PCT Case Study: Newham

Introduction

This short case study explores cycle commuting potential in Newham, Greater London. It uses the Propensity to Cycle Tool (PCT: www.pct.bike) to look at area and route-based potential across Newham.

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About the PCT

The PCT is a Department for Transport-funded tool that uses information about current trip lengths and hilliness to identify trips that might be most easily switched to cycling. It seeks to help overcome problems associated with planning for cycling in England, where cycling levels are currently low.

Tools and models for transport planning have tended to focus on motorised transport, with cycling and walking usually not included or only included as residual modes.

Hence it is difficult for planners to know where to build. Where infrastructure is built at all, locations are often chosen based on ease of implementation, rather than on the likely demand that might be induced by such infrastructure. What planners want to be able to see is not *current cycling*, but *potential cycling*, based on the presence of trips that might plausibly be cycled. However, until recently, tools for estimating potential cycling did not exist1.

The Scenarios

The Propensity to Cycle Tool uses scenarios to identify which areas and routes might see greatest cycling uptake under different scenarios of the future. The basic concept involves using a statistical model to identify journeys that might be most likely to switch to cycle, based on trip distance and hilliness, established as being substantial barriers to cycling. The tool can then also route cyclists using Cyclestreets.net, which we use to provide estimates of scenario cycling potential along different route sections.

While this case study only uses commuting data, the PCT has since Spring 2019 also incorporated a schools layer, which covers cycling to school.

There are five core scenarios for commuting:

1. Government Target (equality) – the target for cycling in England for 2025, involving a doubling of cycling nationally. At the local level this growth is not uniform, in absolute or relative terms. Areas with many short, flat trips and a below-average current rate of cycling are projected to more than double. Conversely, areas with above-average levels of cycling and many long- distance hilly commuter routes will experience less than a doubling.

2. Government Target (near market) – a variant of (1) but with some demographic

predictors added, so tends also to highlight areas where the demographics of potential cyclists are similar to the demographics of current cyclists, at a national level.

3. Gender Equality – women cycle at the same rate as men do now, for each origin-destination pair.

4. Go Dutch – uses the probability that each given trip would be cycled in the Netherlands, based on length and hilliness. In other words, the scenario assumes that England overcomes its infrastructural and cultural barriers to cycling, but hilliness and journey characteristics stay the same.

5. E-bikes – A kind of Go Dutch plus, based on Dutch and Swiss data, assuming that people use e-bikes for longer or hillier journeys as the Dutch and Swiss already do.

For each scenario, we can calculate health and carbon benefits at area and route level. The carbon benefits are based on trips switched from the car, taking into account the length of those trips.

Health benefits are calculated using a modified version of the WHO's Health Economic Assessment Tool that uses data about local populations. Switching trips from public transport or car to cycling produces health benefits, while trips switched from walking reduce those benefits (because a mile walked gives you more exercise than a mile cycled). For each origin-destination pair, we assume that people switch to cycling proportionally from modes currently used; hence if most trips are driven, most new cyclists would have been car drivers, for instance.

Scenario Cycling Levels in Newham and London

Cycle commuting levels are somewhat lower in Newham than in Greater London, at 3.2% compared to 4.3%. Under the Government Target (equality) scenario this gap is maintained, although commuter cycling rates in Newham rise similarly to all-London rates, reaching 4.8%. This lower potential relative to Inner London is characteristic of Outer London boroughs, partly because the PCT does not capture the potential for cycling to stations.

In the more ambitious Go Dutch and Ebike scenarios, however, cycle commuting potential in Newham is very similar to potential across Greater London: for Go Dutch, 20.4% vs.

20.9%, and for Ebikes, 27.3% vs. 28.2% (Figure 1). In other words, were Newham commuters to cycle to work (all the way) at the same rate as Dutch commuters, one in five would do so, and if we additionally assume mass access to e-bikes we might expect more than one in four to ride all the way to work. In numbers, this would mean 25,000-33,000 Newham residents cycle commuting, compared to around 2,000 now.

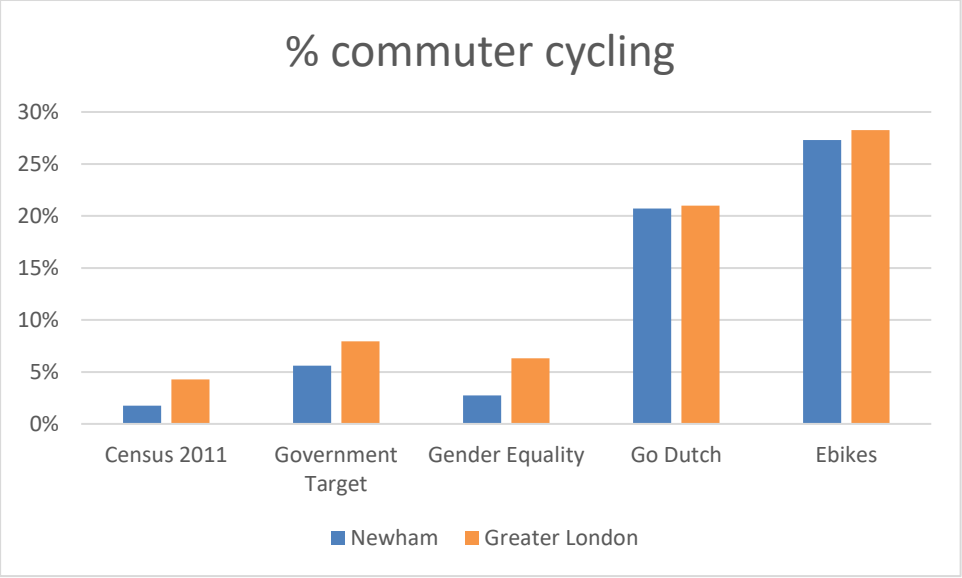

Figure 1: commuter cycling now and under all scenarios, Newham and Greater London

The remainder of the analysis focuses on Government Target (Equality), Go Dutch, and E-bikes scenarios. What might these scenarios mean for car trips? In Newham, compared to England as a whole, relatively fewer cycle trips will come from the car because (as generally in London) people are more multi-modal to begin with. However, there is substantial potential to cut car trips through cycling: the two more ambitious scenarios show 6,000-7,000 fewer commuter car trips originating in Newham, with Government Target cutting over 1,000 car trips (Figure 2).

