

Smithfield Market 7day Count Data

1. Notes on the Data and presentation of Graphs

- The raw data is in a separate Excel Workbook per day of data. They are named as follows: 3378-LON-JB Farringdon - Friday 30 September etc.
- A workbook of graphs is included entitled: Graph Pack for Smithfield Market. The graphs are numbered "1.AB" etc. (i.e. Site 1, movement AB) and are referenced in this report. Note: do not resize the graphs that have shapes (i.e. grey rectangles for the delineation of days and black boxes for the indication of market hours) placed on them or the shapes will no longer correspond to the times on the horizontal axis.
- As the proportion of traffic making turns at the junction varies, most graphs are repeated; one with a fixed axis to provide an easy comparison with other graphs and another with an automatic axis to enable a detailed look at the distribution of vehicle types. For example graph "1.ABa" is the auto axis graph and graph "1.ABf" is the same data with a fixed axis of 1200 vehicles per hour. The graph is not repeated if the auto axis version uses a maximum of 1200 vehicles per hour.
- Grey boxes denote days, black outlines denote market hours (5am-7am)
- Data starts from Friday (left) to Thursday (right)
- Horizontal axis labels are the 'end hour'. For example hour 01:00 on the graph is the data collected from 00:00 to 01:00.
- Abbreviations for vehicles below:

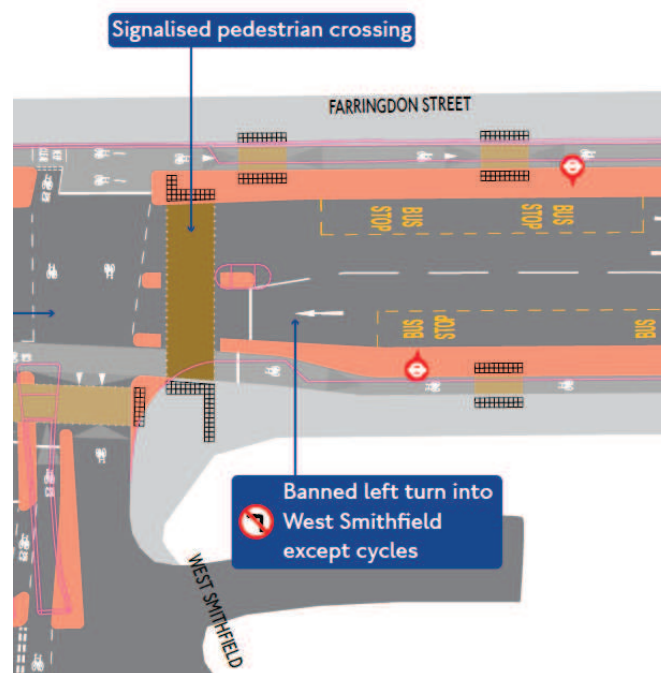
Car/LGV	LDN Taxi	R2A	HGV	PSV	MC	PC
Car/ light goods vehicle	London taxi	Rigid 2 axle lorry	Heavy good vehicle	Public Service Vehicle (bus)	Motorcycle	Pedal cycle

2. Rationale for signalised junction at West Smithfield (WS)

- Feedback from TfL's public consultation in early 2016 highlighted that key stakeholders and the public wanted to see more done to tackle safety at this junction
- The collision data shows there is a very strong case for signalising the junction, especially due to the number of right turn collisions the design would seek to remove. See separate collision note.
- In the AM peak right turning pedal cycles peak at 401 per hour, or an AM peak hour average over the 5 weekdays of 352 per hour. Cyclists therefore represent an average of 65% of the vehicles making this turn in the AM peak
- The average figure for right turning cyclists in the inter-peak is 22 per hour, or 14% of the right turning vehicles

3. Rationale for the proposed banned left turn into West Smithfield

- The left turn is proposed to be banned to remove the risk of 'left hook' collisions at this junction which is a key connection between CS6 and the Central London Grid cycle route on West Smithfield.
- It is not possible to separately signal this turn from SB cycle movements at the junction because this would require another traffic signal stage to be added to separate the movements. Adding a 5th Stage to the signal timings would require additional time in the signal phasing and the impact of this is be increased journey times for all traffic through the junction. This has been demonstrated through sensitivity modelling of other options that increase time at this junction.
- The location of the bus stop in advance of this junction reduces the inter-visibility between cyclists and vehicles, increasing the risk of a left hook collision. At Charterhouse Street, visibility between cyclists and vehicles is greater.



4. Market traffic calculations

- It is not possible to completely separate vehicles accessing the market from total traffic counts at junctions due to the variation in market activities and destinations in the area.
- Market associated traffic has therefore been calculated as follows:
 - Market hours are calculated as between 00:00 and 08:00 Mon-Fri based on the market operational hours of 02:00 to 07:00 with a two hour preparation time before and one hour set down time after
 - Two methods of estimating how many vehicles per hour access the market via the left turns at CS and WS have been used to provide a calculated high and low range:

Method 1 (provides high range calculation):

- All HGVs and R2A vehicles between 00:00 08:00 Mon-Fri

plus

- 90% of all Car or LGV left turns (CS and WS) between 00:00 and 08:00 Mon-Fri.

Assumes a high % of market associated use and takes less account of the 'ambient' traffic conditions when the market is not on

Method 2 (provides low range calculation):

- All HGVs and R2A vehicles between 00:00 08:00 Mon-Fri

plus

- All Car or LGV left turns (CS and WS) between 00:00 and 08:00 Mon-Fri

minus

- average Car or LGV movements from 00:00 and 08:00 Sat-Sun (non market days).

