**November 2016**

**A contribution to the debate from Rt Hon Nick Brown MP:**

## Blue House Roundabout and related congestion & infrastructure: 7 key issues facing transport commissioners and providers

### (1) Blue House Roundabout:

NCC is correct to identify Blue House Roundabout as being subject to significant congestion and safety challenges, particularly during the morning and evening peak travel times (7.30am – 9.30am and 4.30pm – 6.30pm). Along with Hadricks' Mill Roundabout, traffic congestion at this intersection is amongst the worst in the city. All stakeholders including cyclists, pedestrians, public and private transport users face these challenges, however, any solution must address the significant additional time that business users face during peak hours travelling southbound from Gosforth High Street in the morning peak hours, and northbound from the Great North Road in the evening peak hours. The adverse economic impact on local businesses is significant.

During Monday-Friday (although particularly Monday-Thursday from 7.30am – 9.30am) significant southbound traffic volumes from Gosforth High Street are restricted by lesser traffic volumes northbound from Great North Road travelling northbound who are turning right on to Jesmond Dene Road. This creates a significant tail-back through the high street and adds to journey times. The situation is compounded by eastbound traffic from Grandstand Road who are travelling straight ahead on to Jesmond Dene Road. A second congestion problem occurs mainly on Monday-Thursday from 4.30pm – 6.30pm, on the north-bound approach to Blue House Roundabout, and regularly leads to stationary traffic queues backing up on to the central motorway, creating a significant traffic safety hazard, as vehicles travelling at 50mph turn the bend and are met by stationary traffic. For those unfamiliar with the motorway, sharp breaking is required. It should be noted that this second congestion problem is compounded by two additional factors. Firstly, the traffic light sequencing on the intersection with Forsyth Road gives disproportionate time priority to low traffic volumes (and cyclists) turning out on to Great North Road, thereby artificially creating unnecessary congestion. Secondly, because the North-bound bus lane reduces the car lane volume to a single lane, this too creates additional congestion. By contrasting the opposite site of the road (where there is currently no bus lane and cars are free to use both lanes) and the lack of congestion, it is clear that the artificial restriction of road capacity is the major factor in this instance[1].

### (2) Better co-ordination between cities, boroughs and counties:

There is also a need to see the issues in the broader context of commuter flows across city, borough and county boundaries. The neighbouring councils need to work closely together to co-ordinate transport infrastructure to minimize congestion and develop a credible plan to implement this. The impact of congestion on businesses, constituents and other stakeholders across the three Newcastle constituencies needs to be considered in parallel with those who live in the NCC area but who commute to surrounding neighbourhoods covered by, for example, North Tyneside Council and Gateshead Council.

NCC also need to ensure that proportionate weight is given to the majority of users of Blue

House Roundabout and other congestion hot-spots, specifically including the majority of road users, some of whom (due to business or other socio-economic reasons) have to travel by car. It is desirable to encourage some more environmentally friendly forms of transport and to identify businesses, commuters and other citizens who are unable to make use of these alternatives.

**(3) Evaluating recent road re-engineering projects:**

The council also needs to have transparent evaluations of those schemes that have already been implemented. These (eg: Central Station and vicinity, Gosforth/Salters' Lane/Church Road and vicinity, John Dobson Street) need to be evaluated in terms of whether or not, in combination, they have added to, rather than reduced congestion across the city. Decisions ultimately should be data-led, and evidence-based.

**(4) Better co-ordination between different transport modes:**

There is a need for better co-ordination between different transport modes (for example, some bus routes directly duplicate the route taken by metro services). Fully integrated ticketing should go hand-in-hand with a proper “hub and spoke” approach to public transport. Whilst some of this responsibility lies with Nexus and the bus operating companies, the city council can play a facilitating role, particularly where decisions are taken as to prioritise bus lanes over other vehicular networks. There is a need to review the duplication of service route provision. Further evidence is also needed to evidence that Nexus and public service providers are working to deliver a hub-and-spoke approach to pan regional transport, that is closely mapped to actual journeys, particularly on those routes that are already significantly congested. More comprehensive research is needed as to why commuters are not choosing public transport alternatives (including looking at the percentage of drivers who find that metro and bus routes do not match their workplace commuter needs).

**(5) Economic and environmentally sustainable solutions:**

Whilst transport solutions need to be environmentally sustainable and responsible, they also need to be economically responsible across the city and beyond. There is a risk that certain interest groups get overlooked if decisions are taken in isolation of broader strategic goals.

