3 TRIP GENERATION

3.1 INTRODUCTION

3.1.1 This section calculates service vehicle trip rates for the proposed light industrial use on the site (Use Class E, previously Use Class B1c) and creates a trip generation profile for the proposed floor area.

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

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

- Comparable location (Greater London)
- Comparable Public Transport Access Level (within reason and where possible)
- Comparable development type in terms of use class

3.1.4 The LGV and HGV trip rates were extracted from TRICS for the proposed industrial use. For the purpose of the conflict analysis, the trip generation was based on a twelve-hour period of 0700-1900 to calculate conflicts against the existing ATC data for Edwin Road.

3.1.5 **Tables 2-1** below shows the number of LGV and HGV trips that could be generated by the proposed industrial uses on the site and the servicing trip rates and servicing trips for the full use (7,228sqm) of the site.

3.1.6 HGVs accessing the site have been a clear source of neighbourhood conflict for the previous site use.

3.1 PROPOSED B1c (NOW CLASS USE E) TRIP GENERATION

3.1.1 The TRICS database of B1c surveyed sites contains a number of outer-London borough sites which are deemed to be comparable to the proposed use.

Table 3-1: LGV/HGV Generation – Class B1c

Time Period	LGV/HGV Trip Rate (per 100sqm)			Vehicle Trips (7,228sqm)			Vehicle Trips (883sqm)		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
0700-0800	0.339	0.341	0.680	25	25	49	4	3	7
0800-0900	0.414	0.391	0.805	30	30	60	3	3	6
0900-1000	0.348	0.325	0.673	25	25	50	4	4	8
1000-1100	0.471	0.463	0.934	34	34	68	5	5	10
1100-1200	0.453	0.528	0.981	33	33	65	4	4	8
1200-1300	0.396	0.409	0.805	29	29	57	4	5	9
1300-1400	0.367	0.333	0.700	27	27	53	3	3	6
1400-1500	0.320	0.351	0.671	23	23	46	3	3	6
1500-1600	0.294	0.312	0.606	21	21	43	2	3	5
1600-1700	0.208	0.219	0.427	15	15	30	2	2	4
1700-1800	0.114	0.148	0.262	8	8	16	1	1	2
1800-1900	0.102	0.125	0.227	7	7	15	1	1	2
TOTAL	**3.826**	**3.945**	**7.771**	**277**	**277**	**553**	**36**	**37**	**73**

3.1.2 **Table 2-2** below shows the expected two-way servicing trips that the residential development is likely to generate. The regular HGV trip to the residential site is likely to be the weekly refuse collection undertaken by the council. The majority of servicing trips to the residential development are likely to be carried out by transit type vehicles.

Table 3-2: 97 Unit Residential Scheme – 12Hour LGV/HGV Two-way Vehicle Trips

Vehicle Type	Proposed Number of Units
	97
LGV	22
HGV	2
TOTAL	**24**

3.2 ATC SURVEY DATA

3.2.1 ATC data taken over ten days during January 2019 on Edwin Road between Crane Road and Norcutt Road. **Table 2-3** below shows the average weekday eastbound and westbound vehicle flows on Edwin Road over a 12-hour period between 0700 – 1900.

Table 3-3: ATC Weekday Data – Edwin Road

Direction of Travel	0700-1900 (12 Hour Flow)
Eastbound	199
Westbound	149
Total	**348**

4 SERVICING & INDUSTRIAL ACCESS

4.1 VEHICULAR ACCESS

4.1.1 Whilst the site was operational as Greggs Bakery, the site generated a number of regular daily HGV movements, with instances of conflict where large vehicles were passing each other. On the A305 The Green, this is not an issue but, on the 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.

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

4.1.3 A Probability Matrix was created to understand the likelihood of the generated HGV traffic for the proposed industrial use, conflicting with the existing traffic on Edwin Road over a 12-hour period. The numbers below show the 85th percentile chance that a generated HGV arriving or departing the site will conflict with either the eastbound or westbound traffic on Edwin Road.

4.1.4 The probability of conflict is based on a vehicle leaving the A305 and arriving at the site access on Edwin Road (westbound route) or vice versa (eastbound route). The route between the A305 and the site access is via Colne Road, Marsh Farm Road and Edwin Road and is approximately 260m in length. The ATC surveys included speed surveys which showed an 85th percentile speed of 27kph eastbound and 25kph westbound, from which the journey times in both directions could be calculated.

4.1.5 **Table 3-1** below shows the likelihood of the generated HGV traffic by the proposed 97 unit residential scheme, conflicting with the existing Edwin Road traffic over a 12-hour period.

Table 3-1: Proposed Residential Use – No. of Conflicts of HGVs with existing traffic on Edwin Road

Number of Units - 97		HGV
85th% No. of conflicts (0700 – 1900)	Eastbound	1
	Westbound	1
	Total	**2**

4.1.6 **Tables 3-2** below shows the number of HGVs conflicts generated by the proposed industrial use on the development site for the proposed 883sqm unit. These HGV conflicts are against the existing eastbound and westbound traffic on Edwin Road. As set out above, the proposed 97 unit residential development generates one HGV conflict each way over a twelve-hour period, and the 883sqm industrial unit generates the same number.

Table 4-2: Proposed Light Industrial Use – No. of Conflicts of HGVs with existing traffic on Edwin Road

Floor Area – 883sqm		HGV Conflicts
85th% No. of conflicts (0700 – 1900)	Eastbound	1
	Westbound	1
	Total	**2**

4.2 CONFLICT SUMMARY

4.2.1 The proposed residential development will generate on average two HGV two-way movements during a 12 hour period. The HGV trips have an 85th percentile chance of conflicting with opposing traffic once in each direction during the 12 hour period. The proposed industrial unit will generate six two-way HGV movements over a 12 hour period, and there is an 85th percentile chance that this quantum of HGV movements will conflict with the existing traffic on Edwin Road twice times over a 12 hour period, once in the eastbound direction and once in the westbound direction.

4.2.2 The proposed light industrial provision on-site would generate an 85th percentile chance that one HGV in a 12-hour period would conflict with an existing vehicle travelling in the opposite direction. If the residential conflict is used as a baseline and one vehicle conflict in each direction is acceptable, then the quantum of the light industrial floorspace being proposed is therefore appropriate.

5 PARKING PROVISION

5.1 LONDON PLAN 2021 STANDARDS

5.1.1 The latest London Plan standards for residential developments in Outer London with a PTAL rating of 2 – 3 are shown below:

- 1-2 Bed – up to 0.75 spaces per dwelling
- 3+ Up to 1 space per dwelling

5.2 PARKING PROVISION

PREVIOUS SCHEME

5.2.1 On-site parking spaces for 100 vehicles was proposed, with one space allocated to the proposed commercial space. The residential parking provision was 0.86 parking space per unit.