Influenced by factors such as high weekend traffic and will be high night time traffic flows at weekends (note Fabric was shut at the time of the counts). It is not possible to undertake a comparison to a non market weekday as the market is open every week

5. Re-assignment of left turning traffic from West Smithfield to Charterhouse Street

- The left turns at CS and WS are low flow movements compared to other traffic movements at the junctions. This is illustrated in the following comparison of graphs which are plotted on the same vertical axis scale for comparison:
 - 2.ABf** – Southbound left turn into WS
 - 2.ACa** – Southbound ahead at WS
 - 2.CBf** – Northbound right turn into WS
 - 1.AC-1Aba** – Southbound left turn at CS and the southbound ahead traffic plotted on one axis
- It can be seen that the southbound left turn is a very low flow compared to the northbound right turn into WS and the southbound ahead traffic at the Farringdon St (FS) and WS junction
- Data calculations in the table below show that if all the vehicles that currently use the left turn at West Smithfield move to make this turn at Charterhouse Street, the number of vehicles turning left at Charterhouse Street would still be very low - less than one vehicle per minute on average during market hours.
- If you also add all of the traffic currently turning right at Charterhouse Street (which could divert via the market) then this figure rises to 1.53 vehicles per minute which is still low. It is likely right turning traffic would not all use this route however as other diversion routes are available.

Data showing average vehicles movements during market hours

	All vehicles		Market associated vehicles ¹	
	Total average	Average per minute	Total average	Average per minute
West Smithfield left turn (Graph 2.AB)	25	0.4	15-21	Up to 0.35
Charterhouse St left turn	27	0.45	10-21	Up to 0.35
Charterhouse St plus West Smithfield left turn	52	0.87	35-42	0.7
Charterhouse St right turn	40	0.7	N/A ²	N/A
Charterhouse St plus West Smithfield left turn plus Charterhouse St right turn (diverted)	92	1.53	N/A	N/A

- At night when the flows on the network are lower (for example the ahead southbound traffic at Charterhouse: Graph 1.ACa) the signal cycle times will be shorter (i.e. the

¹ Based on the Method 1 & 2 approaches.

² The SB right turn is not used for market access

green light for the left turn at Charterhouse St will occur more frequently) and based on the higher percentage of left turning traffic the green time could be adjusted through the SCOOT (Split Cycle Offset Optimisation Technique)* and UTC (Urban Traffic Control)³ systems to allow more green time for these left turners. Even so, with such low flows it would be expected all vehicles waiting to turn left at Charterhouse St will make it through the junction on the first green light it receives.

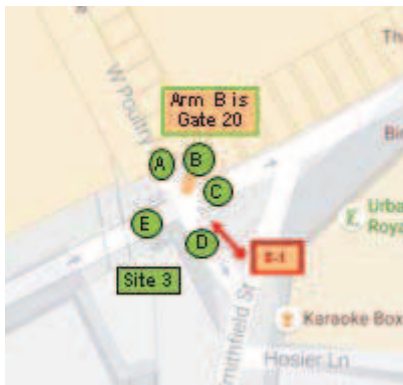
- In addition, the traffic data shows that during the AM peak hour (which is the time period used for our traffic modelling), the Charterhouse Street junction has an average of **2380** vehicle movements per hour.
- During the average market hour the Charterhouse Street junction has an average of **870** vehicle movements per hour, which represents just 36% of the movements experienced at the junction during the AM peak hour
- This means that traffic modelling undertaken for the route (which shows neutral impacts on journey times) represents a situation with higher volumes of traffic than those experiences during market hours.



³ In short; computer controlled traffic signals that respond to demand to minimise delay across all arms of a junction and across a wider urban area.

6. Impacts at Gate 20 of the proposed banned left turn into WS

- Gate 20 was included in our review of the data as it was highlighted as one of the furthest access points to the market if accessing from Charterhouse Street
- The data shows that an average of 6 market associated vehicles per hour enter Gate 20 from any direction (including illegal movements), or **1 vehicle every 10 mins.** (Graph 3.EBa).
- Entry into Gate 20 from the West Smithfield approach arm forms half of these movements with an average of 3 market associated vehicles per hour, or **less than 1 vehicle every 20 mins.** (Graph 3.XBa).
- Market associated traffic entering Gate 20 from WS (3 per hour) is lower than the market associated left turners at WS (15-21/hour). Therefore very few of the market associated left turners at WS use Gate 20.



7. St. John St and Charterhouse St Junction

- St John Street was included in our review of the data as it was highlighted by the market as a potential location for traffic congestion due to re-assignment of traffic to Charterhouse Street
- Vehicles displaced at WS that use CS would pass this junction via the Lindsey St diversion route.
- The data shows that an additional 25 vehicles per hour could be displaced from WS during market hours.
- Graph 4.CB shows St John Street junction has an average of 148 vehicles per hour during market hours. This means a there would be a total of 173 vehicles per hour passing this junction, or **3 vehicles per minute**.
- During peak hours (07:00-10:00, 16:00-19:00) the average number of vehicles at this junction is 410 per hour, or double the market hours volume at **7 vehicles per minute**.
- This means that traffic volumes at this junction would be half that of the AM peak
- At night when the flows on the network are lower the signal cycle times will be shorter and the green time could be adjusted through the SCOOT and UTC systems to allow more green time.