**(6) Engineering and geographic limitations:**

NCC and other councils need to be able to evidence that they are making best use of increasingly limited road space. It would not be credible to say that, by removing road space, drivers will be forced to use public transport alternatives. Poor road engineering around, for example, Newcastle Central Station, has removed road space and created additional congestion, rather than providing a viable alternative for commuters and other travellers. The situation is not helped by restricted access to the Tyne and Wear Metro station at Newcastle Central Station. Whilst the environment and aesthetic issues have rightly been given significant consideration, the actual knock-on impact on pollutant levels (eg: at Mosley Street, Swan House Roundabout and in other areas) needs to be assessed. The wider public should also be consulted about whether or not they feel that specific transport “solutions” that have been implemented by NCC have made the perceived

problems better or worse.

**(7) Economic disincentives to using public transport**

NCC's parking policy needs to be consistent with its policy statement to encourage more people to use public transport. The councils, NEXUS and the private bus operators need to work more closely to resolve any disincentives which means that it is cheaper to travel into Newcastle by car than it is by metro/public transport. For example, Manors car park in central Newcastle costs 90p an hour to park. For a couple travelling from Regent Centre on the metro in Gateshead using a standard “Daysaver” return ticket, it would cost them £7.80. As such, they would have to stay in town for over 8½ hours before it was cheaper to use the metro, than to drive. In addition, because of the Alive-after-5 free parking, this means that is becomes even more of an incentive to use the car, rather than public transport.

**Background:**

**CASE STUDY 1: Bus lanes: the Liverpool experience**

On 23 October 2013, Liverpool City Council suspended all bus lanes in the city to evaluate the impact on congestion. Originally a 9 month study, it was then extended until 24 November 2014 to allow for a thorough analysis of the findings. The findings were as follows:

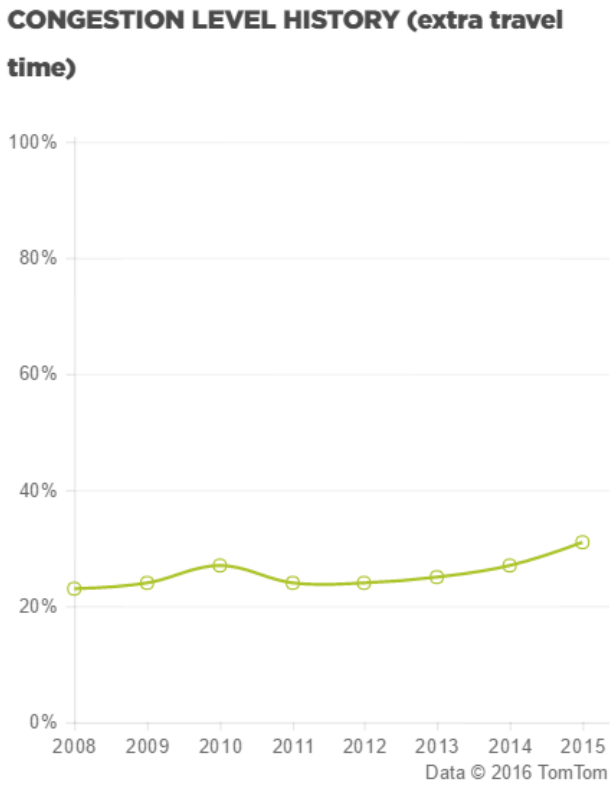
- **26 bus lanes were evaluated.**
- **22 were found to have more disbenefits than benefits for the travelling public (ie: created more congestion/slower overall journey times for the majority).**
- **4 bus lanes were found to have more benefits than disbenefits for the travelling public**

As a consequence, 22 bus lanes were permanently scrapped and 4 were kept.

**The congestion challenge facing the Tyne and Wear area:**

An independent international study by Tom-Tom, the leading sat-nav manufacturer, looked at peak transport road speeds for **174 major cities** (with populations over 800k) around the world. Mexico City, Rio, and L.A. were, perhaps not surprisingly, all in the top ten for worst congestion in the world. However, perhaps surprisingly, **Tyne and Wear ranked 43rd worst in the world.** The economic impact of this is, of course, significant. Tom Tom also looked at whether or not Newcastle and the surrounding conurbations had been getting to grips with the problem, and whether things had been getting better or worse. Specifically, they measured the increase in overall travel times compared to Free Flow (ie; uncongested) situations for every year since 2008. By 2015, Tyne and Wear was found to have a 31% average variance in travel time between free flow and congested situations. This was a 4% increase on the variance since 2014. For the typical car journey over a 24hr period (eg: to and from work), this equates to an extra 34 minutes every day per driver, or 129 hours of lost productivity per person per year. For many small businesses including plumbers, electricians, etc. this is a significant loss of revenue.

