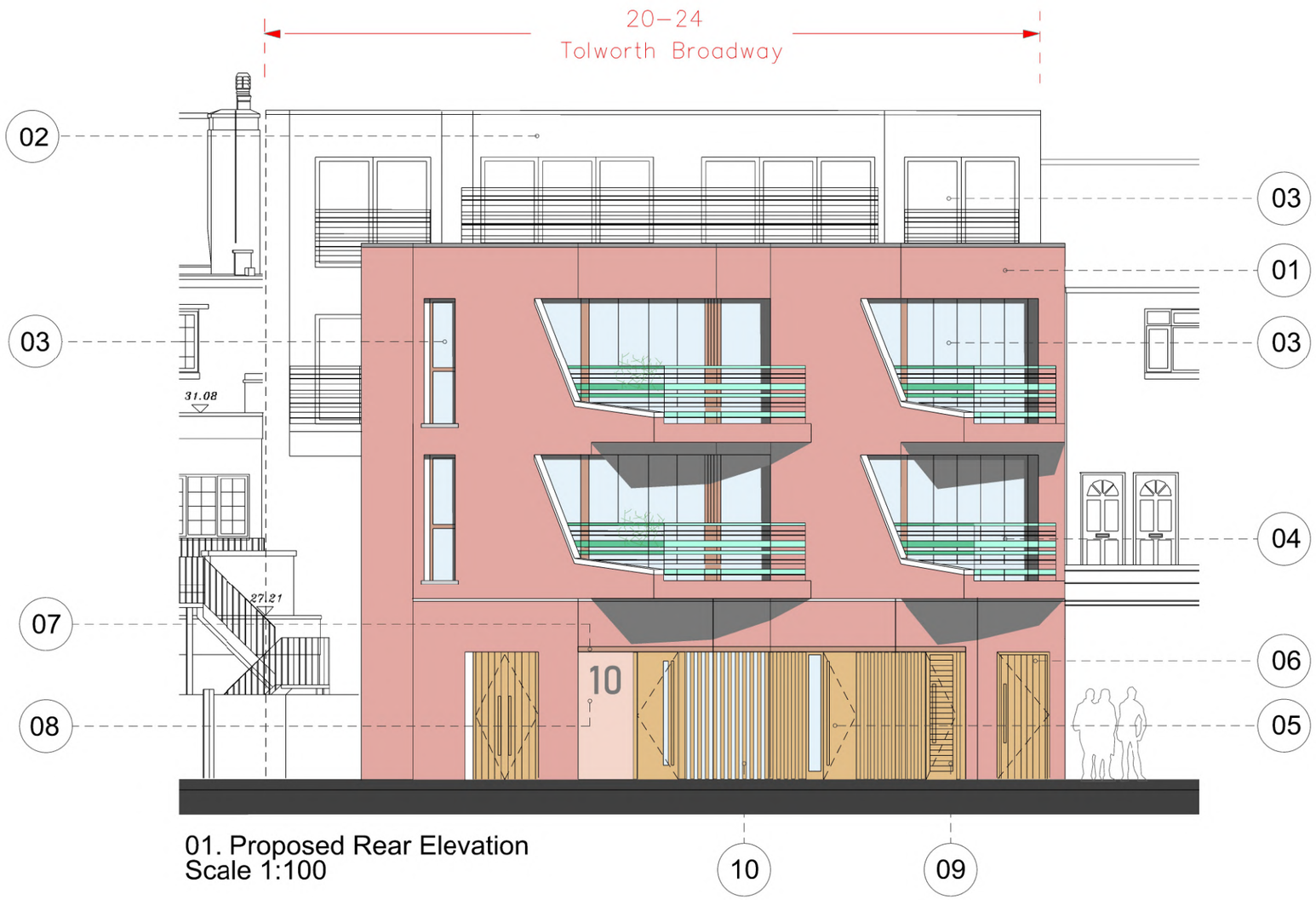
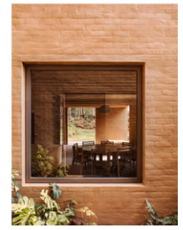
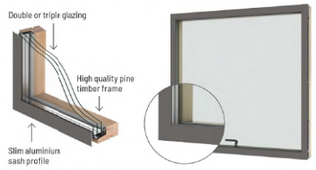


