APPG ENQUIRY INTO CYCLING & WALKING INVESTMENT STRATEGY 2021

SUBMISSION BY THE TRANSPORT AND HEALTH SCIENCE GROUP

- **About Us**

THSG is a scientific society of public health and transport professionals. We are one of the two principal public health organisations in the transport field internationally, and we are the main such organisation in the UK, where we also act as agent for the other (the North America-based International Professional Association for Transport and Health) and where we help administer the Transport Special Interest Group of the Faculty of Public Health of the Royal Colleges of Physicians of the United Kingdom. We sponsor and help produce the award-winning Journal of Transport & Health, a peer-reviewed scientific journal and, together with IPATH, we organise the International Conference on Transport and Health.

- **This Evidence**

We have endeavoured to answer your various questions but we have laid the evidence out according to four main themes – climate change and decarbonisation, creating a vision, removing obstacles to implementation, and winning public support. However, our summary will be laid out in response to your various questions.

- **Summary of Responses to Specific Questions**

Targets.
We would like the UK first to catch up with and then to keep pace with areas like the Netherlands or Copenhagen.

Overall level of funding.
Successful cities spend £25-£30 per capita per annum equating for England to about £7.5bn over a Parliament (plus the Barnet consequentials for the devolved nations). This is in addition to money needed for backlog maintenance.
It is important that funding is secure over a multi-year settlement and not changed from year to year.
The Government is still committed to roadbuilding but it is now clear that new roads only temporarily reduce congestion; they attract additional traffic instead.

Money committed to roadbuilding would be better spent on active travel and public transport.

Priorities for Funding

- The creation of complete cycling networks. The utility of a network is approximately proportional to the square of its size. Accordingly, one 100-mile network is sixteen times more useful than four 25-mile networks. Funding should be focused on creating and linking networks not on isolated schemes.
- Blocking rat runs
- Green attractive pedestrian routes, in which routes through parks or other greenspace would be linked by green streets, using street trees, gardens extending into the street, climbing plants on buildings and patches of green space.
- Cycle parking and cycle hubs
- Attractive pedestrian crossings where roads sever communities or pedestrian routes
- Investment in the train/cycle combination, including the provision of cycle vans on all passenger trains (which Cal Train in Northern California has shown to be highly successful)

Allocation

We suggest an allocation to add cycle vans to all passenger trains, an allocation to the National Cycle Network, some other national allocations and an allocation of £20 per capita per annum to each local authority to be released only to a plan agreed with Active Travel England. Active Travel England should have default powers to spend the money if no plan is agreed.

Capacity.

Local authorities vary considerably in the extent to which thoughts have changed from movement of vehicles to movement of people and then to placemaking. There is insufficient use of innovative street designs, which in part results from professional traditions but also from the nature of official street design guidance. Examples from overseas are given in the body of the evidence, including large stone balls as obstacles for traffic calming, encouraging drivers to give way to pedestrians by narrowing the road and painting stripes, public art to make underpasses more inviting and public art actually on the street surface to encourage community use and separate cycle lanes from vehicular lanes, car

parking nose to kerb as an obstacle in traffic calming and living streets designed by the residents who are encouraged to make provision for parking, for play and for community use, with the carriageway being merely the gaps between the obstacles. These methods are more effective and much cheaper than the methods commonly used in the UK.

Active Travel England

Active Travel England needs public health representation on its Board and public health specialists who have a clear role in its decision-making processes.

Active Travel England needs to be

- a regulator of transport strategies
- a source of expertise and guidance, for which purpose it will need appropriate experts
- an advocate able to speak for active travel in public debate, for which purpose it will need a policy staff, probably drawn from a third sector background
- If it is to have default powers, as we suggested above, it will also need to have project management capacity.

Public and political acceptability.

Opinion polls show that the majority support schemes such as lower speeds and low traffic neighbourhoods. Unfortunately, the minority who do not are organised, vociferous, fact-averse and at times hate-filled. They need to be opposed.

Behaviour change.

Most people do not perceive any choice because, outside London, the alternatives to the car simply are not there. We need comprehensive cycle networks, walking networks and public transport networks. They need to be well-publicised.

Virtual reality can be used to promote the attractive lifestyles that can be created by living streets.

The cost of motoring should be shifted from the ownership of vehicles to their use, so as to encourage more selective use.

Wider policy support.

The following support policies are needed

- Highways England needs to stop infilling old railway bridges and tunnels as this obstructs the expansion of cycle networks, railway reopening and greenways
- Great British Railways needs to be very much more selective in its programme of removing pedestrian level crossings.
- The 2026 cut off date for claiming historic rights of way should not be applied except where the local authority has carried out a comprehensive review of its definitive map.
- Planning policies need to shift developers away from their current failure to consider green walls, green roofs, and living streets.
- Women in particular, but also some men, are scared of waiting at quiet bus stops or on quiet railway platforms or of passing through quiet passages. Attention needs to be paid to this. Lighting, and monitored CCTV can offer considerable reassurance.

Walking as much as cycling.

Walking requires the creation of a comprehensive aesthetically-attractive walking network and safe crossings of main roads. This requires a different thought process from just building a facility. The financial process needs to be able to fund widespread small improvements to a network as if they collectively amounted to a project.

- *Levelling up.*

  Our proposals for indicative per capita funding of local areas would meet the requirement for levelling up. However, this will only work if the overall funding is adequate. Whilst overall funding has been inadequate it has been better to allow some authorities to demonstrate what can be done. That needs to move on – but by levelling up not by spreading more thinly.

- *Justice and inclusion*.

  One of the obstacles to walking and cycling in deprived neighbourhoods is that those neighbourhoods tend to be less green and less attractive to walk in. Sometimes they are also less safe. There are ways to measure walkability and a goal of a transport strategy focused on placemaking would be to improve the walkability of the less walkable neighbourhoods.

- *Decarbonising transport*.
  There is currently no public health representation on the Zero Carbon Transport Board. We are disappointed at the failure to address the promotion of the train/cycle combination or to move away from roadbuilding.

- **Climate change and decarbonisation**

  Climate change is an emergency. We need to act immediately and decisively. The world needs to reduce unnecessary business travel and commuting. Organisations around the world need to consider how they can make use of the benefits of cyberconnectivity. The world needs to replace most aviation with a zero-carbon alternative. Airport development should be halted and the creation of an alternative based on high speed rail (or, possibly, the hyperloop) should be urgently planned. The world needs to replace the private car with active travel, multi-modal transit and shared-ride systems and to replace long-distance road freight with freight by rail and by water. The shipping industry also needs to address its carbon footprint and the effect of oil spills. We need to regulate autonomous vehicles so that they are used for shared use (where they could contribute to a public transport system which would reduce traffic by 90%) rather than individual use (where they could double traffic).
  A healthy transport policy will minimise transport use by having more local facilities and making more use of cyberspace. It will use walking and cycling for short journeys, and the rail/cycle combination for longer journeys, with the bulk of freight transport being by rail, electric delivery vehicles and a new generation of modern electrically-assisted sailing ships. Ultimately, we see only a limited role for the private car, e.g. in sparsely populated areas. We also see only a limited role for aviation – for flights across oceans and polar ice caps and for islands too far from the mainland to rely on ferries, and for local travel in very remote areas such as Alaska or Antarctica. These approaches to transport policy will improve air quality, reduce climate change, for which transport is the largest contributor in the UK, and promote physical activity with consequential reductions in the prevalence of obesity, diabetes, heart disease, stroke, depression, some cancers, and osteoporosis
  The following is an extract from the submission we made to the Zero Carbon Transport Board on its creation. We also suggested that the Board should include public health representation. We are disappointed that this suggestion was not accepted. We are disappointed that the Board has not really projected a clear vision.