Tyne and Wear is getting worse at addressing it's congestion problems. In 2008, there was a 23% variance in travel time from rush hour to free-flow. By 2015, this had grown to 31%:




There is a need to publish evaluations of all intersection redesigns in the last 5 years, particularly in terms of

the before/after impact on traffic flows.

There is also a need to ensure that this research is independently peer-reviewed for data and statistical rigour.

There is also a city-wide need to look at the impact of lane restrictions (eg: bus, cycle and no-car lanes, as well as one-way systems, pedestrianisation, extended pavements, and other infrastructure redesigns) over the last 5 years, specifically in terms of congestion.

**Traffic light sequence timings: main arterial routes and side-roads**

Effective traffic light systems balance the traffic through-put of main arterial routes with the needs of those joining the traffic flow from side-roads. Typically, light sequencing should use standard Benthamite utilitarianism as the principle (ie: that a small inconvenience of an extra time delay for one road user is “a price worth paying” to allow a large number of road users to travel through the intersection in the other direction.) Thus, for example, a main arterial route may have a green sequence of 1 minute, with a joining side road having only 30 seconds for green.

The decision on how long the overall sequence should be should of course be based on relative traffic volumes, and modern systems allow this to vary according to the time of day, and may even be triggered by over-riding events (eg: traffic sensors can measure the length of stationary vehicles in each direction in real time and adjust the red-green sequence accordingly).

A major complicating factor to this basic principle is the cumulative effect of (1) having a number of traffic lights in close proximity to each other on a major arterial route compounded with (2) these lights being out of synchronisation with each other. The resultant “stop-start” journeys actually create congestion, because each time a vehicle breaks in anticipation of an approaching red light, this creates a “shunting” effect for the vehicles behind.

Poorly managed arterial routes (and a failure to prioritise their free-flow) have a major negative effect not just for the road users, but for surrounding local communities, as drivers seek out alternative routes, for example residential roads. Transport engineers sometimes respond to justifiable resident concerns by installing no-entry signs, access only, one-way systems and traffic calming measures that, whilst preventing rat-runs, fail to deal with the over-riding problem which is to increase the through-put on the original main arterial routes. It also creates further problems for residents who can not filter on to the main arterial routes, due to traffic volumes.

Main arterial routes operate much in the same way that water-pipes operate, in that if you do not maximise the pipe width, and have a number of taps along the pipe, you very quickly get a significant back-up of water. As the Liverpool experience found, by reducing the flow of traffic by up to 50%, many bus lanes were effectively creating significant congestion.

An additional safety concern is that, ironically, by adding a larger number of traffic lights in close succession, frustrated drivers have been shown to accelerate more quickly as soon as a green light appears, and drive at higher speeds when road space is clear.

MIT have shown that “slower is faster” junctions are more successful at achieving maximum vehicle through-put, whereby instead of relying on traffic lights, raised crossings and four-way stop signs can actually force drivers to drive (a) more carefully and slower, and (b) navigate through the junction more efficiently, rather than artificially relying on traffic lights. Shared space or “naked” junctions have also been shown in research to both reduce congestion and improve safety.

In 2006, Transport for London did an evaluation of a number of shared-space schemes currently operating around Europe and the rest of the world[2]. Whilst a number of the findings were inconclusive (due to the variances in individual design structures of intersections, variations in traffic volumes, traffic speeds, etc.), two specific examples stand out:

**CASE STUDY 2-- Netherlands: Drachten- Kaden**

TfL noted that a "simplified space scheme was introduced at a central crossroad junction in Drachten. Here the traffic signals were removed and replaced with an open square (with a textured surface different from the approach roads) with no traffic being given the right of way. Although the centre of the space had a very large 'roundabout' indicated in a different texture and colour this was at the level of the street and so presented no physical obstruction to vehicles. Pedestrians were free, within limits, to cross where and when they wished. Although this was a relatively busy junction, at least compared to Oosterwolde, with vehicle flows of around 17,000 per day and pedestrian and cycle flows of around 2,000 per day – the scheme appeared (at least in the short term) to reduce collisions. In the seven years before the scheme was introduced (in 1999) 30 collisions had been reported including 4 involving injury. In the two years following the scheme only 4 collisions (all damage only) were recorded."