01. Proposed Rear Elevation
Scale 1:100

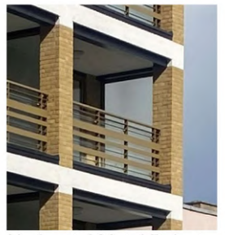
01 Coloured Render, Terracota Pink



02 Painted Bricks: Terracota Pink



03 Composite Window
Finish: PPC Bronze,
White Window Reveal



04 Horizontal Metal Balustrade,
Finish PPC Peppermint Green

05 Timber Door
With Side Vision Panel

06 Timber Door

07 Slim Metal Lintel, Finish PPC Bronze

08 Supergraphic Signage

09 Louvered Timber Door

10 Timber Fins in Front of Window/Wall

0 1 2 3 5

20-24 TOLWORTH BROADWAY KT6 7HL

Proposed Materials

G M L A r c h i t e c t s
UNIT 3,1-4 Christina Street, London, EC2A 4PA
Tel: 020 7729 9595 Fax: 020 7729 1801 info@gmlarchitects.co.uk

SCALE: 1:100@A3
ISSUED FOR: PLANNING
FIRST ISSUED: 13/02/2024
DRAWN BY: MG CHECK BY: NM

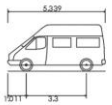
5062/PA/40

APPENDIX B

20-24 Tolworth Broadway, KT6 7HL

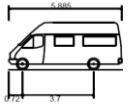
Input	Number of Proposed Dwellings	**9**
	Daily Two-Way Trip Rate (Peak)	**0.35**
	Daily Two-Way Trip Rate (Typical)	**0.27**
Peak Hourly Output (Maximum)	Large LGVs	**0.1**
	Small LGVs	**0.2**
	Total Vehicles	**0.2**
	Total Duration of Stay (Mins)	**2**
Peak Hourly Output (Typical)	Large LGVs	**0.0**
	Small LGVs	**0.1**
	Total Vehicles	**0.1**
	Total Duration of Stay (Mins)	**1**
Peak Daily Output (24 Hours)	Large LGVs	**0.4**
	Small LGVs	**1.1**
	Total Vehicles	**1.6**
	Total Duration of Stay (Mins)	**10**
Typical Daily Output (24 Hours)	Large LGVs	**0.3**
	Small LGVs	**0.9**
	Total Vehicles	**1.2**
	Total Duration of Stay (Mins)	**8**

Small LGVs



3.5t Panel Van

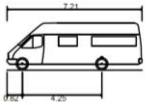
Overall Length	5.339m
Overall Width	1.986m
Overall Body Height	2.565m
Min Body Ground Clearance	0.338m
Track Width	1.986m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	6.400m



4.6t Light Van

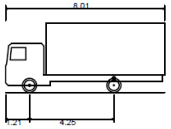
Overall Length	5.885m
Overall Width	2.000m
Overall Body Height	2.526m
Min Body Ground Clearance	0.299m
Track Width	1.765m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	6.000m

Large LGVs



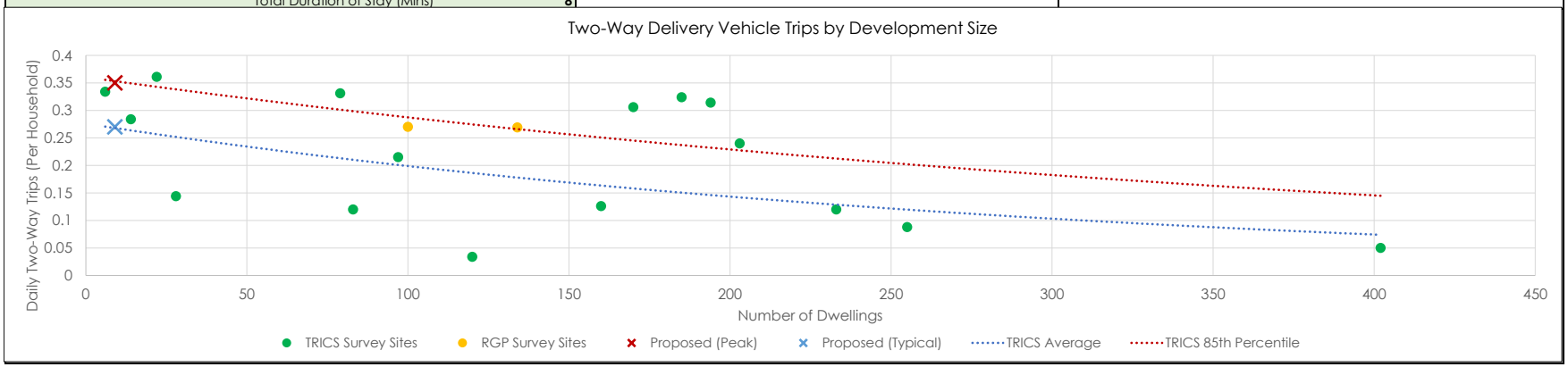
7.5t Panel Van

Overall Length	7.210m
Overall Width	2.192m
Overall Body Height	2.544m
Min Body Ground Clearance	0.316m
Track Width	1.865m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.400m