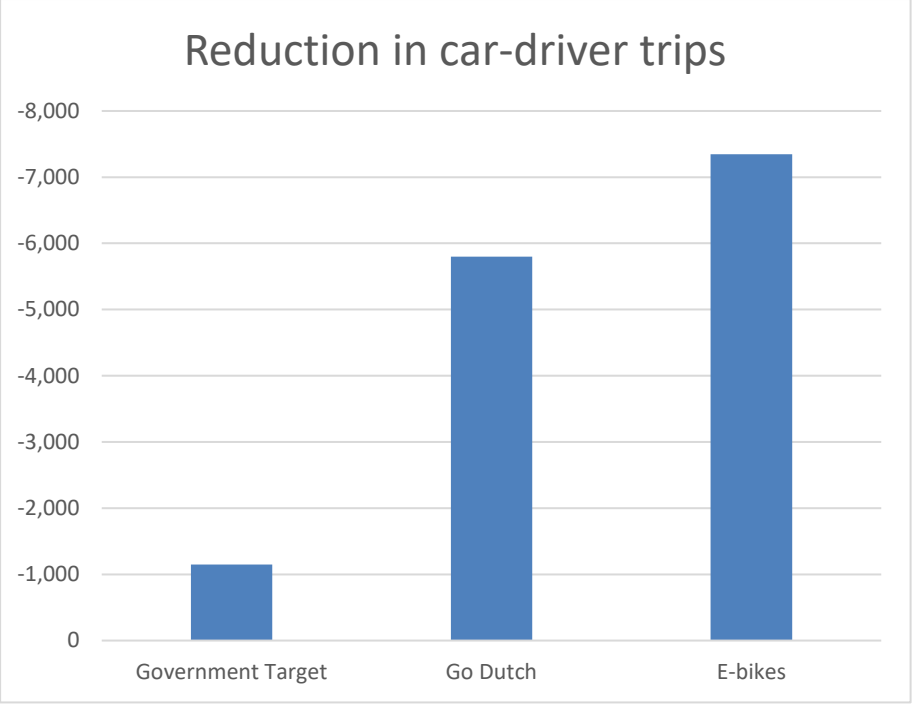

Figure 2: Reduction in car-driver trips, Newham, scenarios

The health economic benefits gained in Newham under the three scenarios are illustrated in Figure 3 below. These are benefits gained through the reduced mortality rate, thanks to the increased physical activity of Newham residents in each scenario.

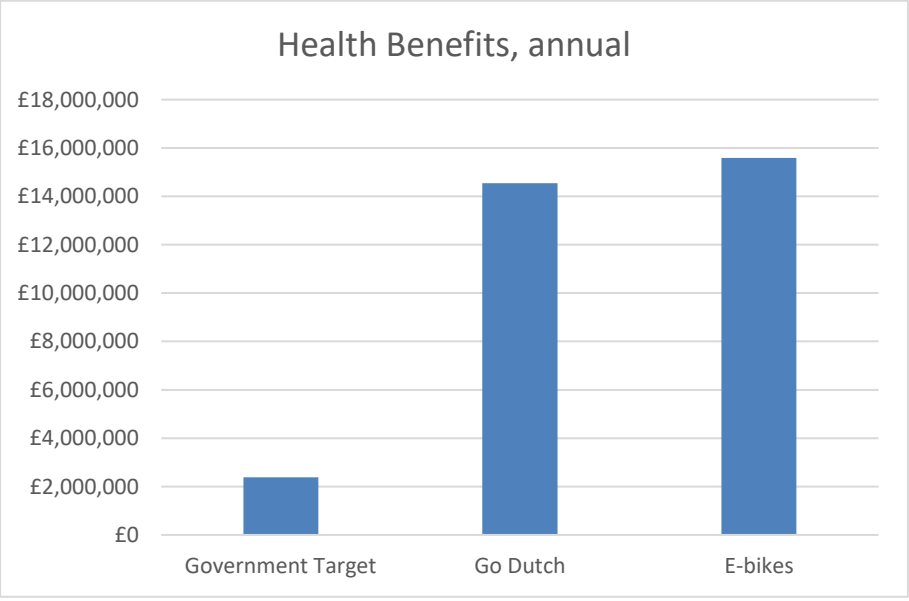

Figure 3: Health benefits, Newham, scenarios

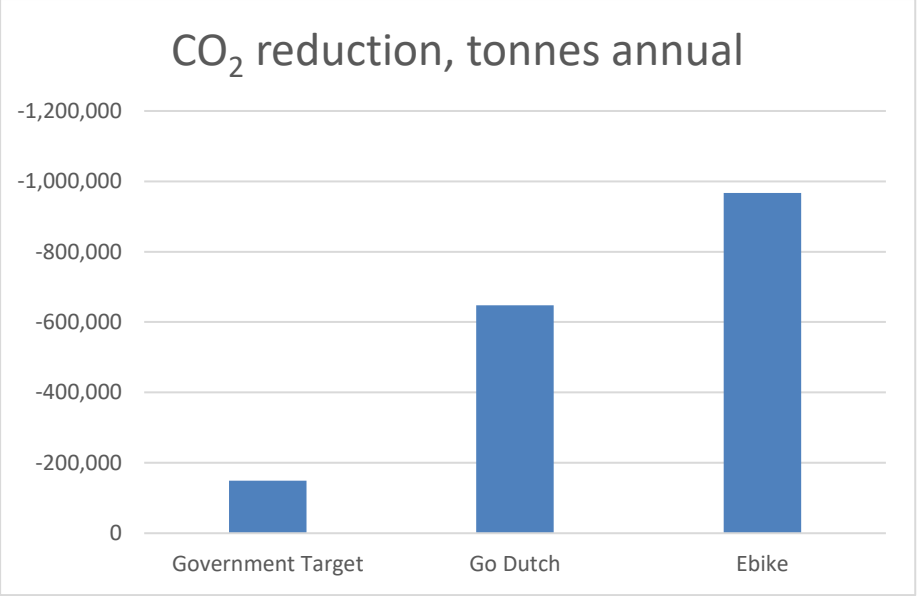

Figure 4: CO_2 reduction, Newham, scenarios

Figure 4 highlights the substantial additional carbon reduction benefits from the e-bikes scenario. In this scenario it is likely that many additionally cycled trips come from medium length car journeys, providing a large additional carbon reduction boost (whereas Figure 3 shows that health benefits are more similar for the two more ambitious scenarios, as e-bikes involve somewhat lower physical activity than traditional cycles).

Commuter Cycling Potential in Newham: area-level detail

The following images explore the cycling potential in Newham at MSOA level (average population of just under 8,000 people), highlighting those MSOAs with particularly high potential and/or co-benefits[1]. Figure 5 illustrates current commuter cycling rates across the borough, all are under 5%.

[1] The PCT now offers data at both MSOA and LSOA level.