**Overall finding: collisions per year at this site reduced from 6/yr to 4/yr**

**CASE STUDY 3: Netherlands-- Opeinde**

TfL found that "This scheme involved a larger area than many typical junction schemes. The entry points of the town (or at least that part of the town involving the scheme) were clearly marked with a large 'gateway' or tubular steel arch. Inside the gateway the road layout is different from that typically encountered. There were no 'normal' road markings and kerbs and roads are surfaced differently to denote a change from a world where traffic had priority to a public space where appropriate social behaviour is expected. Road widths were reduced from 9 metres to 6 metres and kerbs removed – and although pedestrian, cyclist and vehicle space was indicated it was not physically segregated in the typical way. The scheme in Opeinde was introduced during 1998, and collision data was currently available from 1993 until 2001 so that it is possible to compare a 5 year before period (ignoring 1998 data) with a 3 year after period. In the before period there was 1 fatal collision... 7 injury and 24 damage only collisions. Following the scheme collision numbers reduced to only one injury collision in 3 years and 5 damage only in the same period. … In fact in 1997, there were 8 damage only collisions recorded while in 1999 there were only 2."

**Overall finding: collisions per year at this site reduced from 8/yr to 3/yr**

**CASE STUDY 4: Portishead (North Somerset Council):**

Source: http://thecityfix.com/blog/naked-streets-without-traffic-lights-improve-flow-and-safety/ and http://www.bristolpost.co.uk/lights-portishead-traffic-junction/story-11281038-detail/story.html

In 2009, Portishead, "a city that has grown quickly in the last decade" removed a set of traffic lights at a junction, as a way of solving "long-standing congestion at the junction," which was "so debilitating and disruptive it sparked street protests and political campaigns from frustrated residents". the intersections became permanent after travel times for vehicles fell with no loss of pedestrian safety despite increases in the number of people using the road (more than 2,000 vehicles and 300 pedestrians per hour.) The *Bristol Post* explained "Signs have been put up to warn drivers about the experimental system and telling them to give pedestrians priority. In addition, a 20mph speed limit is in force. Drivers will now be expected to use a combination of common sense and courtesy to negotiate the junction of the town's High Street, Wyndham Way and The Cabstand".

As well as alleviating congestion, there is an additional safety benefit. Drivers were habitually racing through the junction before the lights turned red, and were driving, lulled into a false sense of security by the confidence that they have right of way – making them less aware of potential hazards. Throughout the pilot, roads were monitored using cameras to see the impact of no traffic signals on congestion. Crucially, a 20 mile-per-hour speed limit was instituted over that same period. In the video and in comments on articles about the initiative, residents said there have been big improvements—drivers pay more attention to the road and nearby pedestrians as opposed to traffic lights. Plus, there are savings, as each traffic lights usually costs 30,000 to 50,000 pounds to maintain.

**CASE STUDY 5: Southend council:**

Another innovative approach has to introduce 20mph speed averaging cameras (more typically seen in motorway roadworks settings) along a busy water-front stretch of road running along the beach at Southend. The challenge here was that the road was used by a large number of vehicles commuting and other local traffic, but also a large number of children and families who needed to cross the road to attend a large fun-fair. By ensuring that vehicles genuinely were travelling at 20mph, and at the same time reducing the number of pedestrian crossings, vehicles were travelling slow enough to allow pedestrians to safely cross in gaps in the traffic whilst at the same time maintaining the free-flow of traffic unhindered by a number of pelican crossings. Thus, congestion was reduced and pedestrian safety was improved. (NB: police also supported the introduction of 20mph speed averaging cameras because they said the scheme was “unenforceable” without them).