7.5t Box Van

Overall Length	8.010m
Overall Width	2.100m
Overall Body Height	3.556m
Min Body Ground Clearance	0.351m
Track Width	2.064m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.400m



STUDY OF RESIDENTIAL SERVICING IN LONDON

Date: March 2023 **Ref: 22/6649**

SUMMARY OF KEY FINDINGS

Survey Parameters

- RGP commissioned detailed traffic surveys undertaken at two residential developments within the London Borough of Wandsworth to establish and understand the typical servicing requirements of households and residential-led developments.

- The surveys were conducted over the course of 3 days at each respective development in June 2022 (Thursday 23rd, Friday 24th & Saturday 25th), with 72 hours of video data obtained per site to identify all delivery and servicing vehicle activity.

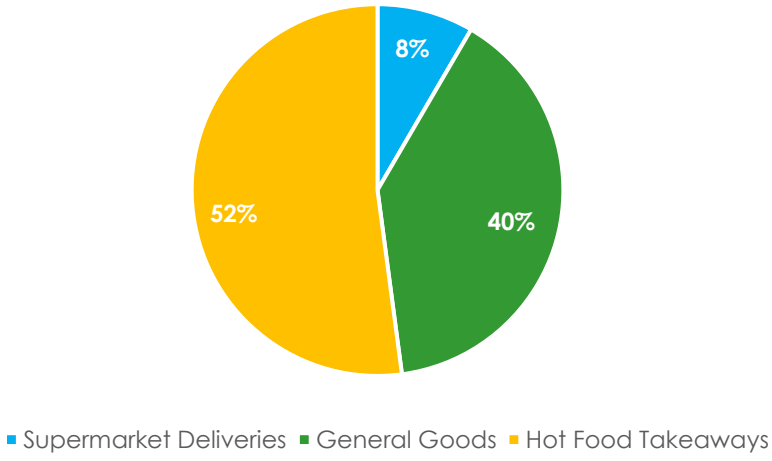
- The surveys represent a post-covid position when it is generally accepted that deliveries to home have increased as retail habits by households have changed over recent time. The observations have been compared with surveys contained within the TRICS database in order to establish a reasonable service trip generation for a range of residential developments.

- The surveys captured the trip purpose, vehicle size and type, frequency of visits, the freight operator, the duration of stay, the specific time of arrival / departure and the type of goods delivered.

Trip Purpose

- The surveys indicate the following types of deliveries carried out by freight operators:

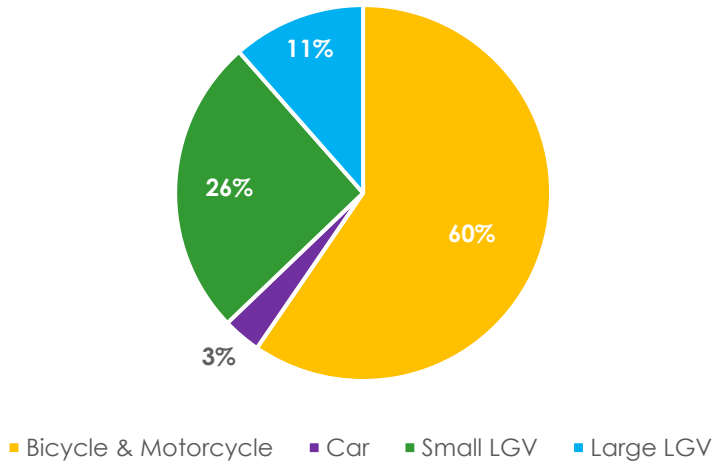
  52% - Hot food takeaways
  40% - General household goods
  8% - Supermarket goods



Delivery Vehicle Sizes

- The majority of recorded vehicles comprise bicycles, motorcycles and small light goods vehicles (LGVs). There were no heavy goods vehicles (HGVs) identified at either survey site for the duration of the 3 survey days. The types of vehicles utilised are summarised as follows:

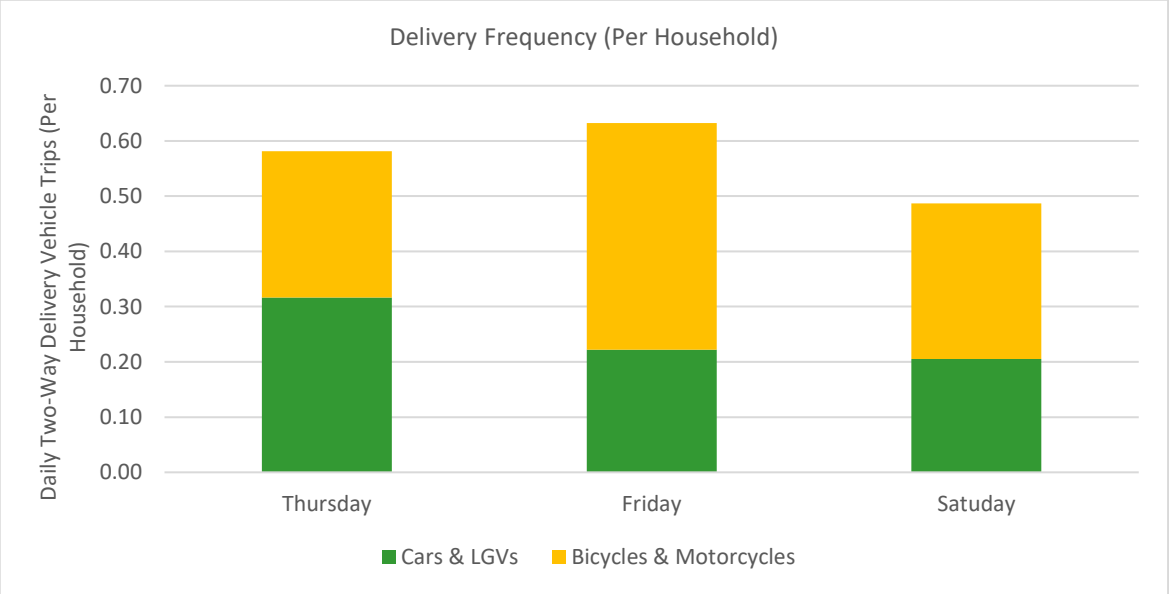
60% - Bicycles & motorcycles
3% - Cars
26% - Small LGVs (light vans / transit vans / sprinter vans)
11% - Large LGVs (7.5t box / panel vans)



Delivery Frequencies

- A daily peak of 0.63 two-way delivery vehicle trips was observed on Friday as an average across the 2 surveyed sites, when considering all delivery vehicle types (including goods delivered by bicycle / motorcycle). If discounting bicycles and motorcycles, a peak weekday trip rate of 0.32 two-way daily trips by car / LGVs is generated per household (i.e. 0.16 deliveries per unit per day). This proportion of trips reduces over the weekend to a peak of 0.21 two-way trips by car / LGV.

Survey Day	Daily Two-Way Trips (Cars & LGVs)	Daily Two-Way Trips (Bicycles / Motorcycles)	Daily Two-Way Trips (All Vehicles)
Thursday	0.32	0.26	0.58
Friday	0.22	0.41	0.63
Saturday	0.21	0.28	0.49
Weekday Average	0.270	0.335	0.605



- The above trip rates represent the average rate of daily deliveries generated by households within developments of between circa 80 and 160 dwellings, based on the surveys commissioned by RGP which observed developments of 100 and 134 dwellings, respectively.