PROPOSED SCHEME

5.2.2 Based on the parking provision of the previous development, 84 on-site parking spaces are proposed for the residential units.

5.2.3 Any industrial redevelopment at the site would need to take into account the 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.

MITIGATION

5.2.4 The risk of overspill parking was of particular concern amongst neighbouring residents as part of the previous planning application.

5.2.5 The parking on surrounding roads is predominantly residential, with Edwin Road, Crane Road and Gould Road within Controlled Parking Zone (CPZ) “WT”, which operates Monday to Friday 0830-1830, excluding public and bank holidays.

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

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

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

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

CAR CLUB

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

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

5.2.11 Zipcar and Enterprise Car Club are the two car club providers affiliated with LB Richmond upon Thames and could provide an additional car club bays in the area surrounding the site.

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

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

POST COVID

5.2.14 The current Covid-19 crisis is having 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.

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

6 SUMMARY

6.1.1 This Transport Note has been produced to analyse the proposed industrial floorspace that the former Greggs site could accommodate, based on the findings within the previous technical Note.

6.1.2 The existing highway access route is not suitable for a medium volume of Heavy Goods Vehicles, and there is evidence of damage to the highway and historical damage to parked vehicles. There is currently signage in place identifying routes to the site as not being suitable for HGV traffic. However, the route that is signed to the site is still unsuitable, as evidenced by previous damage and incidents. The residential-led scheme produces a substantive reduction in the number of HGV movements to and from the site.

6.1.3 The service vehicle trip rates for the proposed industrial use on the site have been calculated, which creates an LGV and HGV trip generation for the proposed floor area.

6.1.4 Velocity created a probability matrix that shows the likelihood of a generated HGV coming into conflict with existing traffic on the route between the site access and the A305. This Note considers the types/size of vehicles that the proposed industrial use will generate without detriment to the local area and highway safety.

6.1.5 The regular presence of HGVs on a narrow residential road network poses a heightened risk of conflict with pedestrian and other road users.

6.1.6 The number of HGV conflicts generated by the proposed residential development was used as the baseline assessment. The residential development would generate two HGV movements (inbound and outbound) over a 12 hour period, and this HGV is likely to generate one vehicle conflict in each direction.

6.1.7 Velocity created a probability matrix that shows the likelihood of generated HGVs coming into conflict with existing vehicles on Edwin Road. **Table 3-2** above shows the number of conflicts that could occur with the introduction of an 883sqm industrial unit on the development site.

6.1.8 If the residential conflict is used as a baseline and one vehicle conflict in each direction is acceptable, then the quantum of the light industrial floorspace being proposed is therefore appropriate.

6.1.9 One of the key benefits in transport terms of delivering a residential-led scheme including a provision of light industrial 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.

APPENDIX A

TECHNICAL NOTE TN001 – SEPTEMBER 2020

VELOCITY
Transport Planning

PROJECT: GREGGS SITE, TWICKENHAM
TECHNICAL NOTE: INDUSTRIAL FLOOR AREAS AND IMPACT OF HGVS

1 INTRODUCTION

1.1 NOTE PURPOSE

1.1.1 This Technical Note has been produced to analyse a series of incremental service vehicle trip generation forecasts, to understand what is the maximum industrial floorspace that the former Greggs site could accommodate before highway safety would be unacceptably compromised.

1.1.2 The scheme was refused at planning committee partly due to the loss of industrial floorspace. However, we know anecdotally that highway safety was compromised when the site was occupied by Greggs, primarily because of the conflicts created by the number of larger sized service vehicles associated with Greggs using the local roads.

1.1.3 The existing highway access route is not suitable for a moderate volume of Heavy Goods Vehicles, and there is evidence of damage to the highway and historical damage to parked vehicles. There is currently signage in place identifying routes to the site as not being suitable for HGV traffic. However, the route that is signed to the site is still unsuitable, as evidenced by previous damage and incidents. The residential-led scheme produces a substantive reduction in the number of HGV movements to and from the site compared to the extant industrial use.

1.1.4 This Technical Note calculates service vehicle trip rates for alternative industrial uses on the site (B1c, B2 and B8 storage and warehousing) and creates a trip generation profile for a range of floor areas. From that, we have created a probability matrix that shows the likelihood of a generated HGV coming into conflict with existing traffic on the route between the site access and the A305. This Note considers the types/size of vehicles that each use and floor area scenario is likely to give rise to, which can then be used to identify the maximum industrial floor area (based purely on transport grounds) that the site can accommodate without detriment to the local area and highway safety.

1.1.5 The regular presence of HGVs on a narrow residential road network poses a heightened risk of conflict with pedestrian and other road users, and this has led to:

- Damage to footways and kerbs
- Concerns about safety for pedestrians and other road users
- Damage to parked cars
- Street furniture being damaged
- Conflicts with existing vehicles

1.1 BACKGROUND INFORMATION

1.1.1 **Figure 1-1** shows the location of the site.

Figure 1-1: Site Location and Local Context

1.1.2 The site measures approximately 1.1 hectares and currently comprises empty industrial units which were formerly occupied by Greggs Bakery until Greggs vacated most of its operations in 2016, and since then, the remainder of the site has been vacated and remained vacant.

1.1.3 The site is situated between two residential streets, Crane Road and Norcutt Road, bordered by Edwin Road to the south and wrapping around Crane Road to the north. There is existing vehicle access from Crane Road that enters into a parking area, with an HGV service access point located towards the south of the site along Edwin Road, providing access to a service yard.

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

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

1.1.6 The existing vehicle route for HGVs from the A305 to the development site is via Colne Road and Edwin Road. There is a railway bridge across Colne Road within 40m of the A305 junction with a 4.1m height restriction. The railway bridge and the existing geometry of the route limit the type, size and number of large vehicles that can access Edwin Road. It is understood that Greggs did not use any articulated vehicles, and access was limited to large rigid HGV up to 10m in length. The London Borough of Richmond refuse vehicle is 10.4m long with a 3.8m travelling height and is the largest vehicle that would be expected along the route.

2 TECHNICAL ANALYSIS – TRIP GENERATION

2.1 INTRODUCTION

2.1.1 This section calculates service vehicle trip rates for alternative industrial uses on the site (B1c, B2 and B8) and creates a trip generation profile for a range of floor areas – starting with small floor areas and working upwards incrementally.