We saw the following comments very much as part of a total package. For your information we attach (Appendix 2) our full submission, which is too long to include in full in this evidence except as an appendix. We welcome the fact that you recognise the need for a comprehensive linkage of the various issues and would urge you to press for that linkage to be more explicit.

[start of extract]

Cycling and Walking

The mainstay of decarbonisation must be increasing walking, cycling & other motor-free travel modes. Not only do these offer the greatest decarbonisation but they have the co-benefit of improving health through increased physical activity with lower obesity, diabetes, heart disease, stroke, depression, some cancers, osteoporosis.

People will walk further if the walk is pleasant, so there needs to be attention to the aesthetic quality of walking routes. Planting fruit trees along walking routes improves the attractiveness of the walk, absorbs carbon and provides fruit for the public to pick to help promote healthier nutrition.

People will cycle more if they perceive it as safe. Segregated cycle routes are important to this. Experienced cyclists may not perceive this as important but the people we want to attract onto cycles certainly do. Enforcement of laws protecting vulnerable road users is also important.

It is important that major cycle routes are seen as major roads for the purposes of priority at junctions.

The experiences of cities like Copenhagen has been that considerable modal shift towards cycling and walking can be achieved with investment to make walking and cycling routes safe and attractive across a wide network. Spending of £20 - £30 per annum per capita seems to be necessary to achieve this. In the UK this would equate to £1.3bn to £2bn a year or about £6bn to £10bn over a Parliament.

E-Bikes

E bikes are important in hilly areas and they could be the answer for many people. They can provide almost as much physical activity as a standard bicycle. However, they must conform to the ECF definition (max speed, max power output and crucially, motor works ONLY when there's pedalling). In Israel, where there is no requirement for pedalling they are used by males too young or too poor to own a car,

with no regard for pedestrians, and used mostly as electric mopeds, feet up on the handlebars! We should make this distinction clear. An e-bike in which the motor only works with pedalling (or, for people with leg impairments, hand cranking) should be treated as a bicycle. An e-bike which can be used without pedalling is just an electric moped.

The Cycle/Public Transport Combination

One of the flaws in the Board's current discussions is that they do not seem to be considering the cycle/public transport combination as a distinct transport mode, even though it is a mode which can compete in flexibility and speed with the private car. We believe that spending on the linking of cycling to public transport, including cycle parking and cycle hire at stations, and also carriage of cycles on trains and some buses, should be considered not simply as a specific niche of rail passenger, or as a part of local cycle schemes. There should be a national planned development to ensure the cycle/public transport combination is promoted as an alternative to the car. The aim should be to move over a reasonable (but not excessively prolonged) defined period of time to a situation where

1. There would be a national network of hubs at which cycles can be hired, parked and loaded onto cycle-carrying public transport, within 5 miles of any part of an urban area, 10 miles of any part of a rural area and 15 miles of any part of a remote area. This should include the establishment of stations whose prime purpose is to serve as a cycle railhead, including stations at junctions between the national cycle network and the rail system. It should also include through bookings for passenger and cycle by routes which include a linking cycle route.
2. There would be cycle vans on all trains. Caltrain in California has shown that this can be successful. Its cycle vans are full so it has had to put a second van on some trains and also support regular users in choosing to have a bike at each end of their journey instead of taking them on the train. It measures the success of the scheme not as a proportionate increase in cyclists using the train but as a proportionate increase in total usage of the train. The passengers attracted by the cycle vans are a significant proportion. This approach dramatically contrasts with the performance of British train operating

companies who think they are doing well if they accommodate two or three cycles on a train.

Living Streets

During the pandemic many people will have experienced and enjoyed the benefits of less traffic (and noise and air pollution) in their local streets, and the importance of community. This is the time to increase dramatically the number of “living streets”.

Living streets (often known by their Dutch name of woonerf) are streets which are so arranged that, although traffic is permitted, it is controlled and directed by physical obstacles (mainly street furniture and obstructively-arranged parking spaces) so that it is a guest in a street mainly used for other purposes, such as social interaction, play, walking cycling and gardening.

There are many advantages to living streets including the promotion of community activities. They lead to an increased number of friendships between neighbours and this has been shown epidemiologically to be a major contributor to reduced death rates.

We have suggested that except for motorways, A roads, B roads and other roads designated as throughways by local councils, most motor vehicular rights should be removed except for access. There should be exceptions for cycles (even if electrically assisted), emergency vehicles, invalid carriages, vehicles controlled by pedestrians, and buses. The term “except for access” would cover not only private cars and motor cycles but also delivery vehicles, street maintenance vehicles and the like.

The significance of this for zero carbon is that the removal of rat running will create lines of direct cycle friendly streets which can contribute significantly to the development of cycle networks.

[end of extract]

- **Creating a Vision**

  We need a vision of a society where

  - People travel less because of more working from home and more business conducted by Zoom (the recent International Conference on Transport & Health was highly successful even though connected entirely on Zoom)
  - Short journeys are made on foot or by cycle
  - There is a comprehensive public transport system, using demand responsive transport whenever scheduled services are unviable
  - The cycle/public transport combination is promoted for longer journeys.

- Networks for cycling, walking, buses and trains are comprehensive. According to Metcalfe's Law (which approximates to reality, although it is not precise due to certain discontinuities) the utility of a network is proportional to the square of its size. Accordingly, one 100-mile network is sixteen times more useful than four 25-mile networks. Funding should be focused on creating and linking networks not on isolated schemes.
- Transport planning moves from thinking about the movement of vehicles to thinking about the movement of people and goods and then makes a further step to thinking about placemaking.

This vision must not only exist as a goal but it must be integral to all areas of policy. This is not currently the case. For example

- The Government is still committed to roadbuilding schemes. Most road schemes would not meet cost/benefit criteria without adding in a substantial element of benefit for reduction of congestion but it is now clear that new roads only reduce congestion temporarily; they attract additional traffic instead, by uncovering unmet demands for relocation. Much of the money committed to roadbuilding would be better spent on active travel and public transport.
- The planning system needs to support this process. An example of the kind of outdated professionalism that needs to change is a local authority which turned down a proposal for a car-free development because it did not meet the normal requirements for car parking provision. Planning policies need to shift developers away from their current failure to consider green walls, green roofs, and living streets. If new permitted development rights are created under the new planning system, they should be conditional on green roofs (or roof gardens or solar panels), green walls and a living street design for any new street. Planning authorities should be prohibited from turning down proposals for green-enveloped buildings on the grounds of "not fitting with adjacent properties" except in unusual circumstances such as an attractive architecturally-distinctive conservation area. Schemes which create new streets without using a living street design should automatically be called in for this to be justified. Green roofs and green walls should figure on the planning form and planning authorities should never be at risk of costs for requiring them.