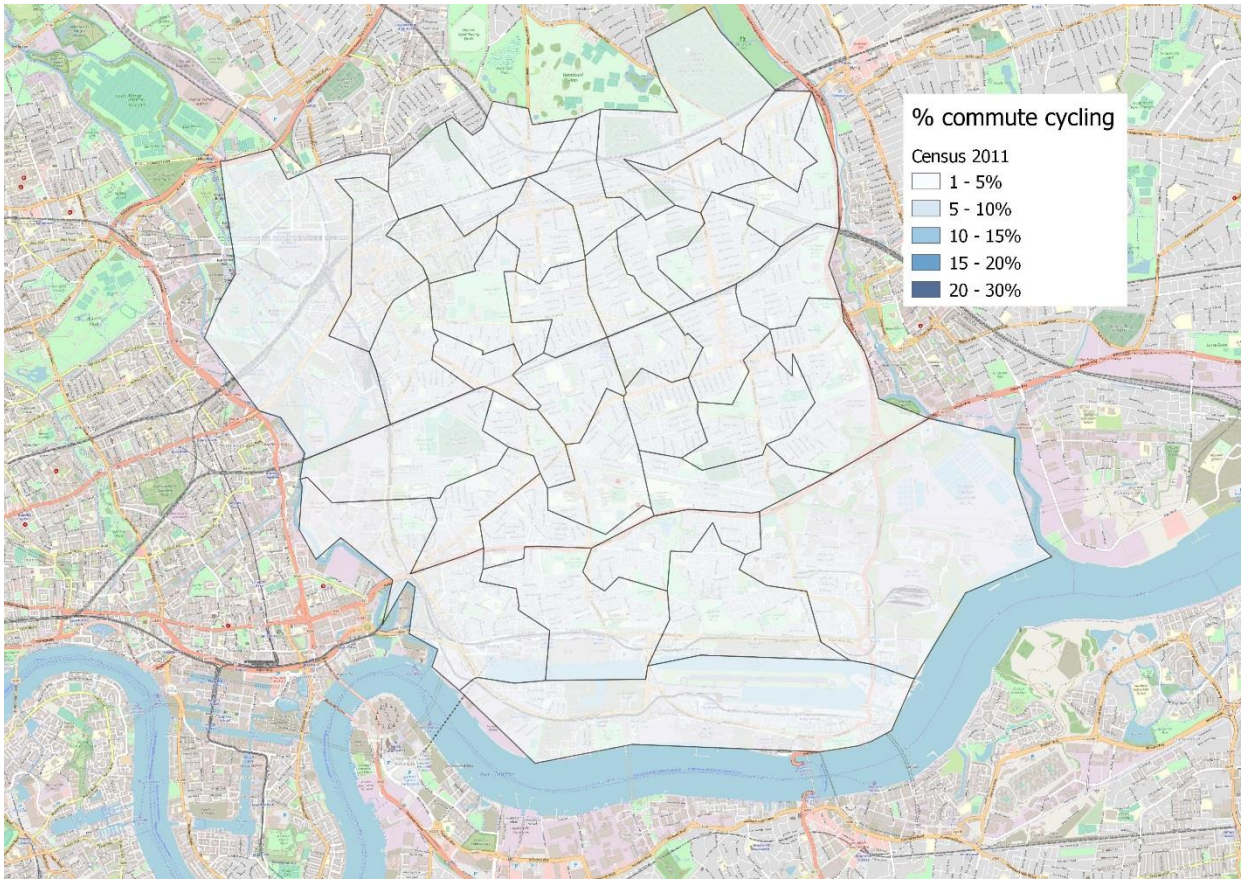

Figure 5: Census 2011 cycle commuting, Newham

Under the Government Target (Equality) scenario, most MSOAs see cycling to work rates between 5 and 10% with four MSOAs to the far East of the borough having 10-15%.

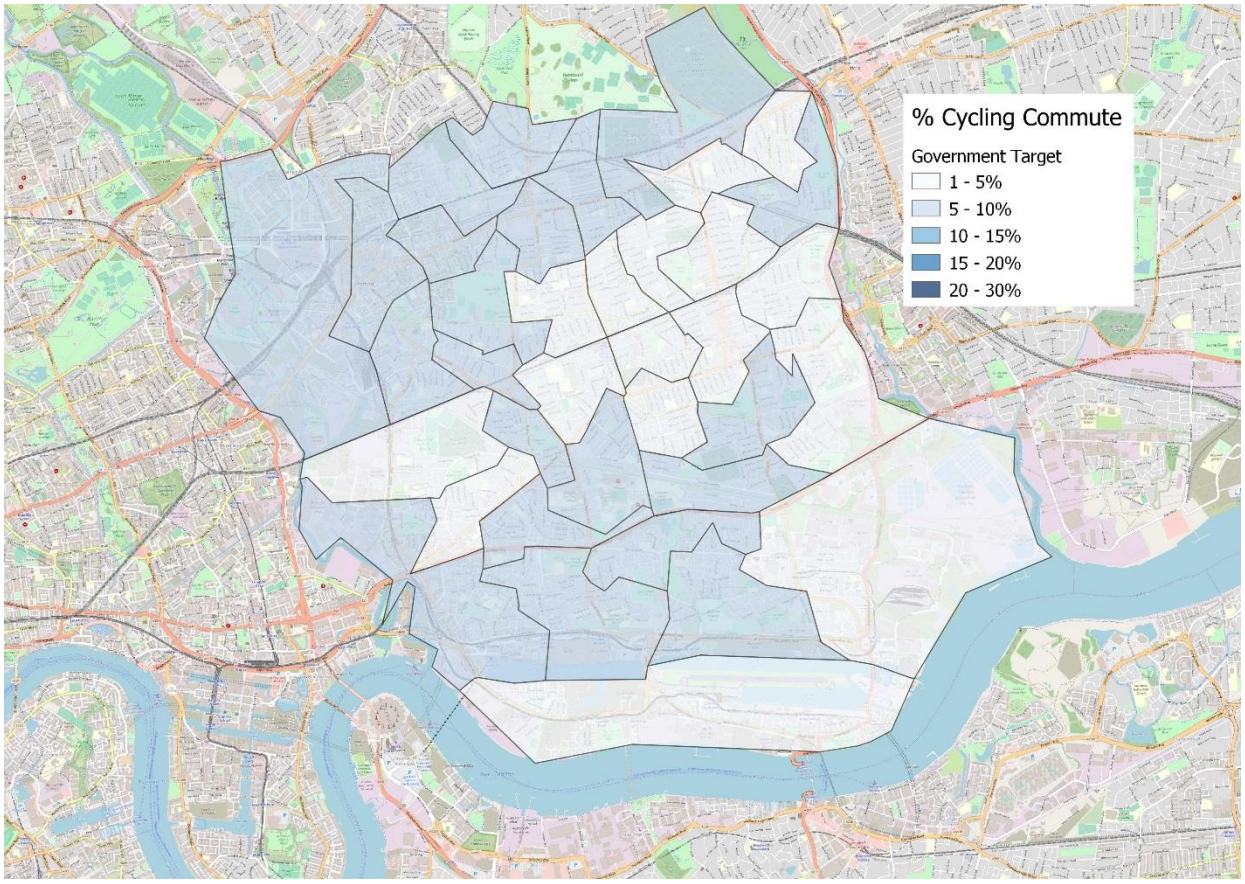

Figure 6: Government Target scenario, Newham

Go Dutch presents a different picture. Apart from one MSOA, half of the areas see 15-20% cycling to work rates, and the other half 20% or more (Figure 7).