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

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

- Comparable location (Greater London)
- Comparable Public Transport Access Level (within reason and where possible)
- Comparable development type in terms of use class

2.1.4 The LGV and HGV trip rates were extracted from TRICS for each industrial use. For the purpose of the conflict analysis, the trip generation was based on a twelve-hour period of 0700-1900 to calculate conflicts against the existing ATC data for Edwin Road.

2.1.5 **Tables 2-1 to 2-4** below show the number of LGV and HGV trips that could be generated by the permitted industrial uses for the site. The LGV/HGV trips generated are based on the floor area of the existing buildings on-site to demonstrate the substantial LGV and HGV trips that could be generated by the extant use.

2.1.6 We have used the LGV/HGV trip rates for each industrial use to provide a vehicle trip generation for incremental floor areas shown in **Tables 2-5 to 2-8**.

2.1.7 Larger HGVs accessing the site have been a clear source of neighbourhood conflict for the previous site use. As such, it is pertinent to review the projected vehicle trips made by larger vehicles for similar industrial uses at the site to consider the impact of a fully operational industrial site. **Table 2-1 to 2-4** shows the servicing trip rates and servicing trips for the full use (7,228sqm) of the site.

2.2 B2 USE TRIP GENERATION

2.2.1 The TRICS database of B2 surveyed sites contains one outer London borough site, which is deemed to be reasonably comparable to the permitted use. The site is situated in West London and is also a food production facility, similar to the permitted use of the Greggs Bakery Site.

Table 2-1: LGV/HGV Generation – Extant Use – Class B2

Time Period	LGV/HGV Trip Rate (per 100sqm)			LGV/HGV Trips (7,228sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
0700-0800	0.016	0.000	0.016	1	0	1
0800-0900	0.082	0.049	0.131	6	4	9
0900-1000	0.032	0.065	0.097	2	5	7
1000-1100	0.082	0.033	0.115	6	2	8
1100-1200	0.115	0.164	0.279	8	12	20
1200-1300	0.099	0.099	0.198	7	7	14
1300-1400	0.032	0.049	0.081	2	4	6
1400-1500	0.082	0.049	0.131	6	4	9

1500-1600	0.082	0.114	0.196	6	8	14
1600-1700	0.016	0.016	0.032	1	1	2
1700-1800	0.016	0.033	0.049	1	2	4
1800-1900	0.016	0.016	0.032	1	1	2
TOTAL	**0.670**	**0.687**	**1.357**	**48**	**50**	**98**

2.3 PROPOSED B1c USE TRIP GENERATION

2.3.1 Following the application of the selection criteria as identified in the trip-generation methodology, TRICS sites were selected as comparator sites for B1c use on the site.

Table 2-2: LGV/HGV Generation – Class B1c

Time Period	LGV/HGV Trip Rate (per 100sqm)			Vehicle Trips (7,228sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
0700-0800	0.348	0.325	0.673	25	25	49
0800-0900	0.471	0.463	0.934	30	30	60
0900-1000	0.453	0.528	0.981	25	25	50
1000-1100	0.396	0.409	0.805	34	34	68
1100-1200	0.367	0.333	0.700	33	33	66
1200-1300	0.320	0.351	0.671	29	29	57
1300-1400	0.294	0.312	0.606	27	27	53
1400-1500	0.208	0.219	0.427	23	23	46
1500-1600	0.114	0.148	0.262	21	21	43
1600-1700	0.102	0.125	0.227	15	15	30
1700-1800	0.339	0.341	0.680	8	8	16
1800-1900	0.414	0.391	0.805	7	7	15
TOTAL	**3.826**	**3.945**	**7.771**	**277**	**277**	**553**

2.4 PROPOSED B8 - COMMERCIAL WAREHOUSING TRIP GENERATION

2.4.1 Following the application of the selection criteria as identified in the trip-generation methodology, TRICS sites were selected as comparator sites for B8 Commercial Warehousing use on the site.

Table 2-3: LGV/HGV Generation - Class B8 Commercial Warehousing

Time Period	LGV/HGV Trip Rate (per 100sqm)			Vehicle Trips (7,228sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
0700-0800	0.059	0.061	0.120	4	4	9
0800-0900	0.069	0.059	0.128	5	4	9
0900-1000	0.103	0.085	0.188	7	6	14
1000-1100	0.094	0.103	0.197	7	7	14
1100-1200	0.108	0.101	0.209	8	7	15
1200-1300	0.108	0.105	0.213	8	8	15
1300-1400	0.085	0.084	0.169	6	6	12
1400-1500	0.066	0.071	0.137	5	5	10
1500-1600	0.092	0.092	0.184	7	7	13
1600-1700	0.069	0.063	0.132	5	5	10
1700-1800	0.059	0.071	0.130	4	5	9
1800-1900	0.059	0.057	0.116	4	4	8
TOTAL	**0.971**	**0.952**	**1.923**	**70**	**69**	**139**

2.5 PROPOSED B8 – PARCEL DISTRIBUTION TRIP GENERATION

2.5.1 Following the application of the selection criteria as identified in the trip-generation methodology, TRICS sites were selected as comparator sites for B8 Parcel Distribution use on the site.

Table 2-4: LGV/HGV Generation – Class B8 Parcel Distribution

Time Period	LGV/HGV Trip Rate (per 100sqm)			Vehicle Trips (7,228sqm site)		
	Arrive	Depart	Total	Arrive	Depart	Total
0700-0800	0.440	0.078	0.518	32	6	37
0800-0900	0.026	0.803	0.829	2	58	60
0900-1000	0.129	1.139	1.268	9	82	92
1000-1100	0.052	0.621	0.673	4	45	49
1100-1200	0.052	0.259	0.311	4	19	22
1200-1300	0.078	0.311	0.389	6	22	28
1300-1400	0.104	0.285	0.389	8	21	28
1400-1500	0.337	0.337	0.674	24	24	49
1500-1600	0.233	0.156	0.389	17	11	28
1600-1700	0.673	0.233	0.906	49	17	66
1700-1800	0.466	0.000	0.466	34	0	34
1800-1900	0.026	0.000	0.026	2	0	2
TOTAL	**2.616**	**4.222**	**6.838**	**189**	**305**	**494**

2.5.2 **Tables 2-5 to 2-8** below shows the number of associated arrival and departure trips by both LGV and HGV for the incremental increases in floor areas over a 12-hour survey period (0700-1900) for various industrial uses on site.