- Highways England need to discontinue its current approach to infilling old railway bridges and tunnels as this obstructs the expansion of cycle networks, railway reopening and greenways
- Great British Railways needs to be very much more selective in its programme of removing pedestrian level crossings. Crossings should be closed only where a genuinely short diversion, not involving use of a busy road, is possible. For other crossings GBR should be more willing to build a bridge, to use a signal-controlled crossing or to accept small risks where they are no greater than those of crossing a lightly-used road.
- The 2026 cut-off date for claiming historic rights of way should not be applied except where the local authority has carried out a comprehensive review of its definitive map.
- Women in particular, but also some men, are scared of waiting at quiet bus stops or on quiet railway platforms or of passing through quiet passages. Attention needs to be paid to this. Lighting, and monitored CCTV can offer considerable reassurance.

- **Removing Obstacles to Implementation**

  Resources

  We have already referred to the need for funding of £20 to £30 per capita per annum. It is important that funding is secure over a multi-year settlement and not changed from year to year. The priorities for funding should be
  - The creation of complete cycling networks
  - Blocking rat runs with barriers which selectively allow the passage of pedestrians, cyclists, buses, emergency vehicles, residents of the immediate local area and some other special types of traffic but do not allow the passage of ordinary traffic from outside the immediate neighbourhood. This would open up scope for community use of the street and would often create a long length of quiet street for cycling.
  - Green attractive pedestrian routes, in which routes through parks or other greenspace would be linked by green streets, using street trees, gardens extending into the street, climbing plants on buildings and patches of green space. Research has shown that people will walk further along such routes.
  - Cycle parking and cycle hubs

- Attractive pedestrian crossings where roads sever communities or pedestrian routes
- Investment in the train/cycle combination, including the provision of cycle vans on all passenger trains (which Cal Train in Northern California has shown to be highly successful)

In our submission to the Comprehensive Spending Review we made the following general points about spending

[start of extract]

Comments on public health expenditure: -

We support the joint representations made by a number of public health bodies in relation to public health grant.

We would add to those representations that it is important that every population should have available to advise it a sufficient number of fully qualified public health consultants to provide public health advice across the whole range of policy areas, including our own area of transport. Many local authorities, faced with cuts in public health spending have cut their consultant workforce below the level at which health in all policies could be practised effectively. As the alternative would have been deeper cuts in public health services which they were already compelled to cut to an irresponsible degree this was understandable, but it does undermine one of the major elements of the mechanisms by which society pursues health as a social goal.

Comments on local government expenditure generally

Health in all policies, including in relation to transport, has also been undermined by the general cuts in local government expenditure. Organisations in survival mode find it hard to focus on the innovative coordinated pursuit of social goals, especially where this requires the transformation of services that are under financial pressure, and particularly if that transformation would require a degree of temporary double running.

Comments on the Keynesian multiplier

The work of David Stuckler and his colleagues (Reeves A, Basu S, McKee M, Meissner C & Stuckler D “Does investment in the health sector promote or inhibit economic growth?” Globalisation Health, 2013, **9(43)** has shown that for health, care, environmental and community spending, education and welfare the Keynesian multiplier is higher than for other kinds of spending and exceeds (sometimes considerably exceeds) the figure of 2.5 at which spending is self-funding (£1 of expenditure generating £2.50 of economic growth which generates £1 of taxation). The Government should therefore approach spending in these areas in a different way, focused on what can sensibly and usefully be spent and at what rate, rather than on a concept of competition for a fixed sum of money.

[end of extract]

We also repeated in our submission the explanation that we have sent to the Treasury on several occasions since 2013 about spending on road building to reduce congestion being completely wasteful as new roads unveil unmet demand for relocation and thereby create new traffic, a process which continues until congestion is as bad as ever and again becomes a limiting factor. This analysis can be found in full in Appendix 2 to this evidence as part of our submission to the Zero Carbon Transport Board.

We also set out in our submission various flaws in the current Treasury assessment processes which are repeated at the end of Appendix 2.

Capacity

Local authorities vary considerably in the extent to which their transport staff have taken on board the requirements of the new transport objectives. Transport planning needs to move from thinking about movement of vehicles to thinking about movement of people and then it needs to take a further step and think about the kinds of placemaking that will promote active travel and minimise motorised traffic. Highways engineers who routinely think about cars first and other road users second are another example. On the other hand, some local authorities have adopted excellent strategies focused on placemaking and real adherence to prioritising active travel.

There is a general reluctance to make use of innovative street designs, which in part results from professional traditions but also from the nature of official street design guidance. This is unfortunate as they can be cheaper than traditional methods. In St. Louis they use large stone balls as obstacles for traffic calming. In New Zealand they encourage innovative street design and have tested various methods of encouraging drivers to give way to pedestrians, finding that narrowing the road and painting stripes works as well as a zebra crossing. In Calgary they have used public art to make underpasses more inviting and have used public art actually on the street surface to encourage community use and separate cycle lanes from vehicular lanes. In the Netherlands car parking nose to kerb is used as an obstacle in traffic calming whilst living streets are designed by the residents, who are encouraged to make provision for parking, for play and for community use, with the carriageway being merely the gaps between the obstacles.

These methods are more effective and much cheaper than the methods commonly used in the UK.

Walking as much as cycling.

Walking is not “difficult to cater to”. It requires the creation of a comprehensive aesthetically-attractive walking network and safe crossings of main roads. This requires a different thought process from just building a facility. It also requires funding of a lot of small actions such as planting some trees, changing the programme of some traffic lights, establishing a path across a field, putting in a pedestrian crossing, which do not amount to a “project” for funding. The financial process needs to be able to fund widespread small improvements to a network as if they collectively amounted to a project.

One of the obstacles to walking and cycling in deprived neighbourhoods is that those neighbourhoods tend to be less green and less attractive to walk in. Sometimes they are also less safe. There are ways to measure walkability and a goal of a transport strategy focused on placemaking would be to improve the walkability of the less walkable neighbourhoods.

Allocating Resources

We have already indicated the level of investment needed and the priorities for it. The initial need is predominantly for capital to create these networks and for funding to publicise the facilities that are created, but as time passes the balance will shift towards a need for revenue to maintain them.

There should be an allocation to the National Cycle Network and an allocation to improve canal towpaths. Highways England should receive an allocation to improve pedestrian and cycle crossings of trunk roads, and a similar allocation should be made to Great British Railways to reduce the community severance effect of railways. There should be an allocation to Great British Railways to provide cycle vans on all passenger trains. The rest of the money should go to Active Travel England, some of it to support national promotional campaigns but most of it to support local programme funding. We suggest that an allocation of £20 per capita per annum be indicatively allocated to each local authority with provisions to bid for an additional sum of up to £10. However, the allocation should only be released to be spent on a plan agreed with Active Travel England. Active Travel England should have default powers to spend the money itself where the local authority fails to produce an acceptable plan and for that purpose should be able to exercise any of

the powers of a highways authority. Consultation with stakeholders should be a requirement for funding of local programmes and there would be capacity within the local programmes for third sector involvement.

