Overview of Elephant & Castle Pedestrian Modelling

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MAYOR OF LONDON

Background

A pedestrian count at the current subway system was carried out at the end of 2012. This documented the pedestrian flows through the subway tunnels and also documented the desire lines, route choices, and behaviour of pedestrians.

This data was then used to update a pre-existing pedestrian model using our modelling software known as Legion. This count data formed the base line for future modelling and has allowed outputs to demonstrate pedestrian behaviour, route choice and journey time under the existing and proposed arrangements.

Existing pedestrian flows

Under the current system pedestrians use at least one of the seven subways to move through the area. Below is a diagram demonstrating the current subway system and a table listing the flows as of 2012 in each subway tunnel. These figures are two-way pedestrian flows per hour during the PM peak period, however they are for the individual subways so do include an element of double-counting



(diagram of existing subway system)

Subway	Pedestrian Flows
А	423
В	374
С	414
D	474
E	1,117
F	102
G	527

Predicted pedestrian flows under proposed arrangement

Under the proposed arrangement the subways will be replaced by at grade pedestrian crossings. Five of the new crossings are mapped below, with a table demonstrating the expected pedestrian usage figures for each crossing per hour during the PM peak, as above an element of double counting can be expected.



(map of new pedestrain crossing points)

Crossing Points	Pedestrian Flows
1	1,160
2	1,206
3	592
4	87
5	663

Incredibly TfL's proposal increases the pedestrian journey time for 7 of the 9 routes they analysed, of up to 41% longer. Only 2 routes are quicker, and none by this degree of change! TfL are currently categorically opposed to subways regardless of their current or potential value to pedestrian journey times and protection from collisions.

Journey Time Comparison

Journey time comparisons are made by comparing current pedestrian desire lines through the junction. These desire lines are mapped below.



(Diagram of pedestrian desire lines end and start points)

Using our Legion modelling software we are able to compare journey times under the current arrangement and what this will be under the new arrangement. The figures are based on average journey times and use industry accepted average walking speeds (1.2m/sec) as a basis.

	Movement	Current (secs)	Proposed (secs)		Difference (secs)
1	SE to NE	112.3	157.9	Increase 41%	45.6
2	NW to SW	122	156.8	Increase 29%	34.8
3	SW to SE	48.8	66.7	Increase 37%	17.9
4	SE to NW	167.2	176.2	Increase 5%	9
5	NE to SW	196.4	203.6	Increase 4%	7.2
6	NE to SE	115.2	119.1	Increase 3%	3.9
7	SE to SW	69.8	71.3	Increase 2%	1.5
8	W to SE	122.2	114.5	Decrease 6%	-7.7
9	SE to W	135.4	103.6	Decrease 23%	-31.8

In trying to work out the scale of impact of the proposed changes we need to consider how popular each of these routes currently are. Using the subway pedestrian flow data on page 2 we can calculate an approximation of this.

The net result is that in a one-hour period the proposed scheme wastes a total amount of pedestrian time worth 19 and a half hours! Imagine how much time would be wasted across a day, a week or a year. Time when people could be getting on with their lives rather than hanging out next to a ring road.

	Movement	Current Flow in Subways (count)		Difference (secs)	Time wasted or gained by pedestrians (secs)	Time wasted or gained by pedestrians (secs)
1	SE to NE	1117	Increase 41%	45.6	50,935	14 hours 8 minutes 55 seconds
2	NW to SW	374+423	Increase 29%	34.8	26,142	7 hours 15 minutes 42 seconds
3	SW to SE	527	Increase 37%	17.9	9,433	2 hours 37 minutes 13 seconds
4	SE to NW	102+414	Increase 5%	9	4,644	1 hours 17 minutes 24 seconds
5	NE to SW	117+527	Increase 4%	7.2	11,837	3 hours 17 minutes 17 seconds
6	NE to SE	1117	Increase 3%	3.9	4,356	1 hours 12 minutes 36 seconds
7	SE to SW	527	Increase 2%	1.5	791	13 minutes 11 seconds
8	W to SE	423+527	Decrease 6%	-7.7	-7,315	-3 hours 58 minutes 5 seconds
9	SE to W	527+423	Decrease 23%	-31.8	-30,210	-9 hours 36 minutes 30 seconds
					70613	19 hours 36 minutes 53 seconds