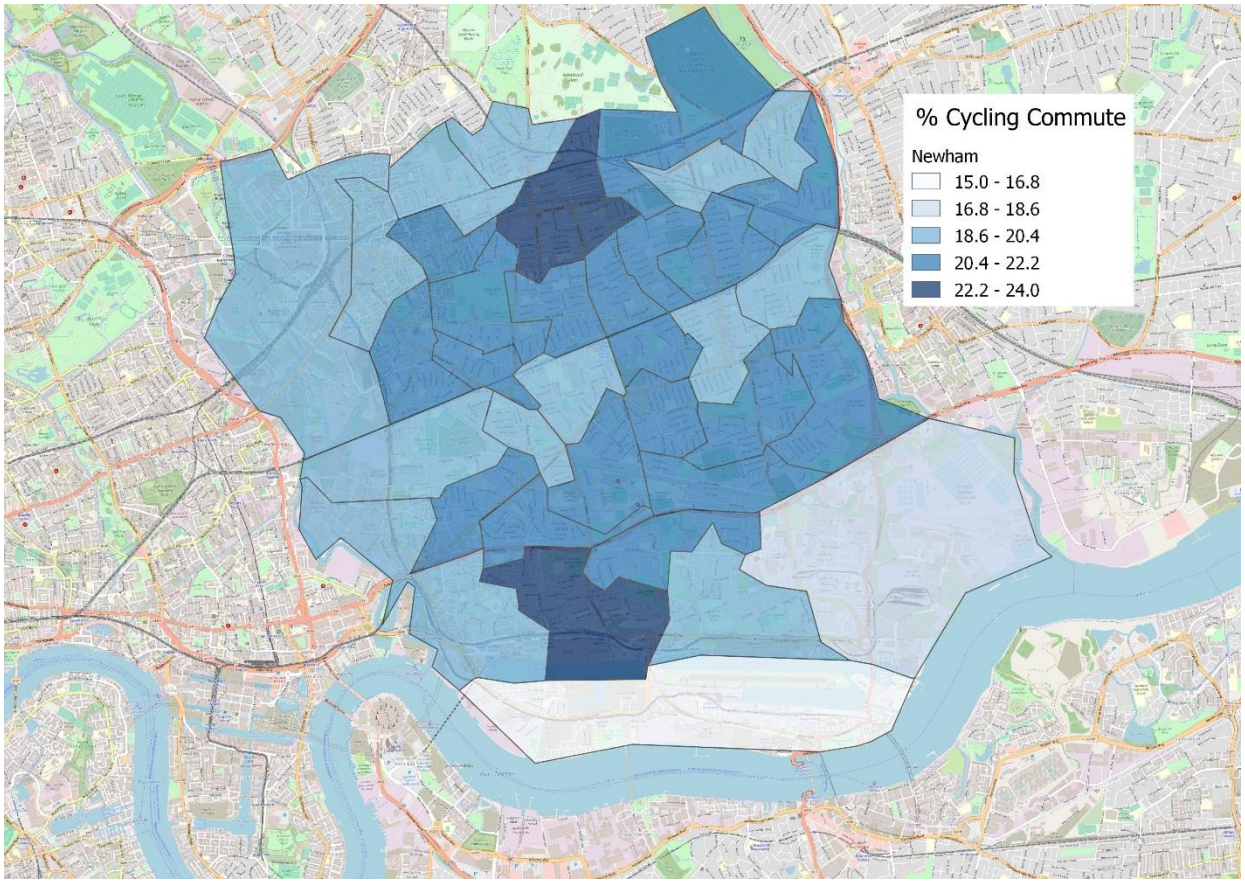

Figure 7: Go Dutch scenario, Newham

The highest cycling potential under Go Dutch are MSOAs towards the middle of the borough, although all have 15% or more cycling to work. The Ebike scenario further increases cycling potential, with all MSOAs now having 23%+. However, in this scenario, the potential is skewed somewhat towards the West of the borough, potentially as ebikes enable longer trips into the centre of London from that part of the borough.