Impact of Delivery Consolidation

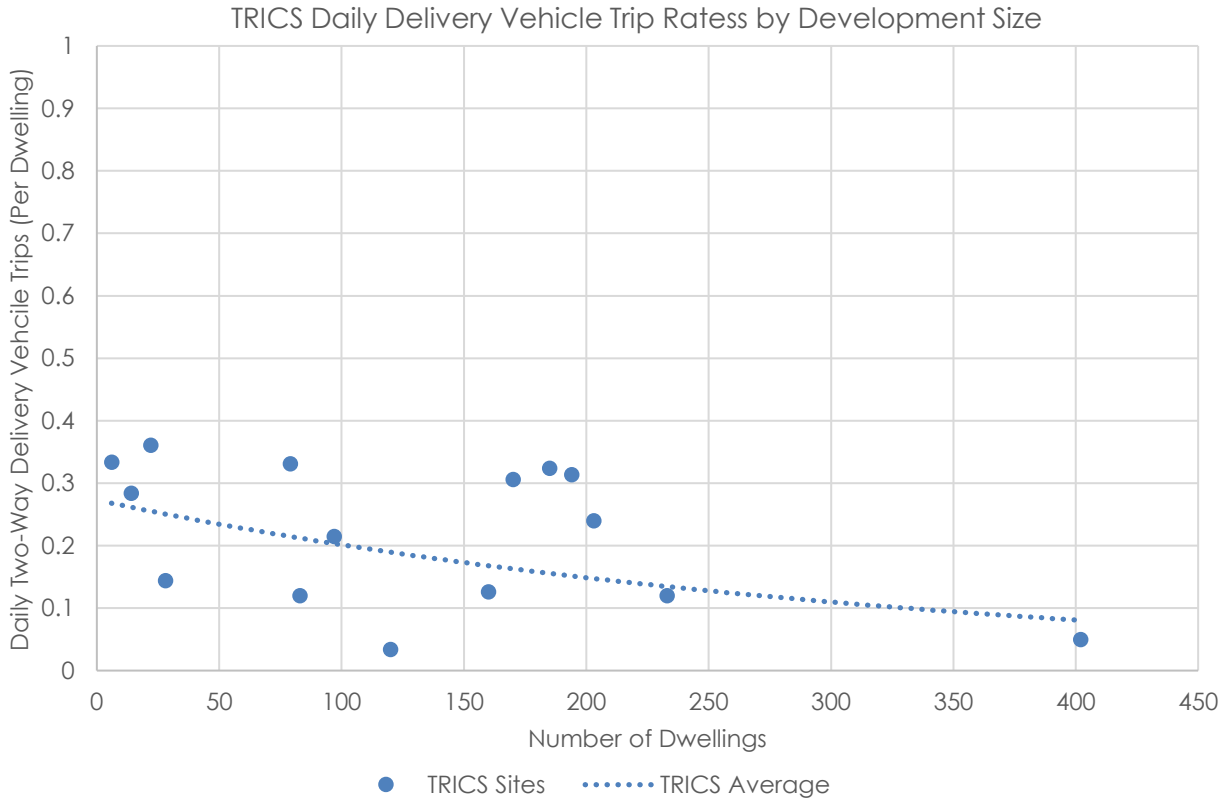
- Freight consolidation refers to the number of goods that con be delivered by a vehicle in a single trip to multiple residences located within a wider development or street, whilst 'linked trips' refers to the use of multiple stops along an optimised delivery route.

- Freight operators, including supermarkets and hot food delivery services, consolidate deliveries where possible to ensure the minimum number of delivery vehicles are dispatched to drop-off goods to as many households as possible on a single optimised delivery route. Separate vehicles dispatched to deliver an individual's goods is not undertaken by freight operators since it is not feasible from either a logistical or financial perspective, and as such freight operators schedule deliveries to similar addresses at similar times to maximise efficiency. Therefore, the larger the quantum of residential units on a development the lower the trip rate for deliveries as the effect of consolidation occurs.

- To determine the impact of delivery consolidation on the projected trip rates for developments of varied scale, RGP has reviewed detailed survey data obtained from 16 TRICS sites containing privately owned flats in London. These surveys were carried out from 2017 onwards and include detailed servicing vehicle counts, not including cyclists and/or motorcyclists.

- A consolidation factor is established for increases in total numbers of dwellings, as demonstrated by the best fit line for the TRICS data in the chart and table below reducing from a daily two-way trip rate of 0.28 per unit for small developments (10 units) to 0.08 per unit for larger developments (400+units).

- The trendline of trip rates derived from the sample of TRICS sites is summarised below, with the individual survey sites plotted on the graph below. A summary of trip rates corresponding to a variety of development sizes is provided in the following table, overleaf.

