

SILVERTOWN TUNNEL

Volume 8

8.118 Applicant's Response to Bus Issues Raised at dDCO ISH 29 March 2017

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Silvertown Tunnel


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The Infrastructure Planning (Applications: Prescribed Forms and Procedure)
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1. QUESTIONS ARISING AT THE ISH

1.1 How was the 37.5bph Assessed Case network developed?

- 1.1.1 The Assessed Case bus network was developed through a 'bottom-up process', looking at ways in which cross-river buses could improve public transport links between east and south-east London.
- 1.1.2 The process included a review of the existing situation, an examination of future demand, outlining of the corridors to be served by buses in future and the development of an example package of routes for model testing – the approach to developing the network is set out in Appendix F of the Transport Assessment (APP-086), which also shows how this example network could complement cross-river rail transport (Figure F-18).
- 1.1.3 As noted in Transport Assessment Appendix F paragraph F5.2, the routes were indicative of what may be achieved, and further work on operating cost, passenger demand and journey times was required, using the principles of bus network planning, to optimise the proposed network before individual bus route enhancement can be consulted on and agreed.
- 1.1.4 The indicative network was modelled as the Assessed Case network, as it represented the best estimate at that time of the likely future network, and given its indicative nature, limited testing was done of alternative networks for the Assessed Case. As noted in the Bus Strategy and other certified documents, prior to the Silvertown Tunnel opening for public use, TfL must refresh its assessment of Scheme impacts, in order to:
- Set the opening user charges;
 - Define the requirement for and form of localised mitigation for residual effects; and
 - Specify the bus network through the Silvertown Tunnel that will operate on opening.
- 1.1.5 For this process TfL will update the relevant transport and environmental models, rerun those models, and develop its proposals for each element in conformity with the commitments, policies and procedures set out in the relevant certified documents and any DCO requirements. The assessment will incorporate a wider range of analyses than the modelling alone.

- 1.1.6 Because there are interactions between each of these elements, TfL must ensure that they are developed and considered in light of one another.
- 1.1.7 The results of the modelling of the Assessed Case network were reported on in the Transport Assessment (7.9.14, APP-086) and in more detail in Appendix K of the Economic Assessment Report (APP-101). It was clear from these results that some routes are much better-used than others in 2021. In part, this reflects the non-optimised nature of the indicative network, and in part the fact that the network was assumed for the 60-year business case period, so patronage would be assumed to grow from the 2021 opening patronage. The Applicant would of course take into account the modelled performance of the Assessed Case network and any other permutations in the future development of the bus strategy.

1.2 Why was the bus network indicative, and should it be fixed in the DCO at a particular cross-river frequency?

- 1.2.1 It was noted above that although the Assessed Case bus network was regarded as the most likely, it needed to be subject to further analysis and refinement, in much the same way that the user charge will be revisited prior to opening.
- 1.2.2 The Applicant considers that the most important issue in relation to the Assessed Case bus scenario is not in fact the number of buses crossing the river but the outcomes that the network results in. These outcomes include:
- the number of people crossing the river by public transport
 - the ability of people with low incomes to use public transport to cross the river to avoid paying a highway user charge
 - the provision of additional cross-river public transport connectivity generally to assist economic development.
- 1.2.3 These outcomes together contribute to an overall public transport benefit arising for the Assessed Case.
- 1.2.4 To demonstrate the Applicant's commitment to these benefits, the updated Bus Strategy now incorporates as Objective 1 an objective to seek to deliver these benefits when developing the cross-river bus services. Requirement 13 of the dDCO submitted at Deadline 6 also now refers to TfL developing the bus services in accordance with the objectives set out in the Bus Strategy.
- 1.2.5 The Applicant shows below that variations in the numbers of buses can achieve virtually the same benefits and effects as the Assessed Case at lower cost, and other variations may offer even better value for money but similar outcomes.
- 1.2.6 Thirdly, buses, by their nature, are a flexible mode of travel and their strength lies in their ability to adapt to changes in demand and supply of infrastructure. There are constant changes in routes due to different new developments (see for example Appendix B of the Bus Strategy), and changes in other public transport services (as just one example, Crossrail this month has requested funding for a substantial increase in frequency

which is likely to affect public transport all across East London and require readjustment of bus services).