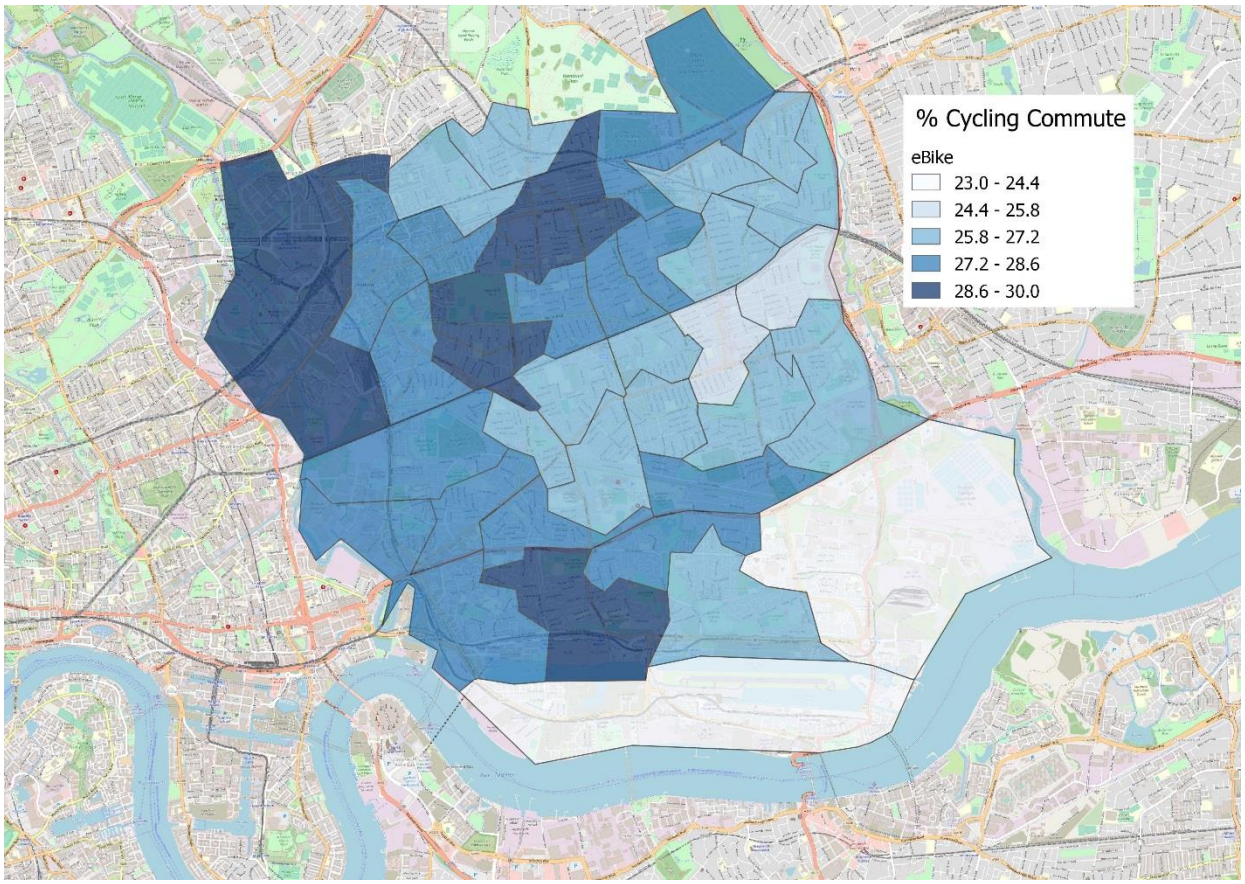

Figure 8: Ebikes scenario, Newham

Commuter Cycling at Route Level

Desire Lines

Figure 9 below shows all desire lines running through Newham that we have captured in the MSOA- level PCT. As explained in the methods section of the Manual (C), this does not include all commuters, due to the exclusion of longer trips and within-zones trips.

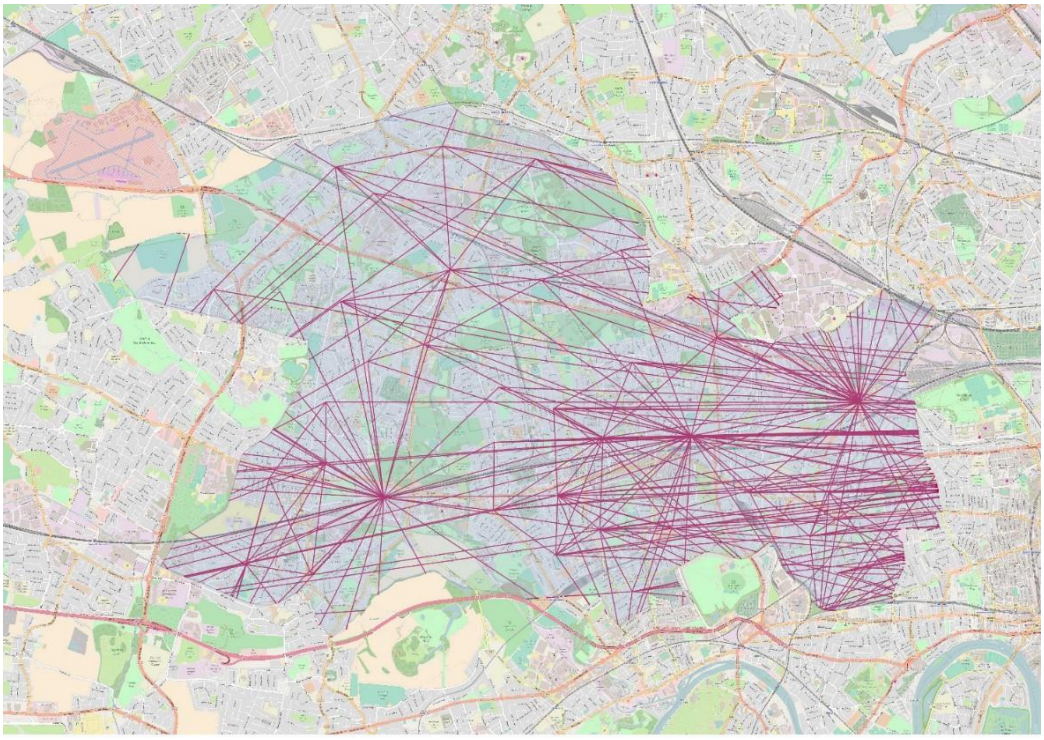

Figure 9: All Desire Lines, Newham

Figure 10 shows cycling desire lines based on the 2011 Census; no OD (origin-destination) pair currently has more than 33 cycle commuters, and most have only a handful (<8).

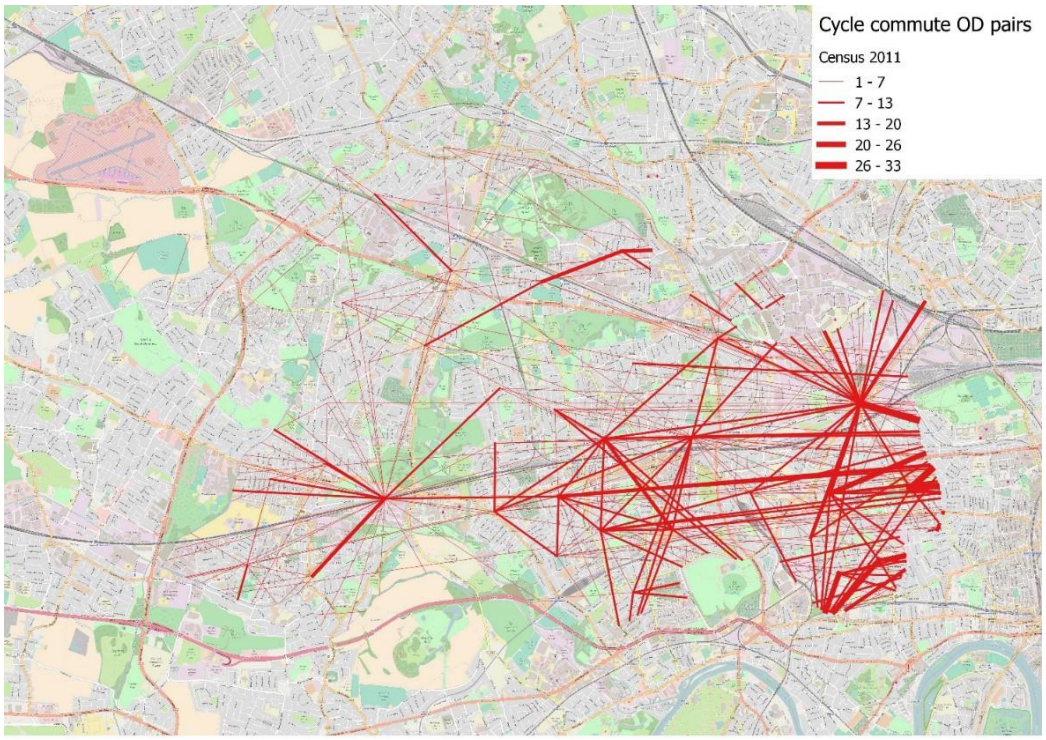

Figure 10: Cycle commute OD pairs, Census 2011

Figure 11 shows the Government Target scenario, where we see a more even geographical split – many more lines in the South-West of the borough start to reach higher levels (>22 cycle commuters), and many more lines with over 10 cycle commuters.