Our proposals for indicative per capita funding of local areas would meet the requirement for levelling up. However, this will only work if the overall funding is adequate. Whilst overall funding has been inadequate it has been better to allow some authorities to demonstrate what can be done. That needs to move on – but by levelling up not by spreading more thinly.

Social prescribing has an important role in promoting active travel.

There are many co-benefits to active travel and these need to be recognised in order to tap appropriate funding.

Active Travel England

It is important there is a public health input into Active Travel England, with public health representation on its Board and public health specialists who have a clear role in its decision-making processes.

Active Travel England needs to be

- a regulator of transport strategies (for example, by controlling the release of funding in the way we have suggested above), for which purpose it will need a group of staff, perhaps drawn from the civil service, able to carry out this function
- a source of expertise and guidance, for which purpose it will need appropriate experts
- an advocate able to speak for active travel in public debate, for which purpose it will need a policy staff, probably drawn from a third sector background
- If it is to have default powers, as we suggested above, it will also need to have the project management capacity to exercise these.

- **Winning Public Support**.

Opinion polls show that the majority support schemes such as lower speeds and low traffic neighbourhoods. Unfortunately, the minority who do not are organised, vociferous, fact-averse and at times hate-filled. They need to be opposed.

However, one of the reasons they appear credible is because there has not been enough positive promotion of the benefits of an alternative transport strategy. All too

often it has seemed as if its is about not flying or not using a car rather than about creating choices.

Most people do not choose to use a car. They do not perceive a choice because, outside London, the alternatives simply are not there. We need comprehensive cycle networks, walking networks and public transport networks. They need to be well-publicised. It needs to be clear that when we say we want people to travel less, this means decentralising facilities and encouraging flexible working, not just people cutting down the journeys they make in an unchanged system. When we say we want people to use the car less, we do not want them to reorganise their lives about irregular buses – we want to provide the good bus and train systems which they will find attractive to use.

People who have family contacts in India do not want to be told not to visit. At the moment, almost all of them choose to fly. None of them choose to board a high-speed sleeper train, have dinner, sleep for eight hours, have breakfast, alight for a day's break in a city 1500 to 2500 miles from their starting point, then in the evening get back on the train to continue to North India (with a further break and a further night's journey to reach South India). The reason they reject this choice is not that they find it unattractive. They reject it because it isn't there. Many people would find it hugely more attractive than a long flight. Ultimately, we believe that aviation is only necessary for flights across oceans or polar ice caps, flights to islands too far from the mainland for a ferry to be the only option, and local travel in very remote areas like Alaska or Antarctica.

Experience of living streets in this country is limited so many people have difficulty envisaging them. In some countries virtual reality has been used as a way of overcoming this problem. It allows people to see how different designs of their street would look, and how they would feel to walk around.

The Cost of Motoring

Owning a car is a significant burden on family budgets but once a family owns a car they find it sensible to get the maximum return from the investment.

We believe that the cost of motoring should be shifted from the ownership of vehicles to their use, so as to encourage more selective use. Use of motor vehicles can be taxed by a combination of increased fuel duty and introduction of road charges. These need not be an anti-motorist measure if they were linked to lower levels of

other motoring taxes and costs. Fees charged to motorists (such as MOT fees) and taxes on motoring items (such as VAT on car maintenance or car accessories) could be reduced or abolished as part of the process of offsetting the increased fuel duty and road charges. Insurance is another major cost which is not directly related to mileage and the Treasury could provide a third party, passenger liability, fire and theft insurance policy automatically to every car (with a higher excess for drivers with a poor record), and fund that through road charges and increased fuel duty. This would shift a major fixed cost onto mileage-related payments and abolish the problem of uninsured drivers, as all drivers would be automatically insured and would pay for their basic insurance through road charges and fuel duty. It could be administered through existing insurance companies. Insurers could compete to offer top-up insurance (such as insurance of excesses, overseas cover, breakdown cover or provision of comprehensive cover). Claims on the Treasury from those who take out top up insurance would be processed through their insurance company. Claims on those who do not take out top up insurance would be allocated to insurance companies in rotation, in proportion to their share of the top-up market, with the Treasury paying them an administration fee for administering the claim.

Projecting an Attractive Overall Vision

In Appendix 1 to this evidence we reproduce section 1.2 from the introductory section of our e book Health on the Move 2. In that introduction we set out to make the case for how a healthy transport system would be compatible with a very attractive lifestyle. We must do that if people are to commit positively and powerfully to a better world instead of seeing the overall vision as an imposition.

Appendix 1 Promoting Attractive Lifestyles with Healthy Transport

The following reproduces section 1.2 (Living with a Healthy Transport System) from THSG's e book Health on the Move 2. We reproduce it as an example of how we should seek to promote more positively the attractive lifestyles of a healthy transport system.

[start of extract]

Jean checked her diary for the day. It wouldn't be necessary to go into HQ. But there were some meetings which would need her to use the video facility at her local

neighbourhood work station. She pondered whether to go to the work station for the whole day or whether to work at home in the large office that they had built in the garage when they gave up the cars. She'd rather like the company, she thought, and Angela was always there on a Tuesday so she'd be able to ask Angela for advice about storing her parents' motorised transport contraptions once they convert their garage into a downstairs bedroom. It had taken her so long to persuade them to do this but, of course, her parents' generation had grown up in the days of private transport and found it hard to abandon old attitudes. Angela always used the community transport bus door to door whenever she needed to go further than her self-propelled wheelchair could manage. Jean had only ever used this when she had heavy luggage but she wondered if it would answer all her parents' travel needs too now they had finally given up driving regularly. Coming back to the present she settled down to eat her breakfast. Bacon from the pig farm in the next village. Eggs from her own hen. Toast and marmalade, made from good Sheffield oranges grown in the multi-storey farms of the Don Valley. David had overslept. Not surprisingly after the late night he had had the previous evening. As she was finishing her breakfast he joined her, spent a few minutes bolting down some cereal (from the multi-storey farms at Ringway, built on the site of the old airport) and rushed out to get his bicycle. "It's pouring down" she said "Why don't you walk?" "Too late" he said as he pedalled off to the station. Jean followed him but she walked along the covered walkway to protect her from the rain. It was a nice street. Rose gardens and trees and children's play areas filled the gaps between the opposing houses. On a sunny day Jean would have wandered amongst them, chatting to neighbours and watching the children play in the street out of harm's way but today the weather called for being under cover. Half way to the work station there was the facility that Jean had pressed so hard for when the street was being designed – the open-air swimming pool. As she passed the swimming pool, the delivery van bringing the shopping up to the local shop for people to collect was picking its way along the carriageway. Unlike the straight direct cycleway, motor vehicles had to negotiate the gaps between the obstacles rather than having a protected carriageway. Jean watched the van, its guidance devices, speed regulators and obstacle detectors all fully engaged, as it inched gingerly along the edge of the pool. It reminded her of the incident last winter when the council had only had had enough grit to do the pavements, cycleways and busways and the roads had been closed. The delivery