Table 2-5: 12-Hour LGV/HGV Trips – Class B2

Floor Area(sqm)	100		250		500		750		1,000		1,500		2,500		5,000	
Veh. Type	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**
LGV	0	0	0	0	0	0	0	0	0	0	1	1	3	3	12	12
HGV	0	0	0	0	0	1	2	2	5	3	6	5	11	12	21	25
TOTAL	0	0	0	0	0	1	2	2	5	3	7	6	14	15	33	37
Two-way	**0**		**0**		**1**		**4**		**8**		**13**		**29**		**70**	

Table 2-6: 12-Hour LGV/HGV Trips – Class B1c

Floor Area(sqm)	100		250		500		750		1,000		1,500		2,500		5,000	
Veh. Type	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**
LGV	0	0	9	9	16	17	25	26	35	35	49	52	82	86	167	173
HGV	0	0	0	0	0	0	2	1	4	4	9	9	13	13	25	24
TOTAL	0	0	9	9	16	17	27	27	39	39	58	61	95	99	192	197
Two-way	**0**		**18**		**33**		**54**		**78**		**119**		**194**		**389**	

Table 2-7: 12-Hour LGV/HGV Trips – Class B8 Commercial Warehousing

Floor Area(sqm)	100		250		500		750		1,000		1,500		2,500		5,000	
Veh. Type	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**	**Arr**	**Dep**
LGV	0	0	0	0	0	0	0	1	5	4	6	9	13	12	26	26
HGV	0	0	0	0	0	0	0	0	1	0	9	8	12	11	22	24
TOTAL	0	0	0	0	0	0	0	1	6	4	15	17	25	23	50	48
Two-way	**0**		**0**		**0**		**1**		**10**		**32**		**48**		**98**	

Table 2-8: 12-Hour LGV/HGV Trips – Class B8 Parcel Distribution

Floor Area(sqm)	100		250		500		750		1,000		1,500		2,500		5,000	
Veh. Type	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
LGV	0	2	5	11	10	16	15	28	21	34	31	50	52	85	103	170
HGV	0	1	1	1	2	3	5	4	5	9	8	12	14	20	27	41
TOTAL	0	3	6	12	12	19	20	32	26	43	39	62	66	105	130	211
Two-way	3		18		31		52		69		101		171		341	

2.5.3 **Table 2-9** below shows the expected two-way servicing trips that the residential development is likely to generate. The regular HGV trip to the residential site is likely to be the weekly refuse collection undertaken by the council. The majority of servicing trips to the residential development are likely to be undertaken by transit type vehicles.

Table 2-9: 116 Unit Residential Scheme – 12Hour LGV/HGV Two-way Vehicle Trips

Number of Units	116
Vehicle Type	
LGV	26
HGV	2
TOTAL	28

2.6 ATC SURVEY DATA

2.6.1 ATC data taken over ten days during January 2019 on Edwin Road between Crane Road and Norcutt Road. **Table 2-10** below shows the average weekday eastbound and westbound vehicle flows on Edwin Road over a 12-hour period between 0700 – 1900.

Table 2-10: ATC Weekday Data – Edwin Road

Direction of Travel	0700-1900 (12 Hour Flow)
Eastbound	199
Westbound	149
Total	348

3 PROBABILITY OF CONFLICT

3.1.1 The current geometry of the local roads and the on-street parking along the route make it very difficult for HGVs to navigate from the A305 to the site and vice versa. This has led to:

- Damage to footways and kerbs
- Concerns about safety for other road users and pedestrians
- Damage to parked cars
- Street furniture being damaged
- Conflicts with existing vehicles

3.1.2 A Probability Matrix was created to understand the likelihood of the generated HGV traffic for the incremental floor areas, conflicting with the existing traffic on Edwin Road over a 12-hour period. The numbers below show the 85th percentile chance that a generated HGV arriving or departing the site will conflict with either the eastbound or westbound traffic on Edwin Road.

3.1.3 The probability of conflict is based on a vehicle leaving the A305 and arriving at the site access on Edwin Road (westbound route) or vice versa (eastbound route). The route between the A305 and the site access is via Colne Road, Marsh Farm Road and Edwin Road and is approximately 260m in length. The ATC surveys included speed surveys which showed an 85th percentile speed of 27kph eastbound and 25kph westbound, from which the journey times in both directions could be calculated.

3.1.4 **Table 3-1** below shows the likelihood of the generated LGV and HGV traffic by the proposed 116 unit residential scheme, conflicting with the existing Edwin Road traffic over a 12-hour period.

Table 3-1: Proposed Residential Use – No. of Conflicts of HGVs with existing traffic on Edwin Road

Number of Units - 116		LGV	HGV
85th% No. of conflicts (0700 – 1900)	Eastbound	3	1
	Westbound	4	1
	Total	7	2

3.1.5 **Tables 3-2 to 3-5** below shows the number of HGVs conflicts generated by various industrial uses on the development site for increasing floor areas. These HGV conflicts are against the existing eastbound and westbound traffic on Edwin Road. As set out above, the proposed 116 unit residential development generates one HGV conflict over a twelve-hour period in each direction and, therefore, where the conflicts generated are above one for the industrial uses, we have shown this as having a detrimental effect on the highway.

Table 3-2: B2 Industrial Use – No. of Conflicts of HGVs with existing traffic on Edwin Road

Floor Area (sqm)		100	250	500	750	1,000	1,500	2,500	5,000
85th% No. of conflicts (0700 – 1900)	Eastbound	0	0	0	1	2	2	3	5
	Westbound	0	0	1	1	1	2	4	7
	Total	**0**	**0**	**1**	**2**	**3**	**4**	**7**	**12**

Table 3-3: B1c Industrial Use – No. of Conflicts of HGVs with existing traffic on Edwin Road

Floor Area (sqm)		100	250	500	750	1,000	1,500	2,500	5,000
85th% No. of conflicts (0700 – 1900)	Eastbound	0	0	0	0	1	2	3	3
	Westbound	0	0	0	1	2	3	4	7
	Total	**0**	**0**	**0**	**1**	**3**	**5**	**7**	**10**

Table 3-4: B8 Commercial Warehousing – No. of Conflicts of HGVs with existing traffic on Edwin Road

Floor Area (sqm)		100	250	500	750	1,000	1,500	2,500	5,000
85th% No. of conflicts (0700 – 1900)	Eastbound	0	0	0	0	0	2	3	5
	Westbound	0	0	0	0	1	3	4	6
	Total	**0**	**0**	**0**	**0**	**1**	**5**	**7**	**11**

Table 3-5: B8 Parcel Distribution – No. of Conflicts of HGVs with existing traffic on Edwin Road

Floor Area (sqm)		100	250	500	750	1,000	1,500	2,500	5,000
85th% No. of conflicts (0700 – 1900)	Eastbound	0	0	1	1	2	3	4	8
	Westbound	0	1	1	2	2	3	4	10
	Total	**0**	**1**	**2**	**3**	**4**	**6**	**8**	**18**

3.2 CONFLICT SUMMARY

3.2.1 The proposed residential development will generate 26 LGV and 2 HGV two-way movements during a 12 hour period. The HGV trips have an 85th percentile chance of conflicting with opposing traffic once in each direction during the 12 hour period. This one conflict in each direction has been used as the baseline to identify the maximum industrial floor space that the development site can accommodate based on the number of HGV conflicts.