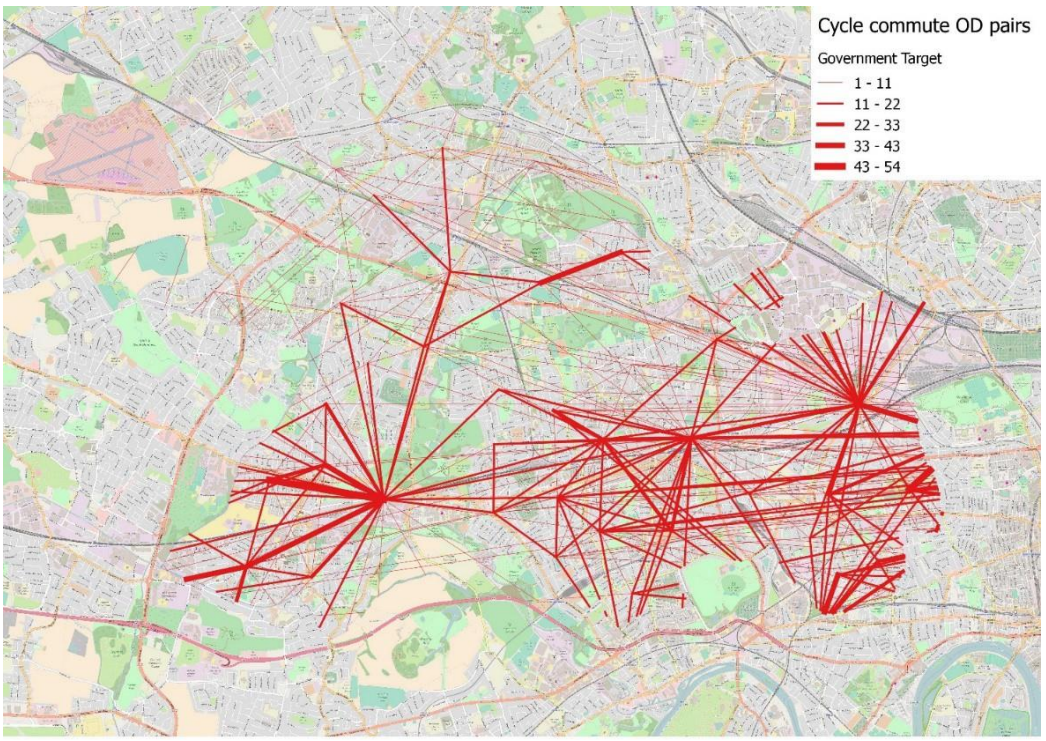

Figure 11: Cycle commute OD pairs, Government Target scenario

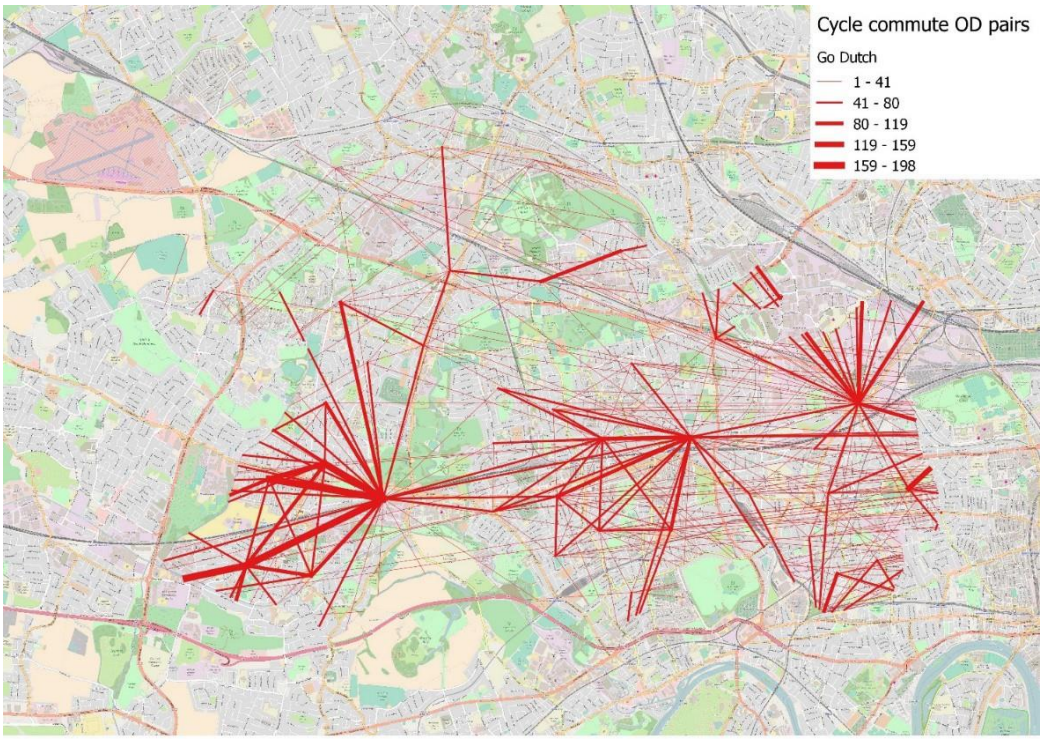

Figure 12: Cycle commute OD pairs, Go Dutch scenario

The Go Dutch scenario marks a step-change, with many OD pairs within or crossing the borough seeing over 100 cycle commuters (Figure 12). The 'Dutch multiplier' image highlights spatial shift with Go Dutch (Figure 13). Desire lines with more than ten times as many cyclists are concentrated in the West.