- 1.2.7 In addition, while buses are flexible, it is TfL policy to try and keep bus route changes to as few as possible to help maintain a stable network for public comprehension and use. So if a bus route is introduced it would be unusual to change it significantly within five years of opening (though frequencies and stops might of course change).
- 1.2.8 Finally, the bus procurement method, with franchises awarded for 3 + 2 years, means that decreasing or removing bus services after commencement is very costly; on the other hand increasing service levels is easier.
- 1.2.9 This is important as bus services can require substantial funds. The gross cost of the Assessed Case network was estimated at approximately £11m per annum, with the present value of the cost of the buses being assumed at some £307m over 60 years in the Assessed Case economic case. This level of cost makes it essential that value for money is achieved with the Silvertown bus network, and makes it important to start from a solid foundation that reflects demand and introduce changes as demand grows and changes.

1.3 How does the planning of buses differ from for example a rail scheme, which is also based on uncertain futures

- 1.3.1 The Applicant considers that with most rail schemes, due to their nature there is little choice but to plan them years ahead of opening, and given the lack of flexibility, rail scheme promoters therefore have to accept a high level of risk.
- 1.3.2 By contrast, there is more scope in the planning of bus services to fix the services when the risk is as low as it can be, i.e. closest to implementation time. In the present case this is reinforced by the setting of the final user charge closer to the opening year and the amount of potential development in the East London area in the coming years.

1.4 Clarification of the intent of dDCO Requirement 13

The Applicant has included in Requirement 13 of its revised dDCO a commitment to implement at least 20 buses per hour during peak periods for the duration of the monitoring period. This is coupled with Objective 1 in the Bus Strategy to seek to deliver the Assessed Case benefits when developing the cross-river bus services

2. IMPACTS OF 20BPH MINIMUM OPENING LEVEL OF SERVICE

2.1 Introduction

2.1.1 The Applicant is not proposing to change the Assessed Case, which remains in its opinion the most likely outcome, but in the same way as it has shown how uncertainties and variations in the Assessed Case can be dealt with by adjustments to the user charge, in this note, it considers the ways in which the level of bus provision can be adjusted to deliver Scheme outcomes.

2.1.2 The following sections show the estimated impacts of implementing a bus network which is no higher than the 20 bph opening year minimum requirement, and compares these to the Assessed Case for:

- Economic outcomes
- Highway impacts / AADT
- Mode shift / redistribution
- Distributional impacts, particularly on low income users

2.2 Economic outcomes from 20bph scenario

2.2.1 The table below shows a comparison between the Assessed Case economic outcomes for the 2021 assessment year and the 20 bph minimum opening year test. (These are a direct comparison with the Assessed Case results for the year, which included a reduction in the bus-related economic benefits of 50% in the first year as a conservative assumption – this same assumption has been applied to the 20bph test)

2.2.2 The tests show that the 20 bph scenario achieves 90% of the Assessed Case public transport benefits, and 95% of the public transport revenue. This is because the 20bph minimum scenario replicates almost exactly the Assessed Case route coverage, but reduces the bus service where assessed case patronage was low, and increases it where it was strong.

2.2.3 The 20 bph test shows a very small improvement in highway benefits compared to the Assessed Case. This is a combination of a slight increase in car travel (as noted above, the vast majority of the public transport benefit and mode share is retained) but a reduction in the number of buses. The

impact on user charges is minimal. To all intents the cases have the same highway economic outcomes.

2.2.4 The overall combined economic effect is that the 20 bph test results in the same economic benefits as the 2021 Assessed Case, and should therefore result in an NPV very close to this. This is to be expected given that the 20 bph test is an optimised version of the Assessed Case bus tests.

Table 1 Economic comparison 2021 – Assessed Case vs 20 bph sensitivity test

Public Transport	Assessed Case	Assessed Case with 20bph	AC with 20ph/AC %
Business	£ 0.57	£ 0.51	89.1%
Commute	£ 1.12	£ 1.04	93.5%
Other	£ 3.64	£ 3.26	89.6%
Total	£ 5.33	£ 4.81	90.4%
PT revenue change	£ 3.99	£ 3.81	95.5%
Highway	Assessed Case	Assessed Case with 20bph	AC with 20ph/AC %
Business	£ 20.79	£ 21.32	102.5%
Commute	£ 3.75	£ 3.98	106.2%
Other	£ 8.61	£ 8.91	103.4%
Total	£ 33.15	£ 34.20	103.2%
Charge	-£ 37.60	-£ 37.74	100.4%
Combined Benefits	Assessed Case	Assessed Case with 20bph	AC with 20ph/AC %
Commute	£ 21.91	£ 22.36	102.1%
Business	£ 4.33	£ 4.49	103.9%
Other	£ 12.25	£ 12.17	99.3%
Total	£ 38.48	£ 39.02	101.4%