3.2.2 **Table 3-6** below shows the maximum industrial floor areas that can be accommodated on-site before the number of conflicts between generated HGVs and existing traffic on the route between the A305 and the site access is greater than those generated by the residential development.

Table 3-6: Maximum Industrial Floorspace

Industrial Use Class	Maximum Floor Area (sqm)
B2	750
B1c	750 – 1,000
B8 Commercial Warehousing	1,000 – 1,500
B8 Distribution	500

4 SUMMARY

4.1.1 This Technical Note has been produced to analyse a series of incremental service vehicle trip generation forecasts to understand what is the maximum industrial floorspace that the former Greggs site could accommodate before highway safety would be unacceptably compromised.

4.1.2 The existing highway access route is not suitable for a moderate volume of Heavy Goods Vehicles, and there is evidence of damage to the highway and historical damage to parked vehicles. There is currently signage in place identifying routes to the site as not being suitable for HGV traffic. However, the route that is signed to the site is still unsuitable, as evidenced by previous damage and incidents. The residential-led scheme would have produced a substantive reduction in the number of HGV movements to and from the site.

4.1.3 The service vehicle trip rates for alternative industrial uses on the site (B1c, B2 and B8) have been calculated, which creates an LGV and HGV trip generation for a range of floor areas – starting with small floor areas and working upwards incrementally.

4.1.4 From that, we have created a probability matrix that shows the likelihood of a generated HGV coming into conflict with existing traffic on the route between the site access and the A305. This Note considers the types/size of vehicles that each use and floor area scenario is likely to give rise to, which has been used to identify the maximum industrial floor area (based purely on transport grounds) that the site can accommodate without detriment to the local area and highway safety.

4.1.5 The regular presence of HGVs on a narrow residential road network poses a heightened risk of conflict with pedestrian and other road users.

4.1.6 The number of HGV conflicts generated by the proposed residential development was used as the baseline assessment. The residential development would generate two regular HGV movements over a 12 hour period which is likely to be the weekly refuse collection undertaken by the council. This HGV is likely to generate one vehicle conflict in each direction.

4.1.7 From that, we have created a probability matrix that shows the likelihood of generated HGVs coming into conflict with existing vehicles on Edwin Road. **Table 3-6** above shows the maximum industrial floor areas that the site can accommodate before the number of HGV conflicts becomes more than those generated by the proposed residential development, to the detriment of the local area and highway safety to all other users.

VELOCITY
Transport Planning

APPENDIX G

EMPLOYMENT SCHEME ASSESSMENT

1 INTRODUCTION

1.1 NOTE PURPOSE

1.1.1 This technical note has been produced to assess the potential highway impacts associated with a full commercial or industrial scheme on the former Greggs Factory site in Twickenham.

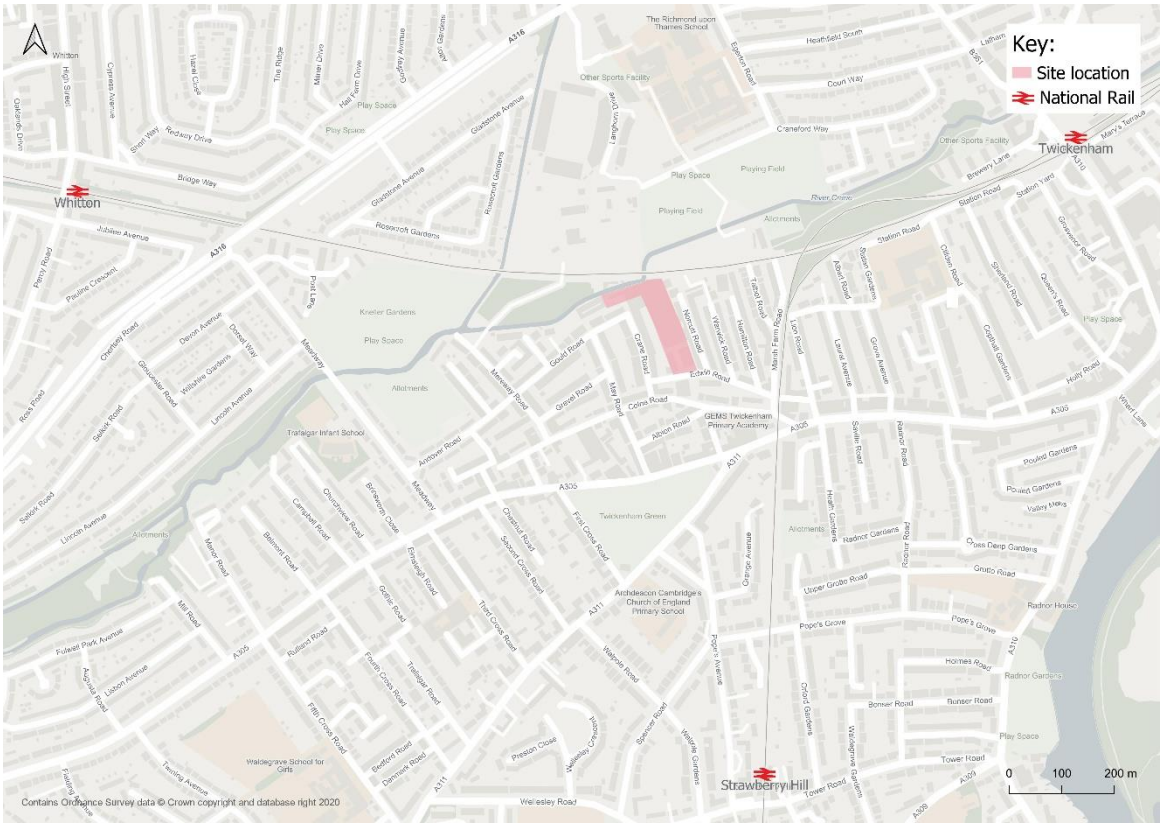
1.1.2 Although the land is allocated as locally important industrial land, this technical note demonstrates that a full industrial site could not be adequately mitigated, and the site is not suitable to accommodate significant industrial land without impacts to local residents and highway safety.

1.1.3 A Technical Note was previously produced that assessed the maximum quantum of employment land that could be accommodated on the former factory site. The findings of that assessment established that 885sqm of light industrial floor space could be accommodated within the site before highway safety was compromised.