van driver had foolishly ignored this and had ended up in the swimming pool and winner of You Tube's Idiot of the Week. As Jean arrived at the work station, checked her booking of the videoconference for the meeting that afternoon, switched on her computer, and started to write a lecture for medical students setting out the evidence for the powerful health benefits of social networks, David was arriving at the Metro station. He inserted his card and keyed adult single with cycle to Emmerdale into the journey planner. A recorded voice came over the intercom. "Next but one service from Platform 3. Change at Angerfield, which is the fourth station, for a bus to Emmerdale from stand E." Then a real human voice replaced it as the controller intervened. "The Emmerdale bus is demand-responsive and you are the only person booked on it today. If you'd prefer we could let you have a car from the Car Club for the normal bus fare and without road charges." They often made this offer when he was going to Emmerdale. Usually he took it but today he was feeling tired and he didn't think it would be safe so he declined, collected his tickets and made his way to the platform. The freight train to the shopping distributive warehouse at Angerfield was passing as he reached the platform, then the fast train to the city drew up into the platform, making the wayside stop that it made here once an hour instead of running through nonstop as it did the rest of the time. David knew this train stopped at Angerfield. They wanted him to wait for the tram because he would get no benefit from the train due to the connection and they liked to keep short distance passengers on the trams if they could. But he rather fancied the plusher seats of the train so he climbed aboard, stored his cycle in the cycle van and lounged back into a seat. The train flashed past the three intervening tram stops and overtook the freight train as it manoeuvred itself into the shopping sidings. Then the train drew up at Angerfield. He made his way to stand E and relaxed in an armchair watching the trolley buses come and go as he waited for his own bus. While he waited, he thought about their holiday. 15 days on a cruise train. They started with a day in Paris, then a slow daytime ride across the Alps with a break at Innsbruck. Full days spent, in Venice, Bled, Dubrovnik, Athens, Istanbul, Samarkand, St Petersburg, Narvik and Bergen, sometimes linked by high speed overnight travel, sometimes interspersed with slow, looking out of the window days. He thought Samarkand and Athens would be the highlights of the trip.

[end of extract]

Appendix 2 THSG Submission to the Zero Carbon Transport Board

As you specifically wish to place your enquiry in a context of decarbonisation we are submitting for your information our submission, dated 18th August 2020, to the Zero Carbon Transport Board. It is too long to include in the main evidence but we wished you to have it available for reference. Some of the sections most directly relevant to your enquiry have, however, been included in the main evidence. To retain the completeness of this appendix we have included them here as well but we have reduced these into a smaller font so that if you wish you may avoid reading them repetitively.

[start of extract]

As requested in your letter of 5th August 2020 and as promised in my reply of 9th August 2020, I am writing with some more focused comments for the Zero Carbon Transport Board from a public health standpoint.

A healthy transport policy will minimise transport use by having more local facilities and making more use of cyberspace. It will use walking and cycling for short journeys, and the rail/cycle combination for longer journeys, with the bulk of freight transport being by rail, electric delivery vehicles and a new generation of modern electrically-assisted sailing ships. Ultimately, we see only a limited role for the private car, e.g. in sparsely populated areas. We also see only a limited role for aviation – for flights across oceans and polar ice caps and for islands too far from the mainland to rely on ferries, and for local travel in very remote areas such as Alaska or Antarctica. These approaches to transport policy will improve air quality, reduce climate change, for which transport is the largest contributor in the UK, and promote physical activity with consequential reductions in the prevalence of obesity, diabetes, heart disease, stroke, depression, some cancers, and osteoporosis.

There are co-benefits to most decarbonisation transport policies (although not all)

- for health – many of the approaches we have described above as part of a healthy transport policy will also contribute to decarbonisation
- for the economy – many decarbonisation policies also form part of a Green New Deal
- for reducing inequalities –the adverse impacts of road traffic fall most heavily on deprived areas whilst the benefits accrue more to the more affluent. Those who have access to cars and can afford rail fares can travel much more freely and quickly than those confined to buses. In between these two groups is a group who struggle to afford a car and who find the cost of it erodes the resources they have for other areas of their life. There is a fourth group, more disadvantaged than all three of these groups, consisting of people who cannot even afford to use buses (or, at least, must severely ration their use).

[Ref Mindell JS, Cohen JM, Watkins S, Tyler N. Synergies between low carbon and healthy transport policies. *Proceedings of the Institution of Civil Engineers – Transport.* 2011;**164**:127-39. https://doi.org/10.1680/tran.2011.164.3.127]

Electric Vehicles

A major part of the thinking of the Board currently seems to be focused on electric vehicles. We support the use of electric vehicles rather than diesel and petrol engines but they are not the whole of the problem.

- the electricity still needs to be generated - the UK needs to increase 'green' electricity (e.g. requiring photovoltaic panels on all new roofs?) Not directly transport, but if generate household electricity, then not so much needed from the grid and can contribute to the grid, increasing the % of electricity used by EVs that is 'green')
- still produce particulate pollution from brakes, tyres
- they do not achieve the health benefits of active travel.

They play a part in the solution but they are not the solution.

Cycling and Walking

The mainstay of decarbonisation must be increasing walking, cycling & other motor-free travel modes. Not only do these offer the greatest decarbonisation but they have the co-benefit of improving health through increased physical activity with lower obesity, diabetes, heart disease, stroke, depression, some cancers, osteoporosis.

People will walk further if the walk is pleasant, so there needs to be attention to the aesthetic quality of walking routes. Planting fruit trees along walking routes improves the attractiveness of the walk, absorbs carbon and provides fruit for the public to pick to help promote healthier nutrition.

People will cycle more if they perceive it as safe. Segregated cycle routes are important to this. Experienced cyclists may not perceive this as important but the people we want to attract onto cycles certainly do.

Enforcement of laws protecting vulnerable road users is also important.

It is important that major cycle routes are seen as major roads for the purposes of priority at junctions.

The experiences of cities like Copenhagen has been that considerable modal shift towards cycling and walking can be achieved with investment to make walking and cycling routes safe and attractive across a wide network. Spending of £20 - £30 per annum per capita seems to be necessary to achieve this. In the UK this would equate to £1.3bn to £2bn a year or about £6bn to £10bn over a Parliament.

E-Bikes

E bikes are important in hilly areas and they could be the answer for many people. They can provide almost as much physical activity as a standard bicycle. However, they must conform to the ECF definition (max speed, max power output and crucially, motor works ONLY when there's pedalling). In Israel, where there is no requirement for pedalling they are used by males too young or too poor to own a car, with no regard for pedestrians, and used mostly as electric mopeds, feet up on the handlebars! We should make this distinction clear. An e-bike in which the motor only works with pedalling (or, for people with leg impairments, hand cranking) should be treated as a bicycle. An e-bike which can be used without pedalling is just an electric moped.

The Cycle/Public Transport Combination

One of the flaws in the Board's current discussions is that they do not seem to be considering the cycle/public transport combination as a distinct transport mode, even though it is a mode which can compete in flexibility and speed with the private car.