2.3 Highway impacts / AADT

- 2.3.1 Table 2 below summarises the AADT changes associated with the scheme, separately for the Assessed Case (37.5bph) and also the 20bph scenario, for the following:
- All river Crossings throughout East London
 - Other key strategic routes nearby (e.g. A12 East Cross Route, A13 East India Dock Road)
 - Other locations of interest including the Royal Docks, the A200 corridor, and North Greenwich
- 2.3.2 The analysis shows that in the 20 bph minimum opening scenario, the changes in AADT associated with the scheme are not significantly different to the AADT used in the Assessed Case environmental assessment.
- 2.3.3 The analysis shows that the changes in AADT associated with the scheme show very little change from the Assessed Case if the 20bph service pattern is implemented.
- 2.3.4 This in turn demonstrates that the traffic-related inputs to the environmental assessment for a 20bph scenario would be very close to the traffic-related inputs for the Assessed Case (in terms of the impact that the Scheme has on traffic distribution) as reported in the Environmental statement.
- 2.3.5 Early indications are also that the changes in flows would not require adjustments to the Assessed Case user charge to account for such a change in opening year minimum bus provision.

Table 2 Comparison of 2021 AADT on key links – Assessed Case vs 20 bph sensitivity test

	Referen ce Case	Assess ed Case	20bph Scenar io	Change - Ref vs Assess ed	Chang e – Ref vs 20bph Scenar io	% Change - Ref vs Assess ed	% Chang e – Ref vs 20bph Scenar io
Southwark Bridge	5,530	5,490	5,500	-40	-40	-0.8%	-0.6%
London Bridge	22,710	22,590	22,610	-110	-100	-0.5%	-0.4%
Tower Bridge	22,030	21,730	21,640	-300	-400	-1.4%	-1.8%
Rotherhithe Tunnel	31,870	32,850	32,860	970	990	3.1%	3.1%
Blackwall Tunnel	93,950	95,810	95,490	1,860	1,540	2.0%	1.6%
Woolwich Ferry	4,460	4,450	4,450	-10	-10	-0.3%	-0.3%
Dartford Crossing	151,860	152,210	152,230	350	380	0.2%	0.2%
A12 East Cross Route	32,340	32,190	32,260	-150	-80	-0.5%	-0.2%
A13 E India Dock Road	89,200	88,520	88,520	-680	-680	-0.8%	-0.8%
A200 Lower Road	22,930	23,550	23,590	620	660	2.7%	2.9%
Prince Regent Lane	15,260	14,910	15,070	-350	-450	-2.3%	-3.0%
Prince of Wales Road	10,590	10,400	10,360	-190	-260	-1.8%	-2.5%
Millennium Way South of EHW	19,510	19,670	19,620	160	120	0.8%	0.6%
Freemasons Road	5,220	5,270	5,290	50	50	1.0%	1.0%
Albert Road	5,330	5,420	5,450	80	70	1.5%	1.4%
Silvertown Way	15,050	16,240	16,150	1,190	1,180	7.9%	7.8%
Connaught Bridge	20,690	21,940	21,820	1,240	1,170	6.0%	5.7%
Victoria Dock Road East of PRL	11,190	11,520	11,460	330	380	3.0%	3.4%
North Woolwich Road Eastern end	24,320	25,800	25,750	1,480	1,420	6.1%	5.8%
North Woolwich Road Western end	22,470	24,320	24,290	1,850	1,800	8.3%	8.0%
West Parkside	1,160	1,460	1,370	300	210	26.3%	18.5%
Bugsby's Way	12,060	12,310	12,240	260	200	2.1%	1.7%

	Referen ce Case	Assess ed Case	20bph Scenar io	Change - Ref vs Assess ed	Chang e – Ref vs 20bph Scenar io	% Change - Ref vs Assess ed	% Chang e – Ref vs 20bph Scenar io
A206 East of Blackwall Lane	20,000	20,390	20,400	390	410	1.9%	2.1%

2.4 Distributional Assessment

2.4.1 Table 3 below replicates the Distributional Assessment user benefits, and compares the 2021 Assessed Case outcomes with those of the 20bph minimum opening year provision. As noted above, while public transport benefits decrease (by some 10%), highway benefits increase by a small amount and overall benefits are close to the Assessed Case. The distribution of benefits between the income user groups is virtually unchanged.