1.1 BACKGROUND INFORMATION

1.1.1 **Figure 1-1** illustrates the location of the Site. The existing Site comprises the former Greggs Bakery Site in Twickenham and no.2 Gould Road, within the London Borough of Richmond Upon Thames. The Site is L shaped and is bound by the River Crane to the north and the railway line beyond, residential properties on Norcutt Road to the east, Edwin Road to the south, residential properties on Crane Road to the west and further residential properties on Crane Road/ Gould Road and at Crane Mews to the northwest.

Figure 1-1: Site location and local context



1.1.2 The Site is highly constrained and is accessed via Edwin Road to the south and Gould Road to the north of the Site. There is a small yard to the south of the Site accessed from Edwin Road, which is where HGVs historically accessed the Site. A limited amount of car parking associated with the existing bakery is located within the Site accessed off Gould Road to the north of the Site. Staff from Greggs Bakery were previously able to park on the surrounding streets prior to parking restrictions associated with the introduction of the 'West Twickenham CPZ', which came into force in May 2018.

1.1.3 The existing use of the Site is for industrial purposes and includes ancillary office floor space associated with the bakery operations that previously operated from the Site. The bakery operation is now redundant, and Greggs ceased the bakery use on the Site in 2018. Greggs has been unable to sell the facility despite a marketing exercise that commenced in February 2018.

1.1.4 Greggs operated on the Site since its acquisition in 1994 until 2018. Agents for Greggs have advised that throughout this period, it proved problematic from an operational and asset management perspective. The buildings gave rise to an unsustainable maintenance cost resulting in the business beginning a search for alternative premises in the late 1990s as the Site was considered unfit for purpose. The business operated from the Site unsatisfactorily and inefficiently, maintaining a difficult relationship with neighbouring residents. Alternative premises were identified in Enfield, and the Bakery production and distribution has now relocated outside of the Borough to a purpose-built facility that is more operationally efficient than the Bakery premises at Gould Road.

1.2 HISTORICAL SITE ISSUES

1.2.1 Whilst the Site was operational as Greggs Bakery, it generated a moderate number of regular daily HGV movements, with instances of conflict where large vehicles were passing other vehicles. Highway safety was compromised when the Site was occupied, primarily because of the conflicts created by the number of larger sized service vehicles accessing the Site and using the local roads.

1.2.2 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

1.2.3 Due to the Site's residential setting, the adjoining network of roads does not lend themselves to moderate-volume HGV movements. Carriageways are in parts, narrow and often flanked by parked cars. There have been regular instances of vehicles mounting the kerb, as illustrated by the condition of the pavement and kerb along Marsh Farm Road (which is the route HGVs used to take between the Site and the A305 and is indeed reinforced by signage identifying other routes as being unsuitable for HGVs). Evidence of damage and over-running is shown in **Figure 1-2** and **Figure 1-3**.

Figure 1-2: Damage to Marsh Farm Road footway

Figure 1-3: Tyre marks on Marsh Farm Road footway

2 TECHNICAL ANALYSIS

2.1 TRIP GENERATION METHODOLOGY

2.1.1 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.

2.1.2 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.

2.1.3 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.

2.1.4 The following section apply data from comparable TRICS sites to assess the extant 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.

2.1.5 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.

2.1.6 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.

2.1.7 With regard to employee parking provision at the Site when operational as an industrial site, the limited amount of parking resulted in employees parking within the surrounding roads, which prior to 2018 were not part of a Controlled Parking Zone, thus causing issues of high parking stress and conflict with residential car owners in neighbouring streets. Any industrial redevelopment at the Site would need to take into account the 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.

2.1.8 As outlined in **Section 1**, 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.

2.2 EXTANT INDUSTRIAL USE TRIP GENERATION

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

2.2.2 The TRICS database of Industrial surveyed sites contains one outer-London borough site, shown in **Table 2-1**, which is deemed to be reasonably comparable to the permitted use.

Table 2-1: TRICS Site Selection – Industrial estate use (existing site)

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

2.2.3 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

2.2.4 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 (06:00-07:00), and PM peak (17:00-18:00) are summarised in **Table 2-2**.

Table 2-2: 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
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**

2.2.5 The peak hour for the industrial Site is 06:00-07:00. It is important to note, as shown by the total person trip rates across the day, that an industrial use comparable to the previous use is characterised by shift working and will generate a significant number of trips earlier in the morning and across a longer PM peak.

2.2.6 Whilst the TRICS site is comparable in terms of land use, and likely OGV/HGV trip generation, the selected Site has a different level of public transport accessibility.

2.2.7 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 2-2**) by mode.

2.2.8 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 2-3.**

Table 2-3: 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*

2.2.9 The estimated multi-modal industrial peak hour travel demand based on industrial use of 7,371sqm is outlined in **Table 2-4**.

Table 2-4: Industrial Site Peak Hour Travel Demand

RICHMOND WARD 014	AM PEAK			PM PEAK		
	Arrive	Depart	Total	Arrive	Depart	Total
Pedestrians	21	1	22	1	27	27
Cyclists	14	1	14	0	17	17
Bus	33	1	34	1	41	42
Underground	9	0	9	0	11	11
Rail	36	1	38	1	45	46
Taxi	0	0	0	0	0	0
Motorcycle	2	0	2	0	3	3
Vehicle drivers (no servicing)	77	3	80	2	96	98
Vehicle occupants (including taxi passengers)	4	0	4	0	5	5
Total	**197**	**7**	**204**	**5**	**244**	**249**

DELIVERIES AND SERVICING TRAVEL DEMAND

2.2.10 A key generator of traffic for industrial sites is OGV/HGV trips. Taking the weighted average OGV/HGV trip rates from the site and applying these to a notional developable area on the Site of 7,371sqm (equivalent to the existing buildings) for an Industrial Use produces the OGV/HGV trips in **Table 2-5**.

Table 2-5: 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**

2.2.11 As **Table 2-5** 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.

2.2.12 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.

2.3 B1 COMMERCIAL OFFICE TRIP GENERATION

2.3.1 To further assess the impact of alternative development at the Site, the scheme architects, Assael Architecture, have prepared an indicative scheme, shown in **Figure 2-1,** comprised of 100% E(g)(i) commercial units. This allows the assessment of potential transport and trip-generation impacts that such a development would have at the Site and upon the surrounding highway network. The comparative 100% commercial scheme comprises 6,223sqm (GIA) of commercial units with associated parking spaces and commercial loading bays.