We believe that spending on the linking of cycling to public transport, including cycle parking and cycle hire at stations, and also carriage of cycles on trains and some buses, should be considered not simply as a specific niche of rail passenger, or as a part of local cycle schemes. There should be a national planned development to ensure the cycle/public transport combination is promoted as an

alternative to the car. The aim should be to move over a reasonable (but not excessively prolonged) defined period of time to a situation where

3. There would be a national network of hubs at which cycles can be hired, parked and loaded onto cycle-carrying public transport, within 5 miles of any part of an urban area, 10 miles of any part of a rural area and 15 miles of any part of a remote area. This should include the establishment of stations whose prime purpose is to serve as a cycle railhead, including stations at junctions between the national cycle network and the rail system. It should also include through bookings for passenger and cycle by routes which include a linking cycle route.
4. There would be cycle vans on all trains. Caltrain in California has shown that this can be successful. Its cycle vans are full so it has had to put a second van on some trains and also support regular users in choosing to have a bike at each end of their journey instead of taking them on the train. It measures the success of the scheme not as a proportionate increase in cyclists using the train but as a proportionate increase in total usage of the train. The passengers attracted by the cycle vans are a significant proportion. This approach dramatically contrasts with the performance of British train operating companies who think they are doing well if they accommodate two or three cycles on a train.

Vehicle Sharing

The Board should devote attention to how to promote co-ownership, car clubs, and other kinds of shared vehicle to reduce the number of vehicles manufactured and on the roads and help make people think before driving whether that is the best / necessary travel mode. We should be encouraging people to drive only when they need to and not to turn to their car for every journey.

The sections that follow, on autonomous vehicles and on rebalancing the costs of motoring, are relevant to this. Insurance is also an issue.

Autonomous Vehicles

OECD figures have shown that if autonomous vehicles are used in the way cars are used now, they will double the amount of traffic, but if they are used as shared vehicles in conjunction with a public transport system they could reduce traffic by 90%.

In a paper in Municipal Engineer we have discussed the kind of total mobility systems that might be possible with autonomous vehicles, the way gradually to move towards such a total mobility system and ways to overcome some of the obstacles, such as loss aversion.

Ref Watkins SJ “Driverless cars – advantages of not owning them: car share, active travel and total mobility” Proceedings of the Institution of Civil Engineers Municipal Engineer 171 March 2018 Issue ME1 Pages 26–30 https://doi.org/10.1680/jmuen.16.00067

Shifting Motoring Costs from Ownership to Use

We believe that the cost of motoring should be shifted from the ownership of vehicles to their use, so as to encourage more selective use.

Use of motor vehicles can be taxed by a combination of increased fuel duty and introduction of road charges.

These need not be an anti-motorist measure if they were linked to lower levels of other motoring taxes and costs.

Fees charged to motorists (such as MOT fees) and taxes on motoring items (such as VAT on car maintenance or car accessories) could be reduced or abolished as part of the process of offsetting the increased fuel duty and road charges.

Insurance is another major cost which is not directly related to mileage and the Treasury could provide a third party, passenger liability, fire and theft insurance policy automatically to every car (with a higher excess for drivers with a poor record), and fund that through road charges and increased fuel duty. This would shift a major fixed cost onto mileage-related payments and abolish the problem of uninsured drivers, as all drivers would be automatically insured and would pay for their basic insurance through road charges and fuel duty.

It could be administered through existing insurance companies. Insurers could compete to offer top-up insurance (such as insurance of excesses, overseas cover, breakdown cover or provision of comprehensive cover). Claims on the Treasury from those who take out top up insurance would be processed through their insurance company. Claims on those who do not take out top up insurance would be allocated to insurance companies in rotation, in proportion to their share of the top-up market, with the Treasury paying them an administration fee for administering the claim.

Living Streets

During the pandemic many people will have experienced and enjoyed the benefits of less traffic (and noise and air pollution) in their local streets, and the importance of community. This is the time to increase dramatically the number of “living streets”.

Living streets (often known by their Dutch name of woonerf) are streets which are so arranged that, although traffic is permitted, it is controlled and directed by physical obstacles (mainly street furniture and obstructively-arranged parking spaces) so that it is a guest in a street mainly used for other purposes, such as social interaction, play, walking cycling and gardening.

There are many advantages to living streets including the promotion of community activities. They lead to an increased number of friendships between neighbours and this has been shown epidemiologically to be a major contributor to reduced death rates.

We have suggested that except for motorways, A roads, B roads and other roads designated as throughways by local councils, most motor vehicular rights should be removed except for access. There should be exceptions for cycles (even if electrically assisted), emergency vehicles, invalid carriages, vehicles controlled by pedestrians, and buses. The term “except for access” would cover not only private cars and motor cycles but also delivery vehicles, street maintenance vehicles and the like.

The significance of this for zero carbon is that the removal of rat running will create lines of direct cycle friendly streets which can contribute significantly to the development of cycle networks.

Speed Limit

This is a good time to make the default urban speed limit 20mph to promote the safety of pedestrians and cyclists.

General reductions in speed limits also reduce fuel use and increase the efficiency of utilisation of road space. We could perhaps reduce all speed limits from 20/30/40/50/60/70 mph to 20/30/40/50/60/70 kph which would reduce them by about a third without any sign needing to be changed. The motorway limit could stay as it is.

30kph is sufficiently close to 20mph that this would achieve the 20mph default urban speed limit.

Motorists will complain that this will slow them down. They should be asked to look at their trip meter and what it reveals their average speed to be. For most drivers it is

slower than a bicycle or a horse. The short bursts of high speed achieve very little overall.

To ensure enforcement we would suggest that all vehicles are fitted with a speed limiter.

Spatial Planning

Another issue that the Board needs to address is the failure to maintain effective linkage between transport planning and spatial planning. We need clear plans to increase land use mix, increase population density and reduce urban sprawl so that more journeys are within walking or cycling distance - the 10/12/15/20-minute neighbourhood / city (Paris is aiming for 15-minute neighbourhoods, with a wide range of destinations available within 15 minutes).

The protection of urban greenspace is important to the maintenance of the aesthetically attractive walking routes which we see as essential to promoting walking but this can be seen as incompatible with increasing population density. There are technological solutions to this problem – green-enveloped buildings with green walls, green roofs and earth sheltering. To encourage the use of these technologies we need to empower councils to insist on them, we need active public endorsement of them by Government and we need to overcome the problem that insurers and mortgage providers look askance at them as “non-standard construction”.

There should be more car-free housing developments close to public transport hubs.

Transport plans are often seen as an afterthought by developers and there is a perception by planners and developers that insistence on transport solutions will not be upheld by the Planning Inspectorate. The current perception is that the Inspectorate will prioritise economics and housing. This must change to prioritising economics, housing, health and climate change.

Whatever changes are made in planning policy will be slow to take effect because of the approved applications that are in the pipeline for implementation. Most of what will be built in the next ten years is already planned and it is not zero carbon focused. We could consider a considerable expansion of the role of building regulations so that they address issues of quality, design, transport plans, flood prevention and decarbonisation. This would require controversial new legislation but climate change is an emergency.