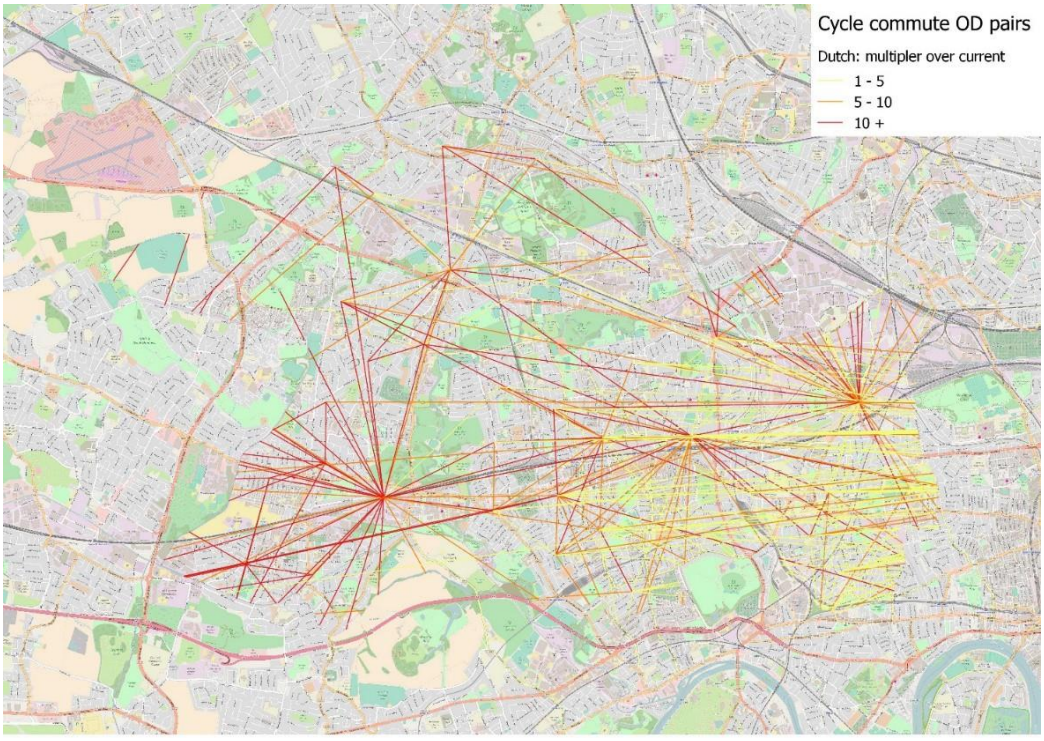

Figure 13: Go Dutch multiplier

Route Network

Now we use the PCT's Route Network data to examine how these OD pairs might map on to the route network in Newham. First we present (Figure 14) the Route Network based on Census data; i.e. where people might be cycling, if they took the fastest legally cycleable routes. Few sections of the route network see over 50 commuter cyclists, and those are concentrated to the East of the borough.

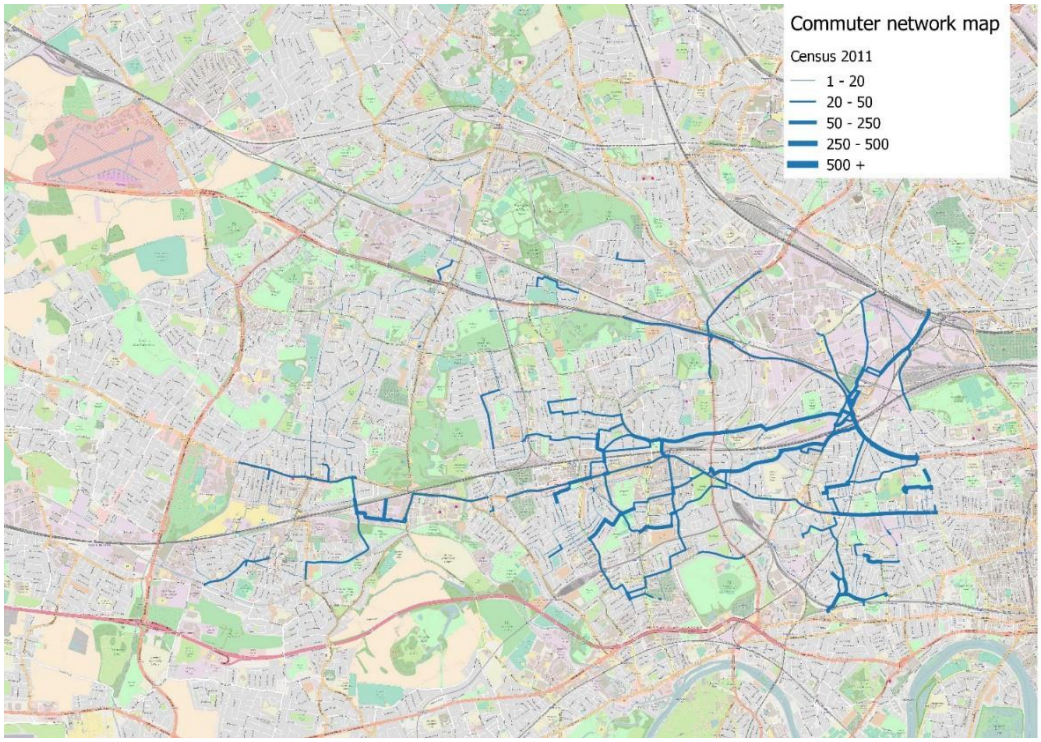

Figure 14: Route Network, Census 2011

Secondly, in Figure 15 we present the Route Network for the Government Target scenario, where the higher- cycling sections are much more spread across the borough, although with lower numbers to the North.