Figure 2-1: Indicative Commercial Scheme

Ground floor plan of full industrial scheme of B1/B2/B8 uses achieving 3,773 sq m (1-3 storeys)

2.3.2 The commercial development would generate demand for travel by:

- Employees and visitors; and
- Delivery and servicing-related trips.

2.3.3 The commercial Site's travel demand has been forecasted using data extracted from the TRICS database.

2.3.4 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.

2.3.5 The TRICS database of office surveyed sites contains two outer-London borough sites, shown in **Table 2-6** which are deemed to be reasonably comparable to commercial use.

Table 2-6: TRICS Site Selection – Employment Office Use

REFERENCE	LOCATION	SURVEY YEAR	GFA (SQM)	PARKING SPACES
BN-02-A-01	Barnet	2021	1,366	19
HD-02-A-09	Hillingdon	2018	12,100	425

EMPLOYEE TRAVEL DEMAND

2.3.6 The corresponding TRICS output showing the weighted average total person trip rates (per 100sqm) has been applied to the extant Site's GIA of 6,223sqm (the maximum floor area due to site constraints including mezzanine) 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 2-7.**

Table 2-7: Commercial Site – total person trip rates and trip generation

TIME PERIOD	TOTAL PERSON TRIP RATE (PER 100 SQM)			TOTAL PERSON TRIP GENERATION (6,223 SQM)		
	Arrive	Depart	Total	Arrive	Depart	Total
07:00	1.144	0.037	1.181	71	2	73
08:00	2.51	0.052	2.562	156	3	159
09:00	0.75	0.059	0.809	47	4	50
10:00	0.201	0.097	0.298	13	6	19
11:00	0.104	0.141	0.245	6	9	15
12:00	0.579	0.772	1.351	36	48	84
13:00	0.55	0.535	1.085	34	33	68
14:00	0.163	0.178	0.341	10	11	21
15:00	0.059	0.401	0.46	4	25	29
16:00	0.089	1.092	1.181	6	68	73
17:00	0.082	2.124	2.206	5	132	137
18:00	0.007	0.921	0.928	0	57	58
TOTAL	6.238	6.409	12.647	388	399	787

2.3.7 The peak hour for the commercial Site is 08:00-09:00.

2.3.8 Whilst the TRICS sites are comparable in terms of land use, and likely OGV/HGV trip generation, the selected sites have a different level of public transport accessibility.

2.3.9 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 2-7) by mode.

2.3.10 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 2-8.**

Table 2-8: 2011 Census data - mode share

RICHMOND WARD 014	PERCENTAGE*
Pedestrians	11%
Cyclists	7%
Bus	13%
Underground	5%
Rail	15%
Taxi	0%
Motorcycle	1%
Vehicle drivers (no servicing)	44%
Vehicle occupants (including taxi passengers)	2%
Total	100%*

(source: WP703EW)
**Rounding has occurred*

2.3.11 The estimated multi-modal commercial peak hour travel demand based on commercial use of 6,223sqm is outlined in **Table 2-9.**

Table 2-9: Commercial Site Peak Hour Travel Demand

RICHMOND WARD 014	AM PEAK			PM PEAK		
	Arrive	Depart	Total	Arrive	Depart	Total
Pedestrians	17	0	17	1	14	15
Cyclists	11	0	11	0	9	10
Bus	26	1	27	1	22	23
Underground	7	0	7	0	6	6
Rail	29	1	29	1	24	25
Taxi	0	0	0	0	0	0
Motorcycle	2	0	2	0	1	1
Vehicle drivers (no servicing)	61	1	63	2	52	54
Vehicle occupants (including taxi passengers)	3	0	3	0	3	3
Total	**156**	**3**	**159**	**5**	**132**	**137**

TRICS PARKING ACCUMULATION

2.3.12 A parking accumulation exercise has been undertaken using the TRICS trip rates used to forecast the proposed commercial trips. Whilst the TRICS sites are comparable in terms of land use; the selected sites have a different level of public transport accessibility.

2.3.13 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 trips by mode.

2.3.14 The car trip rates extracted from the TRICS data have been adjusted downward to reflect the vehicle driver mode share in **Table 2-9**.

2.3.15 The parking accumulation has been set out in **Table 2-10** below.

Table 2-10: Parking Accumulation Adjusted - Commercial

TIME RANGE	CAR TRIP RATES			CAR TRIPS*			PARKING ACCUMULATION
	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way	
07:00	0.824	0.015	0.839	34	1	35	34
08:00	1.559	0.037	1.596	65	2	66	97
09:00	0.527	0.03	0.557	22	1	23	117
10:00	0.111	0.037	0.148	5	2	6	120
11:00	0.045	0.067	0.112	2	3	5	119
12:00	0.059	0.186	0.245	2	8	10	114
13:00	0.074	0.059	0.133	3	2	6	115
14:00	0.037	0.097	0.134	2	4	6	112
15:00	0.015	0.29	0.305	1	12	13	101
16:00	0.037	0.809	0.846	2	34	35	69
17:00	0.052	1.381	1.433	2	57	59	14
18:00	0.007	0.594	0.601	0	25	25	-11

**adjusted to reflect vehicle driver mode share.*

2.3.16 As part of a commercial development on the Site, a total of 95 car parking spaces could be provided. This means that based on the assessment in **Table 2-10** the car park would be over capacity for the majority of the working day (indicated by values in red in Table 2-10) and up to 25 cars will not be accommodated on-site.

DELIVERIES AND SERVICING DEMAND

2.3.17 A generator of traffic for commercial sites is servicing vehicle trips. The TRICS servicing vehicle trip rates have been applied to the developable area on the Site of 6,223sqm for a Commercial Use and produces the servicing trips in **Table 2-11.**

Table 2-11: Commercial Site – Servicing Vehicle trip rates and trip generation

TIME PERIOD	SERVICING TRIP RATE (PER 100 SQM)			SERVICING TRIP GENERATION (6,223 SQM)		
	Arrive	Depart	Total	Arrive	Depart	Total
07:00	0.03	0.022	0.052	2	1	3
08:00	0.015	0.007	0.022	1	0	1
09:00	0	0.007	0.007	0	0	0
10:00	0.045	0.052	0.097	3	3	6
11:00	0.022	0.03	0.052	1	2	3
12:00	0.015	0.015	0.03	1	1	2
13:00	0	0	0	0	0	0
14:00	0.007	0.007	0.014	0	0	1
15:00	0	0	0	0	0	0
16:00	0.03	0.03	0.06	2	2	4
17:00	0	0	0	0	0	0
18:00	0	0	0	0	0	0
TOTAL	**0.164**	**0.17**	**0.334**	**10**	**11**	**21**

2.3.18 As **Table 2-11** suggests, the commercial use could be expected to generate around 21 servicing vehicle trips during a typical day, notwithstanding further trips prior to 07:00 and beyond 19:00.