A comprehensive programme of flood prevention including wetland and peatland protection, upriver measures, flood plain retention, sustainable urban drainage, flood-resilient construction (including floating buildings), and water run offs, lies beyond the scope of our organisation, or of this Board. However, having mentioned it as one of the issues that could be addressed by a new form of building regulation, perhaps we could point out two implications for transport. The widespread

conversion of gardens into car parks is a major contributor to reduced flood resilience. Underground car parks can fulfil a dual function as a flood run off facility.

Promoting Home Working & Shorter Working Weeks

This does not appear to have been given a great deal of consideration by the Board.

If everybody worked a four-day week instead of a five-day week and one of the four days was worked at home, then commuting would reduce by 40%

Of course, not every job can be done from home but the pandemic has shown that many can.

To promote this, we suggest a number of things.

Firstly, we should flex the employer's national insurance contribution so that it has a 25% surcharge for people who attend their workplace on five days a week or more and a 25% discount for those who attend their workplace on three days a week or less. Travelling to meetings away from the workplace should be regarded as the same as attending the workplace, unless the worker walks to them from home, in which case they should be regarded as the same as working from home.

Secondly, we should promote housing developments designed for home working, which could include large well-equipped offices shared by five to ten houses.

Thirdly, we should ensure universal availability of high-quality broadband.

Fourthly, there is an international need for high quality electronic conference centres and Britain should aim to develop such centres.

Fifthly, we need proper health and safety provisions for home working.

City Transport

Cities need a comprehensive walking and cycling network.

They also need a comprehensive rapid transit network with both orbital and radial routes linking stations within walking distance of all parts of the city. To compete with the car, it needs to be a comprehensive network.

Rapid transit could be a frequent rail service, a tram service, a limited stop high quality bus service or a service of pods operated by autonomous vehicles. It could include a mix of those modes according to the most appropriate mode for each route, provided that they interchanged as a system instead of being separate networks. It could also include ferries or cable cars. On routes where demand is not sufficient to warrant frequent scheduled service it could be demand-responsive.

Rural Transport

People will not take a train if there is no train or bus to their ultimate destination. Unless public transport is available for most of their journeys they will feel the need to buy a car and will then find it simpler to use it. Large parts of the UK, especially rural areas, either have no buses or have buses only once a day or less. In the evening these bus-free zones extend to cover most of the rural UK and large parts of the urban area (about a third of the urban core of the town of Darlington, for example). This is not an insignificant problem to be put on the backburner – it is a major obstacle to modal shift. Somebody who needs a car to get to the country once a week is not just somebody lost to the public transport system once a week. They are often lost to the public transport system completely.

There is sometimes a sense of desperation about rural transport. It is however no more difficult to provide public transport in rural areas than in cities – it is just the routes are longer.

When we wrote about city rapid transit people probably nodded approvingly. But let us make the same statement about rural areas:-

Rural areas need a comprehensive walking and cycling network.

They also need a comprehensive rapid transit network with both orbital and radial routes linking stations within walking distance of all parts of the area. To compete with the car, it needs to be a comprehensive network.

Rapid transit could be a frequent rail service, a tram service, a limited stop high quality bus service or a service of pods operated by autonomous vehicles. It could include a mix of those modes according to the most appropriate mode for each route, provided that they interchanged as a system instead of being separate networks. It could also include ferries or cable cars. On routes where demand is not sufficient to warrant frequent scheduled service it could be demand-responsive.

The problem of bus-free zones must be resolved both by funding scheduled bus services as links to the rail system and by funding demand-responsive transport. This could be done in the context of the kind of rural rapid transit network we have advocated.

In the next section we mention the possibility of combining rail reopening and cycle route development by building railgreenways.

Railways

The rail system is the main competitor to the car, and the main driver of modal shift. Hence, research has shown that bus use is higher in European cities with rail based public transport systems than it is in cities with bus based public transport systems. There is some evidence that high quality bus rapid transit systems can have the same impact as trains, but the emphasis must be on the words “quality” and “rapid”. The following are needed: -

1. Increases in rail capacity on the existing network. If we are to make use of the existing rail network there is a need to improve the capacity of the network. A list of schemes to achieve this exists. It includes grade-separation of junctions which limit capacity, restoring double or quadruple tracks or passing loops that have been removed, widening some specific bottlenecks (such as quadruple tracking the Castlefield Corridor), additional platforms so more than one train can enter a station at the same time, and more efficient signalling (including moving block).
2. Some expansions of the network where it is heavily overloaded or subject to disruption. The Exeter-Tavistock-Plymouth line or the old Great Central Railway are examples.
3. The development of freight capacity is important and it requires new construction in order to overcome the limitations of the current loading gauge and to avoid conflict with passenger capacity. For example, we wrote in February to Andrew Stephenson MP, Minister for HS2 and Northern Powerhouse Rail, suggesting that a quadruple track line along the old Great Central Railway could provide both a new north-south freight route and a better alternative for phase 2B of HS2.
4. It is tragic that the Parry people-mover, a British invention, has not been developed despite its success when trialled on the Stourbridge Junction to Stourbridge line. Many short branch lines, linking towns to the network, could be reopened using this technology.
5. Railfutures has prepared a list of railway lines which would warrant reopening and are held up by the Treasury's flawed assessment processes. We believe most of these schemes should proceed.
6. We believe that stopping services should be restored on most of the lines from which they have been removed. The use of tram/trains to operate them would have advantages in allowing reopened stations to be tram stops rather than full stations, in making it easier to expand capacity by passing loops and grade-separation, in signalling half-sections for trams so that the light rail stopping service can proceed into a signalling section when a train ahead is only half way through it, and in the faster slowing and acceleration from a stop.
7. A number of heritage railways have had ambitions to develop as serious community railways with the heritage trains serving as a major source of income rather than as their sole purpose. Most of these ambitions have been shelved due to the lack of supportive capital funding for development, the lack of revenue subsidies for services outside the hours the railway would be open for heritage purposes, and obstacles to linking with the main line. We believe that if Government showed a willingness to overcome these problems, the original ambitions could easily, often eagerly, be revived.
8. We have suggested that the technology which makes it possible to operate standard gauge trains at 180mph could be used to operate 1' 2" gauge (like the Romney, Hythe and Dymchurch Railway) at 45mph, so many rural railway lines could be reopened as "railgreenways", combining cycling and walking routes with high speed miniature railways.
9. We have already mentioned the role of the railway in urban and rural rapid transit schemes and in the development of the cycle/public transport combination as a transport mode. This included the opening of some stations specifically as cycle railheads.

10. Bus shuttles, gondola cable cars, or moving pavements should link some villages or suburbs to a railway station. Some village stations which fell into disuse and were closed because of their distance from the village could be reopened in this context.
11. We believe that some proposed roads could be replaced by rolling motorways (vehicle-carrying trains operating at high frequency as Eurotunnel does). This could improve both the road system and the rail system rather than just one or the other. We suggest that the first of these could be the Woodhead Rolling Motorway, linking the M60 at Denton to the M1 at Dodsworth, and also providing considerable additional rail passenger capacity across the Pennines. Relief of the M4 into South Wales is another possible opportunity.
12. If speed control and guidance devices in cars, buses and lorries could be developed in a way which could communicate with a rail signalling system it could be possible to develop a form of infrastructure which could convey both road traffic (if fitted with these devices) and rail traffic. Although there would only be limited circumstances in which such infrastructure was appropriate they could be useful in some rural areas and they might also make it possible to develop more flexible freight infrastructure.

