



City Transportation Briefing note on traffic during Beech Street closure

Date: 31/05/18

Summary

In March 2018, Beech Street was closed for 5 days for the “Tunnel Visions Array” sound and light event. This was used as an opportunity to undertake traffic surveys on the key junctions on the alternative routes to the north and south of Beech Street. These surveys were then compared to a “normal” day when Beech Street was open as usual. In summary the key findings are that:

- the traffic signals in the area operate at full capacity in the AM peak;
- traffic diverts around Beech Street primarily via London Wall and Old Street;
- With adjoining junctions such as Moorgate / London Wall already operating at full capacity, the additional traffic causes traffic queues to increase;
- Overall, there is an average 23% increase in journey times on the routes to the south and north of Beech Street;
- On some arms of junctions, (such as Aldersgate Street northbound at Beech Street junction) journey times increase by over 100% (i.e. from 34 seconds to 73 seconds).

The above simply presents the analysed data of the traffic surveyed during a closure with no other traffic management interventions. Despite requests for information, we do not know if TfL altered traffic signal timings on the days of closure.

Methodology

1. Observations by Network Management team of a significantly busier network with Beech Street closed
2. Hourly snapshots of the network via the TomTom website between 9am and 6pm
3. 20-30 cameras installed at 7 sites (junctions) that were anticipated to experience additional traffic due to the Beech Street closure
4. Thursday 15th March main survey day, Thursday 22nd March the comparison (baseline) day
5. Data captured
 - journey times
 - traffic volumes
 - queue lengths

Observations

6. Visual observations that significantly more traffic on London Wall and Moorgate
7. Hour snaps of TomTom surveys, significantly elevated levels of congestion on London Wall, Moorgate, City Road, Goswell Road, Bunhill Row and Old Street, in the AM and midday period, less so after 2pm



Traffic analysis:

8. Traffic volumes summary

- Traffic flows are total flows across the AM peak only. As expected, there is little overall difference in traffic volumes however vehicles spent almost 23% more time queuing than in normal network operation in the AM Peak. This tells us that the surveyed junctions cannot operate at an increased capacity to accommodate the reassigned traffic, which generally manifests itself in additional traffic queues.
- The vast majority of traffic diverting around Beech Street use either Old Street or London Wall.
- This note analyses the impact of the closure at four levels: the City Level, the Junction Level, the Junction Arm Level and the Traffic Lane Level.

Table 1: change to vehicle volumes and average Queue time at the City level in the AM Peak

	Thursday 22nd (Baseline)	Thursday 15th (Closure)	% difference between closure and baseline
Number of vehicles	12,360	12,136	-2%
Total Queuing time (hours, minutes and seconds)	04:54:01	06:02:49	+23%

9. Traffic journey times summary

- Increased journey times have been measured to understand the level of congestion on the network.
- As can be seen in the table below, as anticipated there is a significant increase to the average journey time at key junctions on the alternative route.

Table 2: change to vehicle volumes and average Queue time at the junction level in the AM Peak

Junction	Total vehicles (Baseline)	Total vehicles (Closure)	% change to vehicle volumes	Average Queue JT (Baseline)	Average Queue JT (Closure)	% change to Queue JT
Beech Street / Aldersgate Street	2132	1757	-18%	00:30	00:34	+13%
London Wall / Wood Street	1369	1477	+8%	00:35	00:37	+7%
Moorgate / Ropemaker Street	1793	1866	+4%	00:44	00:58	+33%
Moorgate / London Wall	2134	2170	+2%	01:00	01:03	+6%
Old Street / Goswell Road	2700	2482	-8%	01:00	01:17	+29%
Rotunda	2040	2039	0%	No Survey	No Survey	No Survey



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Whitecross Street / Fortune Street	192	345	+80%	No Survey	No Survey	No Survey
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- Looking at the average delays for the junction as a whole masks the effects on some arms where the experience for vehicles is much worse, for instance it is clear there has been a change to the average queue time at the Old Street / Goswell Road Junction.
- Table 3 below shows which arms are most affected by the closure.

Table 3: Change to average queue times by Junction Arm Level in the AM peak only

Junction Arm	Baseline	Closure	Difference	% difference
Old Street / Goswell Road WB	00:01:10	00:02:32	00:01:22	116%
Moorgate / South Place EB	00:02:11	00:03:22	00:01:11	54%
Old Street / Goswell Road EB	00:00:53	00:01:53	00:01:00	114%
London Wall / Moorgate SB	00:01:23	00:02:06	00:00:43	51%
Beech Street / Aldersgate NB	00:00:34	00:01:13	00:00:39	113%
Beech Street / Aldersgate SB	00:01:23	00:01:46	00:00:22	27%
London Wall / Wood Street WB	00:02:05	00:02:23	00:00:17	14%
London Wall / Wood Street EB	00:01:08	00:01:21	00:00:13	19%
Moorgate / South Place SB	00:00:53	00:01:05	00:00:12	22%
Moorgate / South Place NB	00:01:06	00:01:17	00:00:11	17%
London Wall / Wood Street NB	00:00:06	00:00:16	00:00:11	188%
Moorgate / South Place WB	00:00:59	00:01:06	00:00:07	12%
London Wall / Moorgate WB	00:02:38	00:02:41	00:00:03	2%
London Wall / Moorgate EB	00:02:38	00:02:41	00:00:03	2%
Beech Street / Aldersgate WB	00:00:50	00:00:47	-00:00:03	-6%
Beech Street / Aldersgate EB	00:01:37	00:01:29	-00:00:07	-8%
Old Street / Goswell Road SB	00:02:38	00:02:17	-00:00:20	-13%
London Wall / Wood Street SB	00:00:45	00:00:22	-00:00:24	-52%
London Wall / Moorgate NB	00:02:38	00:02:04	-00:00:34	-21%
Old Street / Goswell Road NB	00:04:05	00:03:16	-00:00:50	-20%

- Again as there are multiple movements on each junction arm (for example there two lanes at Old Street / Goswell Road WB), effects can be masked and as such it is necessary to observe the changes to queue times at the traffic lane level as shown in table 4 below.