**CASE STUDY 6: Exhibition Road, Kensington, London:**

Up until 2012, Exhibition Road in London was at the heart of the museum district, with millions of pedestrians visiting every year to attend the museums, galleries and concert halls. Pedestrians competed for space with road users, and the road had a traditional design of road signs, pedestrian islands, traffic lights and crossings. Significant traffic, cycle and bus volumes also competed with significant pedestrian volumes. Between 2011-2012 all of these were removed, and a 20mph speed limit was introduced. Councillor Daniel Moylan, deputy chairman of Transport for London (TfL), subsequently noted: 'The re-imagining of the space has transformed Exhibition Road, improving the quality of life for people living and working in, and for those visiting, the area. In addition, the uplift in local retail has helped nearby business and dramatically improved the pedestrian experience.' He continued:'The psychology of this scheme is fascinating. Experience seems to show that when you dedicate space to traffic and control it with signs and green traffic lights, motorists develop a claim on it. It becomes 'my space.' Drivers become annoyed if people move into it. They get angry if a mother pushing a buggy moves across the crossing just as the lights are about to change. This new scheme is more like the behaviour in a supermarket car park. Drivers know there are people around pushing shopping trolleys and so drive more cautiously. They are looking out. They don't feel that pedestrians are invading their space. They don't therefore get annoyed.'


**Too many traffic lights make congestion worse:**

In 2007, London's transport commissioner admitted that councils in the capital had made a significant strategic mistake by adding a number of new traffic lights where they were not needed. As the Evening Standard observed at the time;

> “The soaring number of new traffic lights is adding to congestion in London, the city's top transport official has admitted. Transport Commissioner Peter Hendy says councils are using money from companies responsible for housing or shopping developments [section 106 agreements] to put up lights where they are not needed. He said: "We have a problem with traffic signals. We would quite like to remove some and if we can it would make a difference. If they do not add to road safety, why have them?" New lights are frequently placed at junctions leading to roads feeding new developments, but they cause queues on existing streets, creating knock-on congestion. They are also installed at new pedestrian crossings. Mr Hendy said most of the unwanted traffic lights were at "middle-ranking" developments and roads might be "better left as they are". He was supported by the RAC Foundation. Executive director Edmund King said: "With the congestion charge motorists are paying more than ever, but they are being held up at more red lights as well as getting less road space with wider pavements and more bus lanes, traffic-calming schemes and road humps. It is a bad deal. "Too many lights could be one reason that initial gains from the congestion charge have gone. On major highways, such as Euston Road and Marylebone Road, you used to get a 'green flow' so that if you did 30mph you came across green at each successive set of lights and kept moving. "Now you hit red after red. It's bad for congestion and for pollution." [Evening Standard]

[1] However, it should also be noted that, as Liverpool City Council experienced, powerful lobby groups such as the private bus operating companies, are reluctant to accept that bus lanes can sometimes be part of the problem. In fact, delays to bus journeys are often caused by customers boarding without correct change, and without bus conductors, this creates a stationary bus for a longer period, which blocks one of the lanes. Bus companies do not wish to employ bus conductors, so bus drivers and other vehicles are forced to navigate around stationary buses. Mandatory prepurchased ticketing and e-ticketing would help resolve this problem.

[2] The Transport for London report states that "Typically safety practitioners have been concerned with reducing driver uncertainty and choice by providing them with timely guidance (via traffic signs and road markings) and by attempting to segregate different road users by the use of signalled pedestrian crossings, cycle lanes and barriers...advertisements, can lead to a very visually cluttered road environment that relies on road users being able to filter out what is relevant to them and to ignore the rest. In recent years there has been an increasing interest in traffic management schemes aimed at simplifying the road environment. Some of these schemes simply remove unnecessary signs/street furniture to reduce complexity and driver confusion. Others remove signs/markings to increase driver uncertainty. Some 'shared space' schemes have involved the removal of footways and of signs/signals giving priority to drivers (again increasing driver uncertainty). Many schemes involve changes to geometric layout and/or surface texture. Advocates have also argued that 'simplified streetscape schemes' can improve public amenity and access at the same time as improving safety. It is suggested that removing signage, increasing uncertainty and giving road users the responsibility for their own actions can reduce collisions by increasing perceived risk (Adams, 1985). This design philosophy differs dramatically from the typical 'segregate and control' approach that is normally included in standard road safety design guidelines and in general use. 'Shared space' schemes have been introduced in a number of countries, most extensively in the Netherlands and to a lesser extent in Denmark and Germany. Less extensive de-cluttering schemes have also been undertaken in different parts of the UK, such as the removal of pedestrian barriers in the Kensington High Street scheme in London which is currently receiving considerable attention as an example of this type of scheme."