Table 3: Distributional Impact Summary, 202, Assessed Case vs 20bph Minimum Opening Bus Commitment

2021, Initial assessment, no reliability

Assessed Case

20pbh

	Low income	Medium or high income	Total
Net user benefits £m, 2010 prices (road users)	-0.7	-0.7	-1.3
Net user benefits £m, 2010 prices (public transport)	12.5	4.2	16.7
Total net user benefits £m, 2010 prices	11.8	3.5	15.3
% benefits	77%	23%	0.00

	Low income	Medium or high income	Total
Net user benefits £m, 2010 prices (road users)	-0.5	-0.5	-1.1
Net user benefits £m, 2010 prices (public transport)	11.3	3.8	15.0
Total net user benefits £m, 2010 prices	10.8	3.2	14.0
% benefits	77%	23%	

2021 Adjusted assessment, including reliability

Assessed Case

20pbh

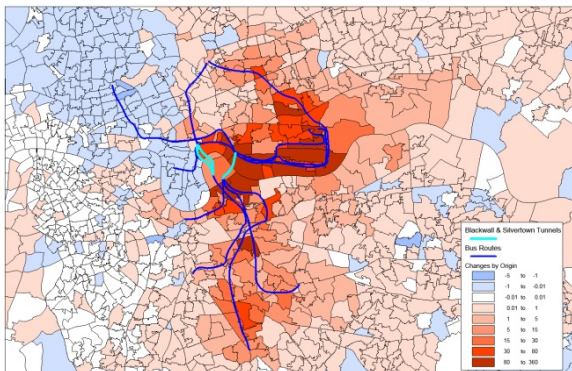
	Low income	Medium or high income	Total
Net user benefits £m, 2010 prices (road users)	-0.3	0.9	0.7
Net user benefits £m, 2010 prices (public transport)	12.5	4.2	16.6
Total net user benefits £m, 2010 prices	12.2	5.1	17.3
% benefits	71%	29%	0.00

	Low income	Medium or high income	Total
Net user benefits £m, 2010 prices (road users)	-0.1	1.0	0.9
Net user benefits £m, 2010 prices (public transport)	11.3	3.8	15.0
Total net user benefits £m, 2010 prices	11.2	4.8	16.0
% benefits	70%	30%	

- 2.4.2 The maps below show the combined highway and public transport benefits for low income (out of work time) users who switch mode for the Assessed Case (with 37.5 bph) and for the scenario with the 20 bph minimum opening year bus commitment.
- 2.4.3 The charges represent total generalised cost based benefits accruing to each transport zone as reported in the SWQ TT2.2 response.
- 2.4.4 Origin movements in the morning peak are shown as these will be a strong proxy for benefits accruing to residents that tend to have their home as the origin. The destination data is shown for completeness. A comparison of the two scenarios shows very little difference resulting from the changes to the bus supply.
- 2.4.5 The maps are presented side by side here for ease of comparison at a strategic level, but are also presented in full size in Appendix A for detailed consideration.

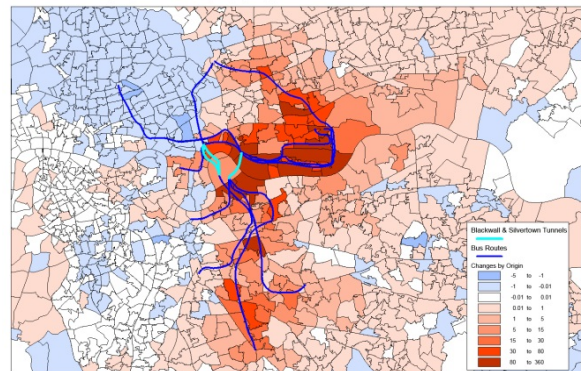
Low income OWT highway and PT benefits by origin – Assessed Case and 20bph

Low Income OWT Highway & PT Benefits by Origin (s142)



Assessed Case

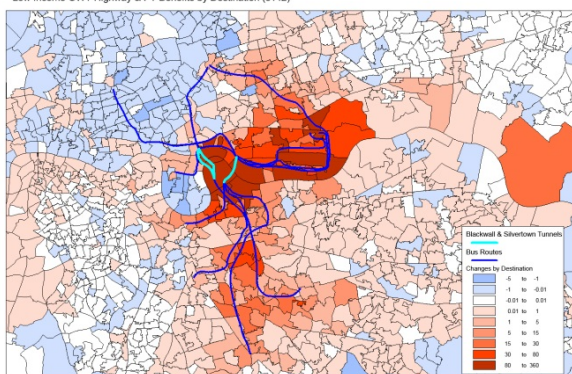
Low Income OWT Highway & PT Benefits by Origin (s295)