2.3.19 There would also be potential for additional daily trips for commercial waste and recycling vehicles, which would not form part of the existing residential refuse strategy. This would create an additional burden on the road network, exacerbating the existing issues caused by years of industrial estate activity at the former factory in terms of both road safety, and kerbside damage caused by HGV and LGV vehicles on the local road network.

3 SUMMARY

3.1.1 This note reviews a fully commercial and industrial scheme on the Site and considers if the impacts could be adequately mitigated and whether such schemes might be acceptable from a highway safety perspective.

3.1.2 Employment use on the Site would generate two major impacts:

- Local traffic and parking pressures; and
- Safety issues associated my multiple HGVs using the local road network at the same time.

3.1.3 An E(g)(i) commercial scheme would result in a reasonably high trip generation and parking demand generated by the number of employees due to the modest PTAL. The high 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 demand on surrounding streets if sufficient supply is not provided on-site. The immediate area 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 their home, so the potential impact on these uncontrolled streets is likely to be worse than a residential scheme.

3.1.4 A full industrial scheme impacts are less to do with trip generation and local parking issues as the employment density would be lower. The impacts associated with a B2 use on the Site have more to do with highway safety on the local residential streets. When the Site was operating as a Greggs factory, there were frequent instances of HGVs not being able to pass each other on the local roads and having to either backup or mount the footways. Both activities compromise highway safety, especially mounting the kerb which puts pedestrians at danger. The probability assessment undertaken in Technical Note TN003 calculated that two HGVs associated with the full industrial scheme will meet at least twice over a 12-hour period along the length of Edwin Road and an HGV would meet 13 times per day with another vehicle on Edwin Road.

3.1.5 **Figure 3-1** below shows a Greggs HGV using Marsh Farm Road to allow another Greggs HGV to pass. The vehicle in Marsh Farm Road is then required to reverse without the use of a banksman across the pedestrian/cycle route underneath the railway on Edwin Road causing potential highway safety issues.

Figure 3-1: Greggs Vehicles passing on Edwin Road

3.1.6 Any use of the Site will certainly result in the occasional HGV movement from refuse collection or larger rigid vehicles, but the concentration of both HGV and LGVs associated with industrial or significant commercial use has historically caused safety issues. It is likely that if the Site were brought into industrial use again, this issue would likely continue.

3.2 CONCLUSIONS

3.2.1 It is clear through the trip-generation assessment undertaken that a commercial or industrial use would generate a considerable number of total person and vehicle trips and would not alleviate the issues surrounding LGV and HGV trips associated with the extant Site.

3.2.2 In comparing a commercial development to the extant consented use, the trip generation assessment has illustrated that both developments would generate a high number of vehicle trips. The industrial Site would still generate a significant number of HGV/LGV traffic, and this could not be alleviated or remedied.

3.2.3 With the concentration of E(g)(iii) or B2 on the development site, there are no obvious measures to mitigate the highway risks. The introduction of the CPZ highlights local residents have suffered from parking pressures and increasing the parking capacity on local residential streets is extremely difficult and often impossible. The impacts of multiple HGVs using the local roads are also very difficult to mitigate where there is no scope to widen roads and dedicated HGV routes are already signed.

3.2.4 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.

APPENDIX H

PHOTOGRAPHS

Photo Locations

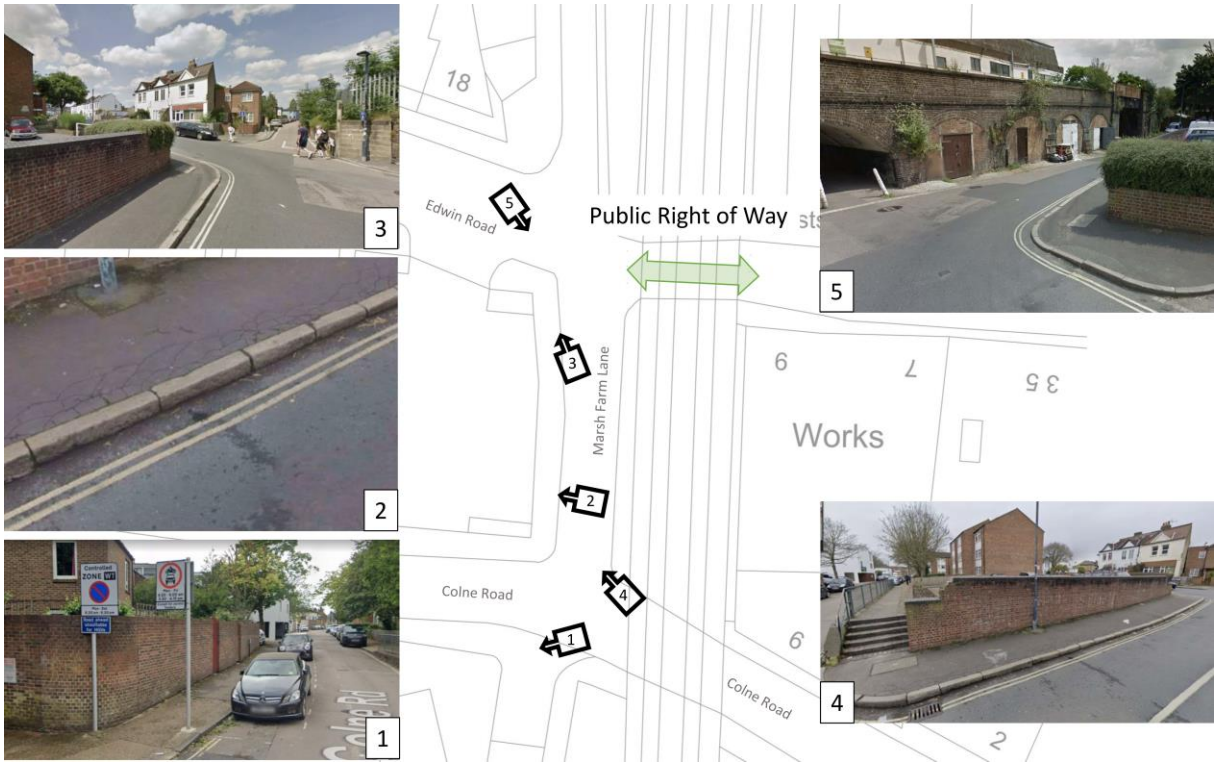


Photo 1: Existing Signage on Colne Road

Photo 2: Damage to Marsh Farm Lane footway from vehicles mouting the kerb

Photo 3: Vehicles overrunning Marsh Farm Lane footway