the future. The long-term effect of the Covid-19 pandemic on travel patterns and working from home has yet to be established but it would be reasonable to assume the following:

- That the proportion of people working from home on a permanent or semi-permanent basis will have increased compared to pre-pandemic levels; and
- People are travelling less and / or at different times compared to pre-pandemic levels, particularly where the journey purpose is work related.

TFL RESEARCH

7.8.7 TfL's research report "Residential Parking Provision in New Developments" provides further evidence to assist in determining appropriate car parking provision for the proposed redevelopment's residents.

7.8.8 The report presents the findings of survey fieldwork carried out to better understand the relationship between parking, car ownership and use amongst residents of new developments in Greater London.

7.8.9 To better understand the relationship between parking, car ownership and use, TfL undertook a large-scale postal survey in November 2011 with residents of developments (with 10 or more units) built between 2004 and 2009. In total, around 3,000 responses were received from more than 800 developments across London.

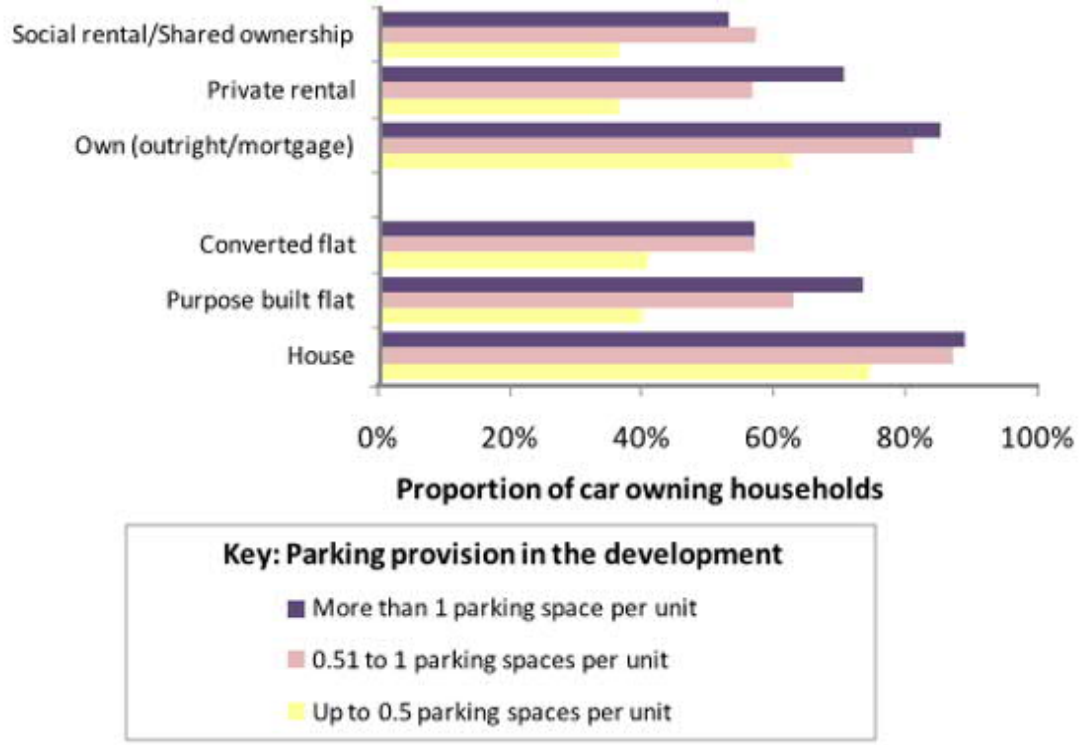
7.8.10 The key findings as summarised within the report, and that are of relevance were:

- For all groups, and in all areas, people living in developments with more parking available had higher levels of car ownership than people living in developments with less parking;
- People choose a home that meets their needs; there is a close relationship between the importance attached to parking and satisfaction with the quality of parking;
- Overall, developments with more parking contained more car owners and generated more car journeys than developments with less parking provided;
- Homeowners are more likely to own a car than those renting their home; and
- A regression analysis identified key factors influencing car ownership to be tenure, housing type, household structure, working status, area and access to public transport, level of parking provision, and car club membership.

7.8.11 Of all respondents, 20% lived in developments with less than 0.5 parking spaces per unit.

7.8.12 The graph shown in Figure 7-5 is an extract from TfL's research report which summarises the proportion of car owning households in London within different tenure and dwelling types.