20bph scenario

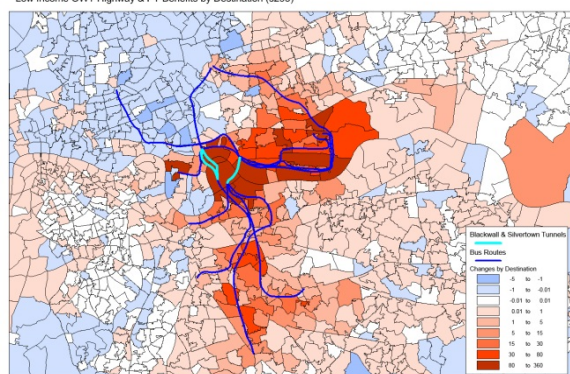
Low income OWT highway and PT benefits by destination – Assessed Case and 20bph

Low Income OWT Highway & PT Benefits by Destination (s142)



Assessed Case

Low Income OWT Highway & PT Benefits by Destination (s295)



20bph scenario

2.5 Mode shift and redistribution comparison

2.5.1 Table 4 below summarises the differences between the Assessed Case and the 20bph test in relation to redistribution and mode shift, including an estimate of the impact on low income users.

2.5.2 The results for the 20bph are very similar to those for the Assessed Case. In the Assessed Case, the reduction in cross river car trips is 2110 (550 of these are low income), and the public transport cross-river increase is 1,950, with some 1,462 of these being low income users, which means that in the Assessed Case the overall low income demand crossing the river increases.

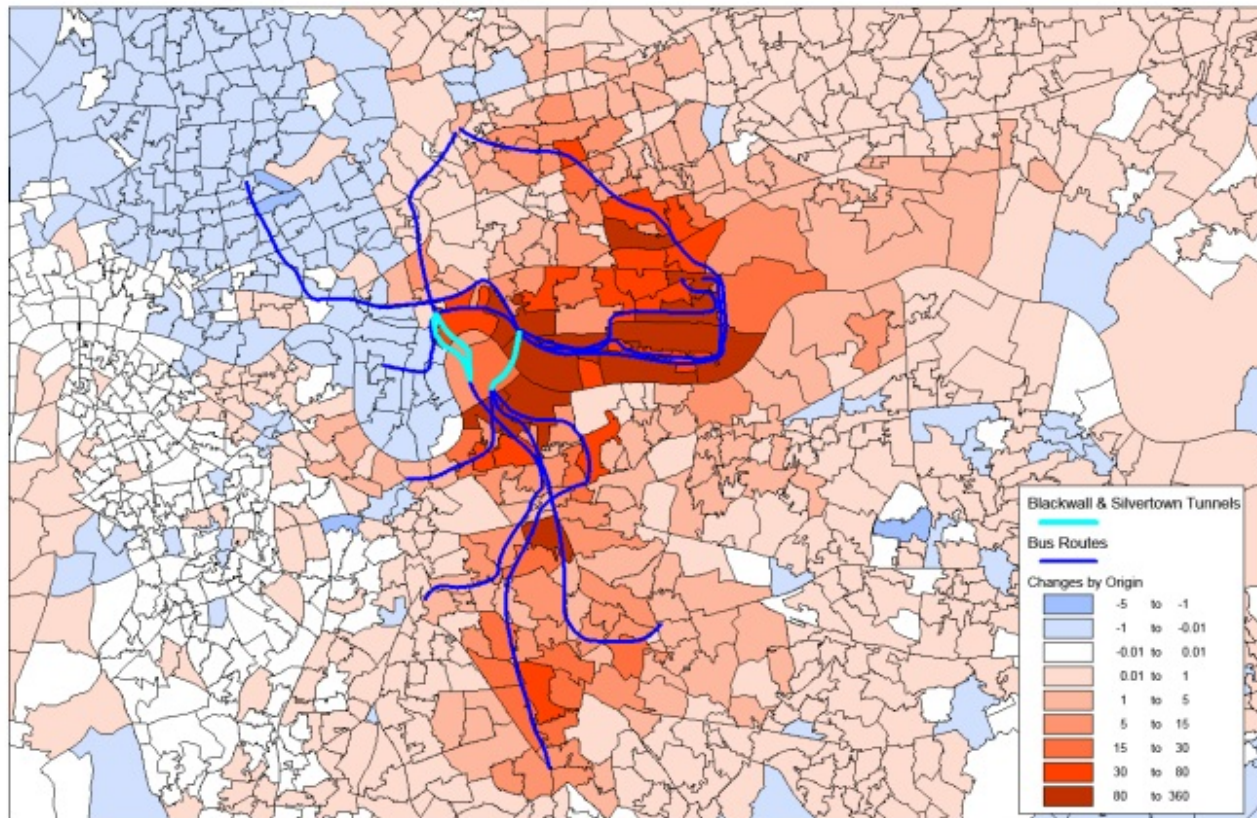
2.5.3 In the 20 bph scenario, the reduction in cross-river car trips is very similar at 2,080 (540 of these are low income users). The increase in cross river public transport trips is 1,520 (430 trips or 22% lower than the Assessed Case). However, for low income users the increase in public transport cross river demand of 1,140 still means that overall this user group increases cross-river travel. When the Applicant sets the final opening year bus network, it will take these results and other factors into account to maximise achievement of the Assessed Case outcomes in accordance with the Bus Strategy.