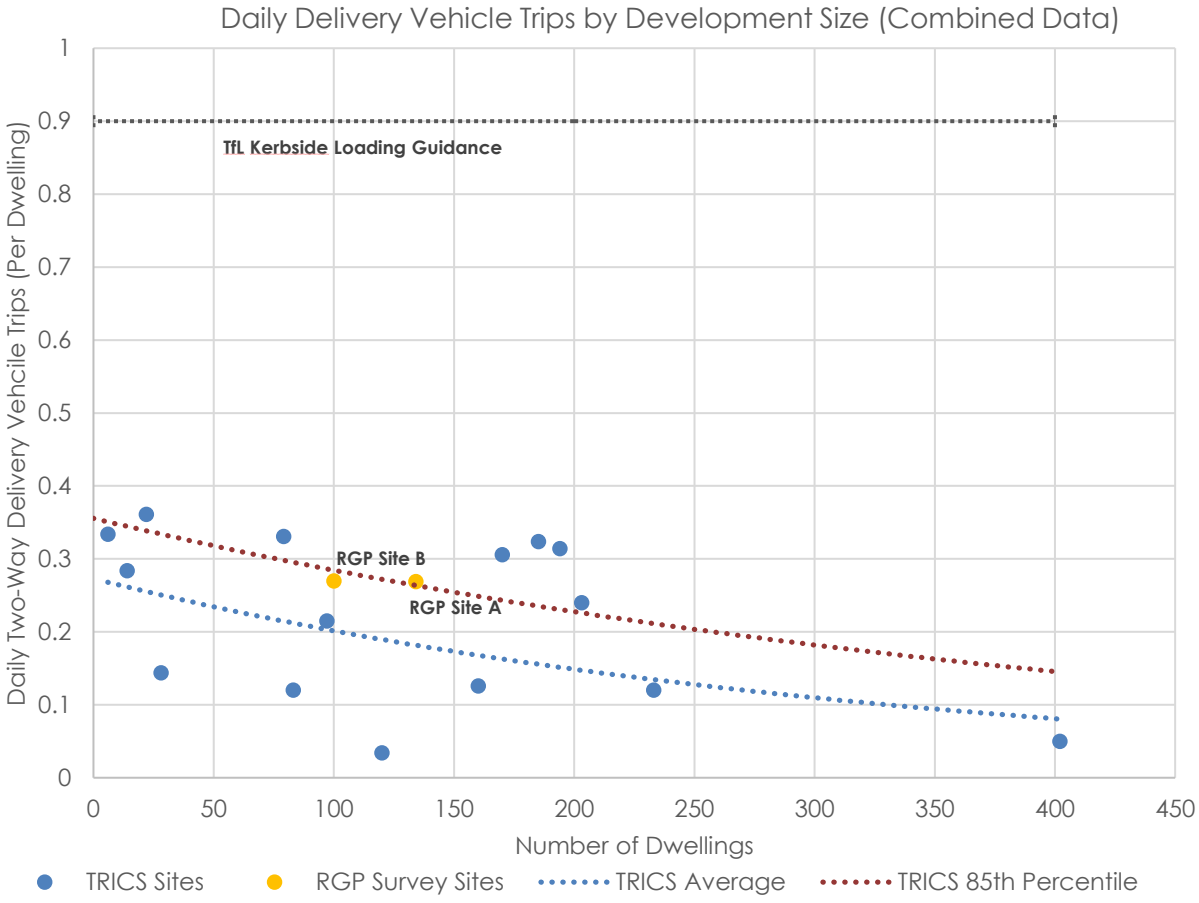


	Development Size (Number of Dwellings)									
	0-19	**20-39**	**40-59**	**60-79**	**80-99**	**100-119**	**120-139**	**140-159**	**160-179**	**180-199**
2-Way Daily Trips per Household (Typical Weekday)	0.27	0.26	0.24	0.22	0.21	0.19	0.18	0.18	0.17	0.16
	200-219	**220-239**	**240-259**	**260-279**	**280-299**	**300-319**	**320-339**	**340-359**	**360-379**	**380-400**
	0.15	0.14	0.13	0.12	0.11	0.11	0.1	0.1	0.09	0.08

Trip Rates

- The study sites surveyed on behalf of RGP generated slightly higher vehicle trip rates to that suggested by the best fit line from the TRICS data above (i.e. 0.270 for circa 100 units instead of 0.20 – TRICS). The RGP surveys were however reflective of a post-covid situation which is it generally accepted has resulted in increased household deliveries.

- Therefore, in order to obtain a usable daily trip-rate (cars/LGVs only) for a range of sizes of development the best fit line has been factored upwards to align with RGP's survey results. This allows for an element of robustness and represents the 85th percentile rate based on the TRICs database. These adjusted robust trip rates are illustrated on the chart below and summarised, based on approximate number of units, within the following table, also below.