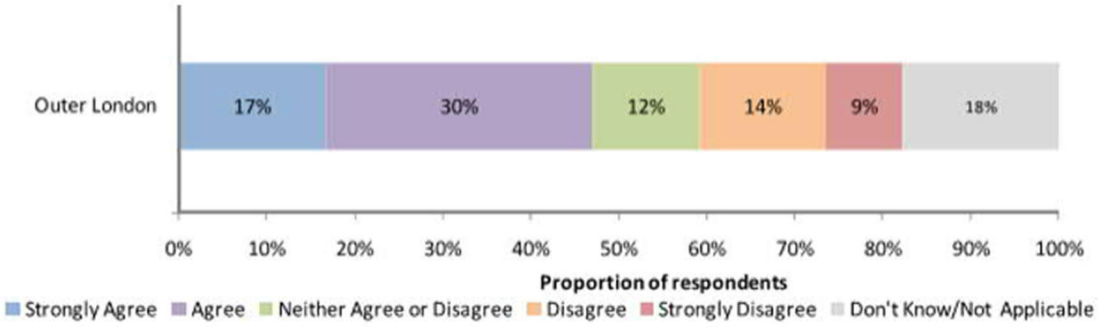
Figure 7-5: Proportion of car ownership per tenure and dwelling type



7.8.13 The graph indicates that within purpose-built flats with up to 0.5 parking spaces only 40% of households are car owners. With parking provision of between 0.5 and 1 space per household ownership is approximately 60%. In addition to the approach applied (decide and provide) to car parking provision and the mitigation measures (car-free services) the applicant will provide to its prospective residents, parking and travel behaviour trends also indicate lower car ownership levels across London.

7.8.14 TfL's research also sought to assess attitudes to car ownership. The graph shown in Figure 7-6 summarises the responses given by Outer London respondents to the statement 'My lifestyle is dependent on having a car'.

Figure 7-6: Dependency on cars for Londoners



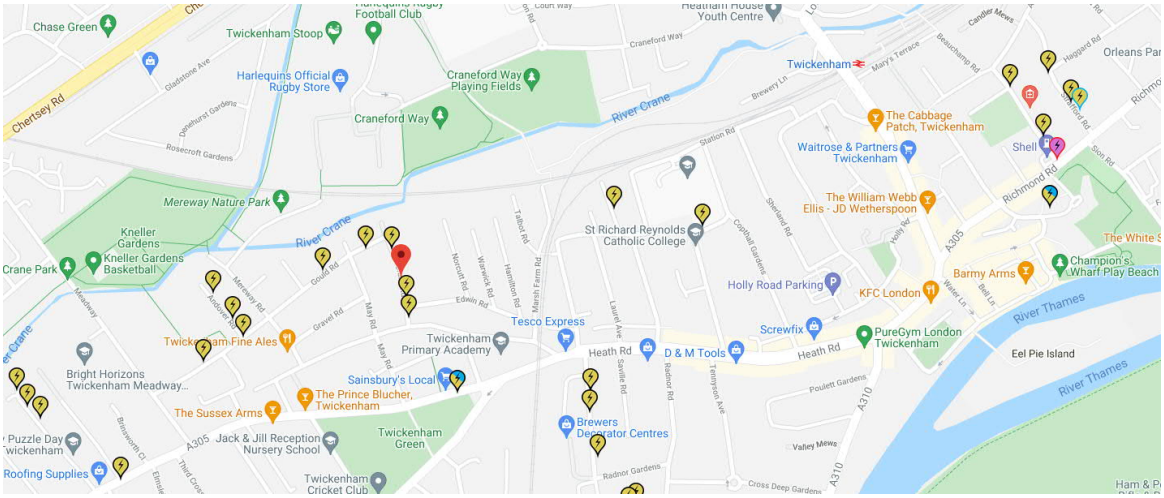
7.8.15 The graph indicates that within Outer London only 47% of respondents agreed with the statement. The data includes all tenure types and household types.

7.8.16 The provision of 0.86 parking spaces per dwelling would be considered in line with the findings of the research set out above and is in line with the London Plan standards for the Sites PTAL level.

7.9 ELECTRIC CHARGING

7.9.1 Along with the proposed on-site provision, Figure 7-7 shows the on-street electric vehicle charging points provided within proximity of the proposed development site.

Figure 7-7: Electric vehicle charging points within proximity of the site



7.10 CAR CLUB

7.10.1 The nearest existing car clubs are located at 2 Lion Road, a six-minute walk to the east of the site) and on First Cross Road a six-minute walk southwest of the site). The former is operated by Enterprise and the later by Zipcar. All car club vehicles within proximity of the site are shown in Figure 7-8.

7.10.2 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. Future residents will have excellent access to the proposed car club bay and will be offered car club membership with further details in the Travel Plan.

7.10.3 LBRuT's website states that research has shown car club cars replace between 6 and 20 privately owned vehicles. CoMo UK's latest report into shared transport states that on average a car club space an replaced 24 vehicles in Outer London.