Table 4: Mode shift and redistribution impacts, Assessed Case vs 20bph Minimum Opening Bus Commitment

Car										Public transport					
Total Residents	Total OWT			Low Income			Low Income %			All		Low Income			
	Changes in Car Trip Productions (a)	River-crossing car trips Change in (b)	Total Redistribution (a minus b)	Changes in Car Trip Productions (a)	River-crossing car trips Change in (b)	Total Redistribution (a minus b)	Changes in Car Trip Productions (a)	River-crossing car trips Change in (b)	Total Redistribution (a minus b)	Changes in PT Trip Productions (a)	River-crossing PT trips Change in (b)	Total Redistribution (a minus b)	Changes in PT Trip Productions (a)	River-crossing PT trips Change in (b)	Total Redistribution (a minus b)
Assessed Case vs Reference Case															
Total 'South of the river'	-770	-1080	310	-210	-280	60	27%	26%	19%	940	840	100	705	630	75
Total 'North of the river'	-520	-1030	520	-150	-270	120	29%	26%	23%	1100	1110	-20	825	833	-15
	-1290	-2110	830	-360	-550	180	28%	26%	22%	2040	1950	80	1530	1463	60
Assessed Case with 20 bph vs Reference Case															
Total 'South of the river'	-680	-1070	390	-180	-270	90	26%	25%	23%	850	710	150	638	533	113
Total 'North of the river'	-580	-1010	440	-160	-270	110	28%	27%	25%	1140	810	340	855	608	255
	-1260	-2080	830	-340	-540	200	27%	26%	24%	1990	1520	490	1493	1140	368