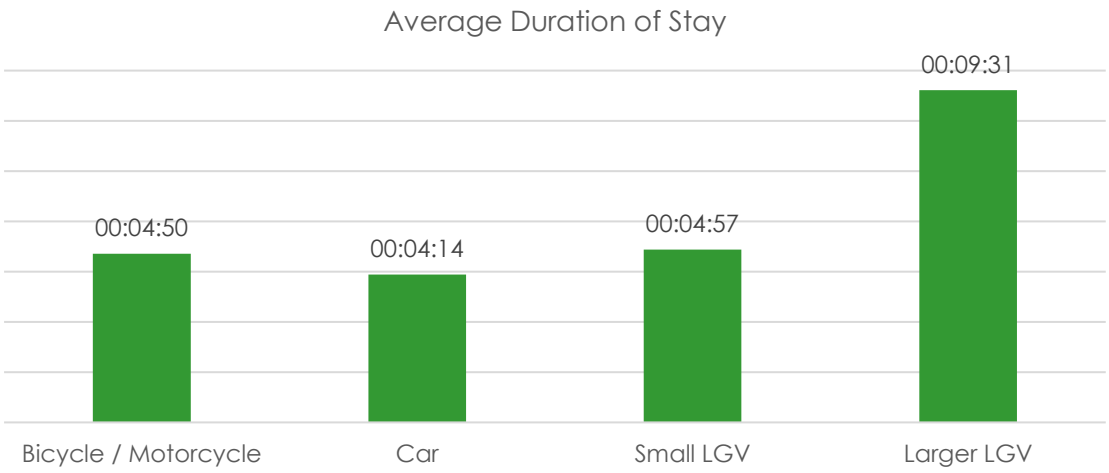


	Development Size (Number of Dwellings)									
	0-19	**20-39**	**40-59**	**60-79**	**80-99**	**100-119**	**120-139**	**140-159**	**160-179**	**180-199**
2-Way Daily Trips per Household (85th Percentile)	0.35	0.33	0.32	0.30	0.29	0.28	0.27	0.26	0.25	0.24
	200-219	**220-239**	**240-259**	**260-279**	**280-299**	**300-319**	**320-339**	**340-359**	**360-379**	**380-400**
	0.23	0.22	0.21	0.20	0.19	0.18	0.18	0.17	0.16	0.15

Duration of Stay

- The detailed surveys commissioned by RGP for this study identify the duration of stay for each recorded visit. The average duration of stay for each delivery vehicle size is summarised below:

  00:04:50 - Bicycles & motorcycles
  00:04:14 - Cars
  00:04:57 - Small LGVs (light vans / transit vans / sprinter vans)
  00:09:31 - Large LGVs (7.5t box / panel vans)



- It is important to note that the majority of deliveries by bike / motorcycle required less than 1 minute to complete, however, some riders remained on-site for up to 10 minutes, presumably waiting to receive a new pick-up instruction following the completion of the previous delivery.