Table 4: Change to average queue times and average queue length by traffic lane level in the AM peak only

	Change to average queue length	Average queue time (baseline)	Average queue time (closure)	Difference	% Difference



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Ropemaker / Moorgate EB traffic lane	6.8	00:02:11	00:03:22	00:01:11	54%
Old Street / Goswell Road WB ahead and right	0.2	00:00:43	00:01:27	00:00:44	104%
Old Street / Goswell Road NB ahead and left	-0.8	00:00:28	00:01:12	00:00:44	157%
London Wall / Moorgate EB ahead lane	7.4	00:01:46	00:02:28	00:00:42	40%
Old Street / Goswell Road WB ahead and left	0.6	00:00:28	00:01:06	00:00:38	135%
Long Lane / Aldersgate EB traffic lane	-0.2	00:00:14	00:00:43	00:00:29	207%
Moorgate / London Wall SB Nearside	5.4	00:01:01	00:01:22	00:00:21	35%
Moorgate / London Wall SB Right Turn	3.3	00:00:22	00:00:44	00:00:21	94%
Moorgate / Finsbury Pavement NB ahead and right	2.8	00:00:28	00:00:46	00:00:18	65%
London Wall / Moorgate WB nearside ahead lane	1.0	00:00:28	00:00:46	00:00:18	65%
Old Street / Goswell Road NB cycle lane	-0.2	00:00:25	00:00:42	00:00:17	67%
Finsbury Pavement / Moorgate SB	1.7	00:00:26	00:00:40	00:00:14	54%
Aldersgate / Beech Street SB ahead and left	-1.2	00:00:33	00:00:46	00:00:14	42%
London Wall / Wood Street EB ahead and left	0.6	00:00:28	00:00:41	00:00:13	48%
London Wall / Wood Street WB Traffic Lane	0.5	00:00:50	00:01:03	00:00:12	25%
Wood Street / London Wall NB	0.4	00:00:06	00:00:16	00:00:11	188%
Long Lane / Aldersgate EB cycle feeder lane	0.0	00:00:20	00:00:30	00:00:10	48%
South Place / Moorgate cycle lane	-0.1	00:00:25	00:00:34	00:00:09	37%
Aldersgate Street / Beech Street SB cycle feeder lane	-0.9	00:00:21	00:00:29	00:00:07	35%
Beech Street / Aldersgate WB Cycle Feeder Lane	-1.6	00:00:15	00:00:21	00:00:06	37%
London Wall / Wood Street WB Ahead and Right	0.9	00:00:49	00:00:53	00:00:05	9%
Aldersgate / Beech Street SB ahead and right	0.0	00:00:29	00:00:31	00:00:01	4%
London Wall / Wood Street WB Cycle Lane	-0.1	00:00:26	00:00:26	00:00:00	1%
London Wall / Wood Street EB offside	-1.9	00:00:40	00:00:40	-00:00:00	-1%
South Place / Moorgate ahead and left	0.7	00:00:33	00:00:31	-00:00:02	-7%
Finsbury Pavement / South Place Right turn lane	0.8	00:00:27	00:00:25	-00:00:02	-8%
London Wall / Moorgate WB right turn lane	2.8	00:00:50	00:00:47	-00:00:02	-5%
Old Street / Goswell Road SB offside	0.3	00:00:44	00:00:38	-00:00:06	-13%
Aldersgate Street / Beech Street NB ahead and left	0.0	00:00:29	00:00:22	-00:00:07	-23%
Moorgate / Finsbury Pavement NB ahead and left	4.2	00:00:38	00:00:31	-00:00:07	-19%
Old Street / Goswell Road EB cycle lane	0.2	00:00:52	00:00:44	-00:00:08	-14%
Old Street / Goswell Road EB nearside	-0.5	00:00:55	00:00:46	-00:00:09	-16%
London Wall / Moorgate NB cycle lane	-4.0	00:00:34	00:00:25	-00:00:09	-27%
Aldersgate Street / Beech Street NB ahead and right	-0.3	00:00:30	00:00:17	-00:00:13	-42%
Beech Street / Aldersgate WB ahead and right	-11.7	00:01:22	00:01:08	-00:00:13	-16%
Old Street / Goswell Road SB nearside	-0.6	00:01:54	00:01:40	-00:00:15	-13%
Wood Street / London Wall SB	0.2	00:00:45	00:00:22	-00:00:24	-52%
London Wall / Moorgate NB traffic lane	8.6	00:02:04	00:01:39	-00:00:24	-20%
Old Street / Goswell Road EB offside	-0.1	00:01:16	00:00:50	-00:00:26	-35%
London Wall / Moorgate EB left turn lane	2.3	00:00:51	00:00:13	-00:00:39	-76%



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