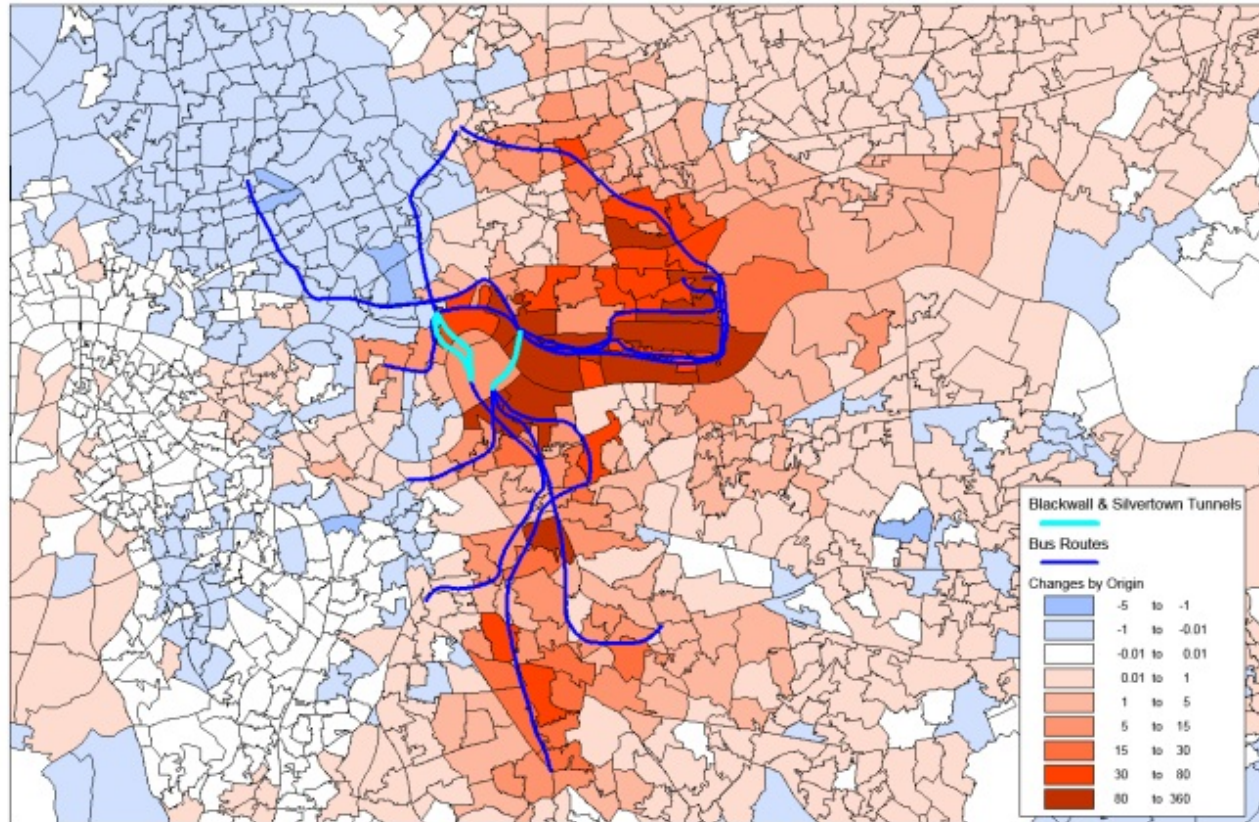
Appendix A. FULL SIZE PLOTS OF BENEFITS DISTRIBUTION

Low Income OWT Highway & PT Benefits by Origin (s142)