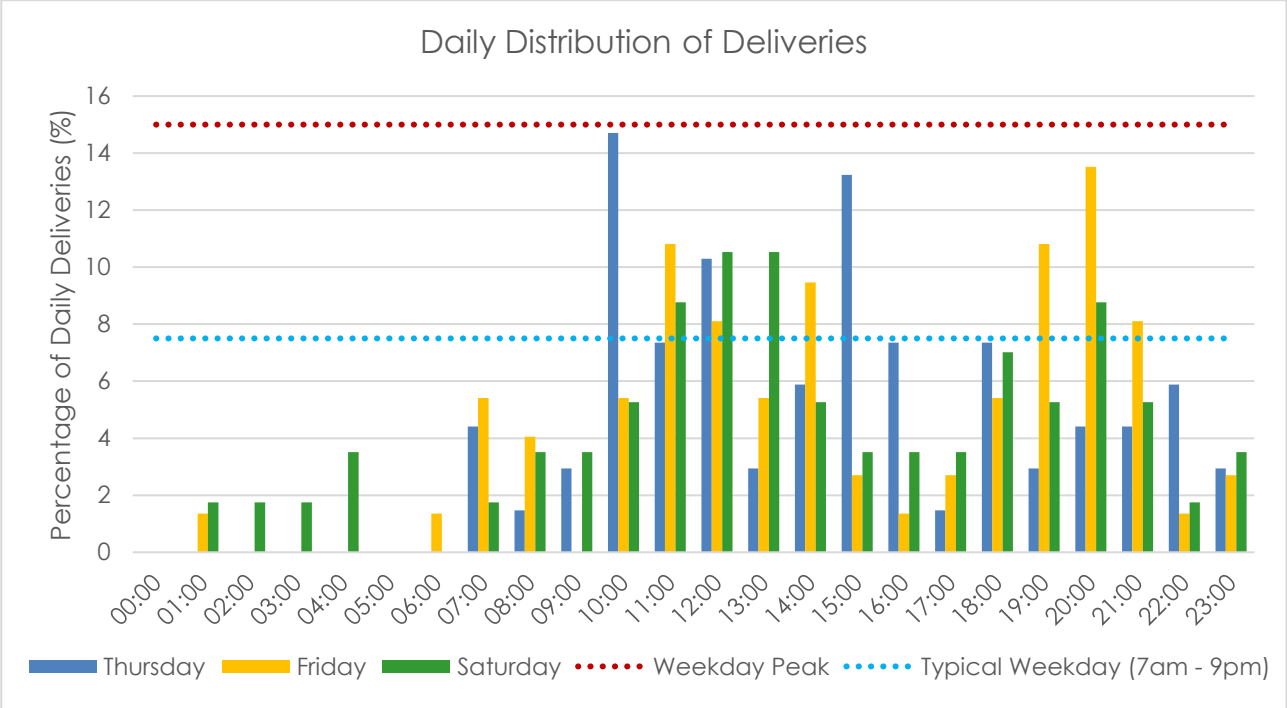
- For assessment purposes, it is considered robust to assume the following:

  i) **Cars and Small LGVs** would have an average duration of stay of **5 minutes**;

  ii) **Large LGVs** would have an average duration of stay of **10 minutes**.

Daily Distribution of Deliveries

- The distribution of deliveries across each surveyed day is as indicated in the chart below.



- The peak time of weekday deliveries is demonstrated to occur between 10:00 and 11:00 hours, during which time circa 15% of daily deliveries are undertaken. A second evening peak was observed on Friday evenings between 20:00 and 21:00 hours, associated with deliveries of hot food takeaways undertaken by bicycle and motorcycle.

- Weekend deliveries are more evenly distributed throughout the day, although still with identifiable peaks at 12:00 and 20:00 hours.

- Assuming that most deliveries occur during a typical daytime period of 14 hours (i.e. 07:00 hours to 21:00 hours) it is expected that a typical hourly demand from deliveries would be circa 7% – 7.5% of daily deliveries.

- For assessment purposes, it is considered reasonable to assume the following:

  i) The **peak hour**, in terms of deliveries at a development, is equivalent to **15%** of the daily number of deliveries;

  ii) The **typical weekday hour**, in terms of deliveries at a development, is equivalent to **7.5%** of the daily number of deliveries;

Implications of Study

- This study demonstrates that a fixed trip rate should not necessarily be applied when assessing the likely servicing requirements of individual households within varied development sizes. Trip rates should be established according to the trends associated with the impact of delivery consolidation.

- RGP has expanded on the traditional application of TRICS survey data by providing a 'sliding scale' of delivery vehicle trip rates depending on the quantum of housing with a given development. The effect of delivery consolidation significantly impacts the forecast frequency of deliveries to residential developments depending on the quantity of households.

- RGP has also validated the TRICS database surveys and uplifted the trip rates to reflect a post-covid scenario where households generally exhibit a greater quantum of deliveries then the pre-covid scenario.

- This study confirms that delivery frequencies established by TfL in the 'Kerbside Loading Guidance' document (4.5 weekly freight movements per household) are significantly overestimated, emphasising the household demand for goods, rather than the logistics of delivering goods and hence the impact of such vehicles on the highway or servicing area. The trip rate applied by TfL is considered to be unsuitable to use for the planning of new residential development of any scale.

- This study demonstrates that typical household deliveries are accommodated by small delivery vehicles, with the largest comprising a 7.5t panel or box van (Large LGV). Any loading bays provided for a residential development would therefore need to measure 8m in length to accommodate a box van. Although larger delivery bays would remain beneficial, they are not a necessity to accommodate typical household deliveries.

- This study allows an assessment of the likely occupancy rate for a service yard or delivery bay, based on reasonable survey data, for any size of residential development. The study therefore allows the level of servicing need to be established to inform the impact of the development or the size and scale of delivery bays needed.