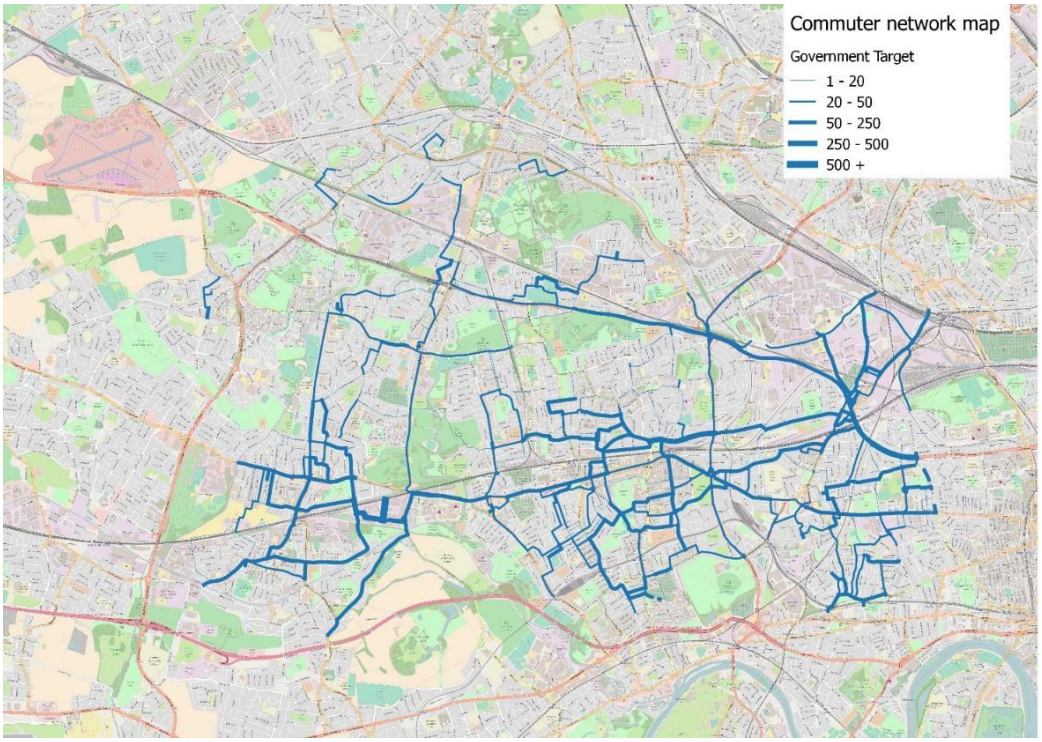

Figure 15: Route Network, Government Target scenario

Figure 16 presents Go Dutch: a number of route sections have >250 (including in the North) and even >500 (particularly in the South) commuter cyclists.

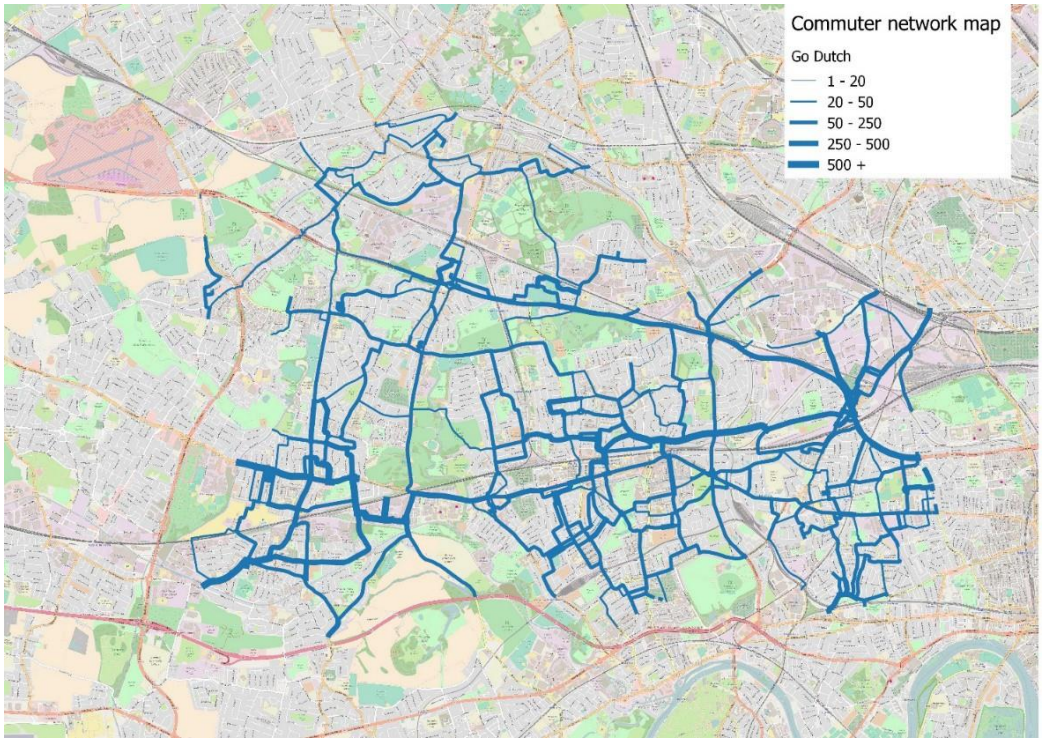

Figure 16: Route Network, Go Dutch scenario

Finally the Ebikes scenario illustrates even higher takeup, with more route sections falling into the 500+ categories, and a clear, busy commuter network emerging that connects both into Central boroughs to the West, and to local employment centres elsewhere in Newham or neighbouring boroughs.

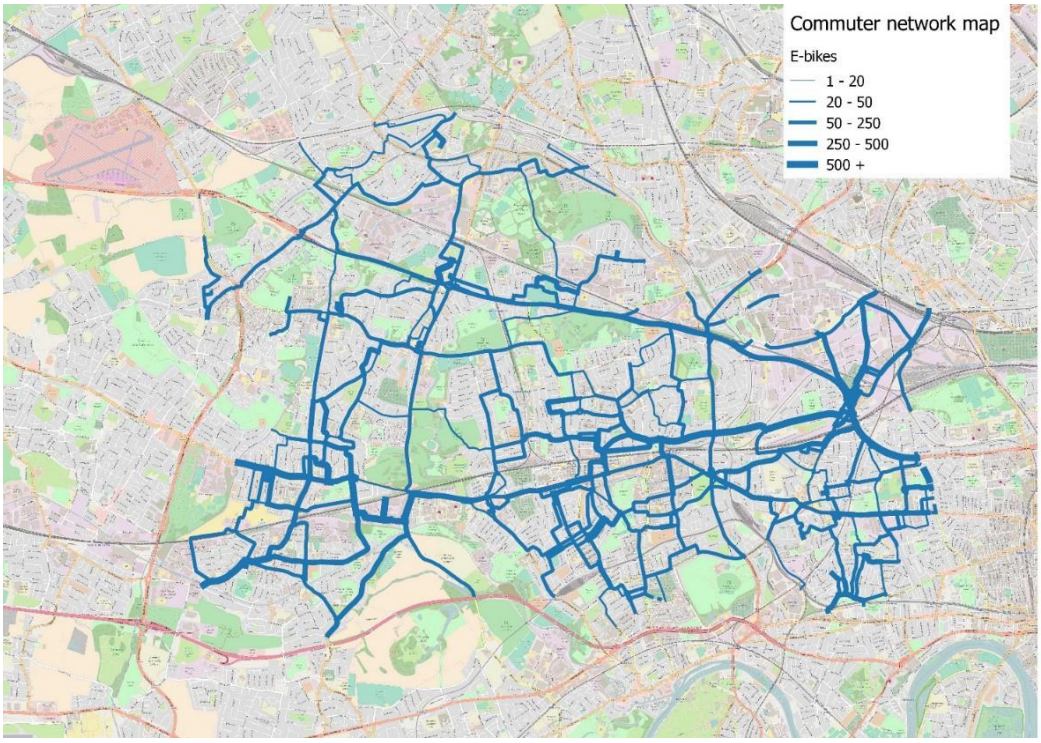

Figure 17: Route Network, Ebike scenario