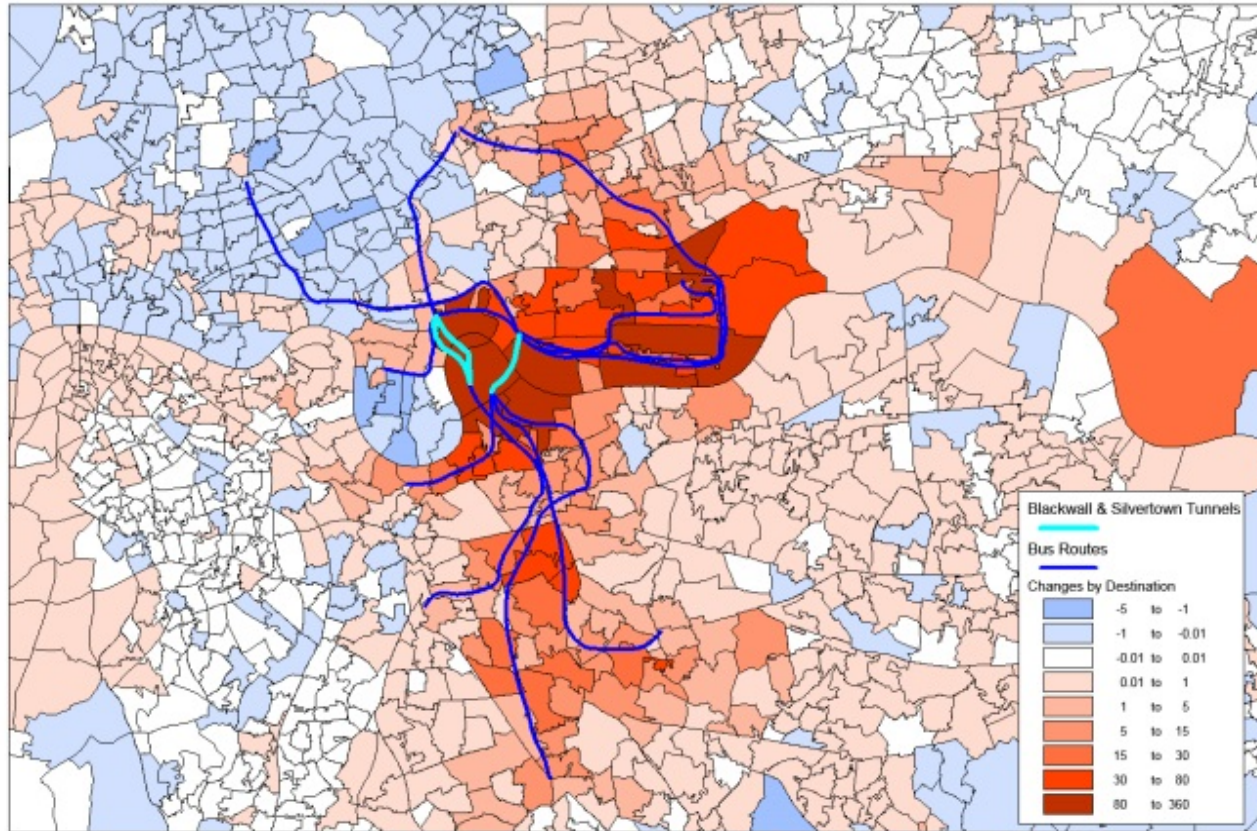
Assessed Case

Low Income OWT Highway & PT Benefits by Origin (s295)



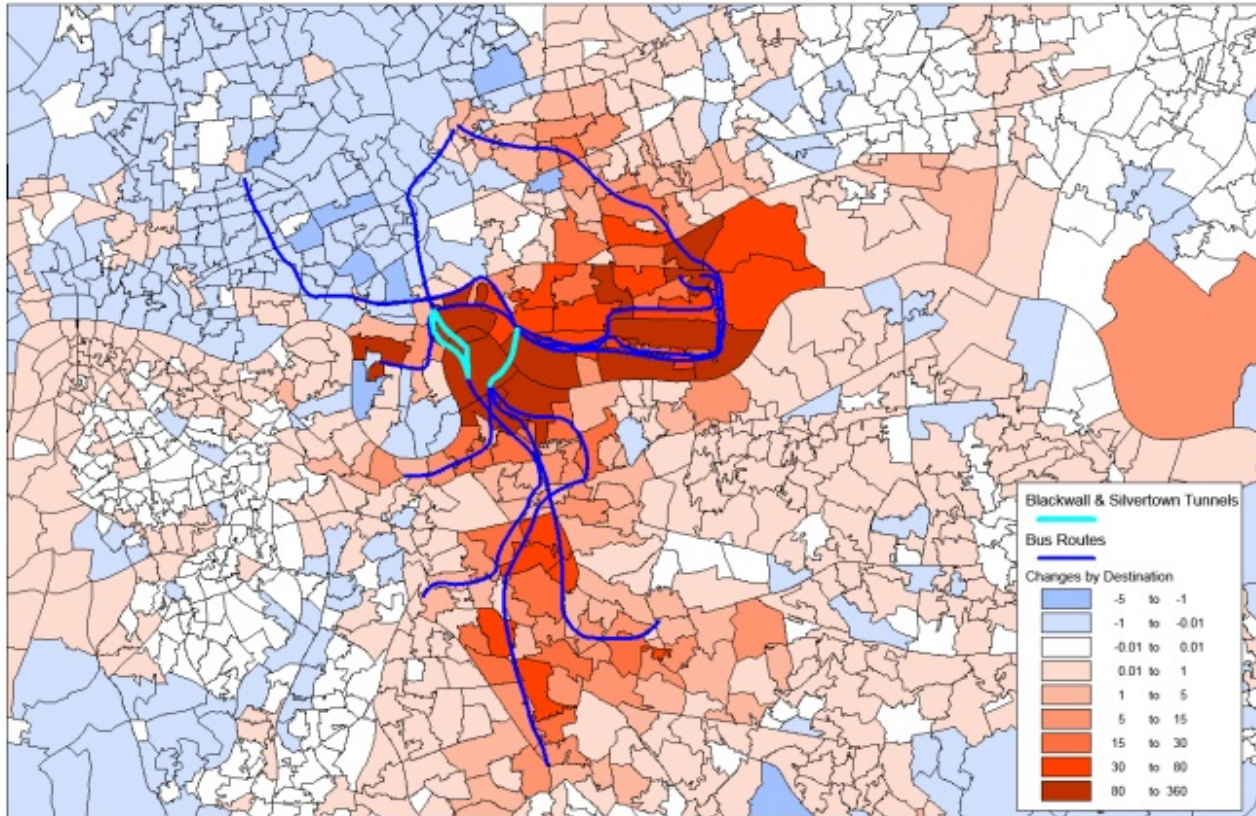
20bph case

Low Income OWT Highway & PT Benefits by Destination (s142)



Assessed Case

Low Income OWT Highway & PT Benefits by Destination (s295)



20bph case