Micromobility

Micro-mobility solutions have health AND environmental /decarbonisation benefits greater if they replace car or van journeys but not if they replace active travel. We have already discussed e bikes. E-scooters are more problematic. If they become legal on the roads it is important that they are not used on the pavement. Mobility scooters for elderly and mobility-impaired people should, however, be usable on the pavement.

Biofuels

Burning biofuels still releases greenhouse gases to the air although they are absorbed in the growing of the biofuels. However, if the biofuel is grown by deforestation this benefit is lost. Biofuel growth reduces food crop production. However, this is not the case if the biofuel is grown through algal culture.

Clearly, we need to be selective in the kinds of biofuel we would advocate.

Roadbuilding

A large proportion of the Government's infrastructure programme consists of schemes to build new roads or to increase the capacity of existing roads.

If we intend to pursue an effective policy of reducing car use then roadbuilding would seem to contradict that and the resources would be better used in developing alternatives.

Much of this spending seems to be based on the perception that it addresses congestion. As we pointed out in a letter to the Treasury in 2013, this perception is not correct.

History provides lessons in managing transport. Mogridge demonstrated traffic speed in London was affected more by improvements in the *rail* system than by anything happening on the roads - even the replacement of horse drawn vehicles by motor cars. Subsequent studies have repeatedly shown that new roads generate more traffic, respite from congestion being only transient. It is the experience of all of us that the roads fill and that the respite from congestion is transient. In the period that infrastructure spending was dramatically reduced there has been the added observation that when road building slows down so does the growth of traffic.

It may seem counterintuitive that road building makes congestion worse not better, but if more road space is made available suppressed demand is released. Suppressed demand is not a demand for immediate travel but for relocation. Many people are prepared to commute for more than an hour. Given a 70mph technically potential speed it is only a combination of congestion and expense which prevents the outer suburbs of Manchester being located in Nuneaton or in the Lake District. This process can be exacerbated by creating more road space such as widening motorways. Traffic flows more freely (for a while), people are encouraged to commute further but become trapped in their new travel patterns when congestion (inevitably) reasserts itself.

Once it becomes possible for the outer suburbs of one city to be located in several other cities (and vice versa) the range of possible journeys becomes such that, if demand is allowed to express itself, it is impossible for the road system to accommodate it. Using Metcalfe's Law (a mathematical approximation to the behaviour of networks which is not precise but is good enough for the purpose) we have calculated that doubling the speed of traffic, as when A roads with a 35mph average speed were replaced by motorways with an 70mph technical potential, would necessitate on average a 16-fold increase in road capacity, increasing at certain points in the network to a 128-fold increase in road space - the replacement of a 2 lane A road with a 256-lane motorway. It is impossible to remove these pinch points - only displace them.

It may be different in sparsely populated lands, or where people choose to stay together in tight family communities bound to ancestral land, but urbanized communities, with freedom of movement, that are organized into cities close to each other, cannot accommodate the demand for relocation.

The appreciation that suppressed demand is a demand for relocation, not for immediate travel, explains why it does not occur with temporary release of road space, and why it does not occur immediately when new roads are built. However therein lies a danger. During the window when traffic flows freely, people will relocate and become trapped in the new situation when congestion reasserts itself. And congestion will indeed reassert itself because congestion is the method by which the unmeetable demand is suppressed.

Therefore, we believe building new roads (or the improvement of existing roads) is a fruitless expensive exercise if the purpose is to reduce congestion. New road building must be justified on other grounds such as freeing road space for other purposes or providing access to new developments.

It is now reasonable for policy to be conducted on the basis that building roads will only transiently ease congestion. The figure for long term reduced congestion and long-term improved traffic flow in cost/benefit studies of road schemes should be either zero or negative, in which case many currently proposed road schemes would no longer be cost/beneficial.

At the same time, it is now well-recognised that the existing methods of assessing rail schemes and cycle schemes seriously underestimate their value.

For all of these reasons we would urge reallocation of the funding earmarked for new roads (to the extent that it is motivated by reducing congestion) towards other areas of transport spending which will be more likely to achieve the changes that are needed.

Alternative Ways to Address Congestion

This need not be a counsel of despair for reducing congestion. As shown by Mogridge the speed of traffic increases with improvements in the rail system and decreases with deterioration. This is because the quality of alternatives sets the standard against which the road must compete. These need to be overall improvements in the network, not just improvements on the line parallel to a particular road, because traffic on a particular road may be making many different journeys.

Our proposals for comprehensive walking and cycle networks and rapid transit networks meet that requirement.

Congestion would also be reduced by our proposals for increased homeworking and a shorter working week. This would be a quick way to kick start the process but the road space released by this reduction would fill, in just the same way as roadspace released by road building, unless steps were taken to prevent this. The removal of roadspace from cars and lorries and its reallocation to walking, cycling, buses or rapid transit (be it light rail or bus-rapid-transit) would be one measure that should be taken. The introduction of road charges would also be important and the perception of this as an anti-motorist measure could be addressed by our proposals to shift the costs of motoring from ownership to use.

People with Impairments

It is important to bear the needs of people with impairments in mind when developing these policies. For example, we said that an e-bike should be treated as a bicycle rather than a moped only if the motor does not work unless it is pedalled. We added the caveat that for people with leg impairments it could be hand-cranked rather than pedalled. There are some people who are too impaired to propel the bike at all and for them there could be an exemption. We have advocated that people be encouraged to walk to a station within walking distance but mobility impaired people may need to be picked up at the door, as may people encumbered with heavy luggage. This can be built into a demand-responsive total mobility system – it is perfectly possible to arrange that services which would be charged as extras for able

bodied people should be included in the standard fare for people with impairments or encumbrances. It is also important to recognise that people with cognitive impairments may be perfectly able to use public transport physically but unable to find their way around the network.

We discuss transport for people with disabilities or encumbrances in chapter 13 of Health on the Move 2 on our website www.transportandhealth.org.uk

Aviation

Emissions from aviation are especially important as they occur at high levels in the atmosphere where they have additional effects.

Andrew Gwynne MP, who is a member of our Council, recently suggested that support for aviation during the current epidemic should be linked to a commitment to address climate change. We believe that airlines should diversify and see themselves as providers of international travel. They should therefore take the lead in developing a high-speed international sleeper train network and in exploring the potential of the hyperloop.

Clearly aviation will continue to have a role in travel across oceans and polar icecaps, in accessing islands too far from the mainland to depend on ferries or bridges, and for local transport in very remote areas such as Alaska or Antarctica. However, we believe that modal shift would be feasible for many current routes. A sleeper train with a meal, 8 hours sleep and then breakfast is a viable alternative for journeys across land of up to 1,000 miles even with conventional trains and up to 2,250 miles with high speed trains. With faster trains it could be viable even further afield and with a 750mph hyperloop (if that proved feasible) it would be viable for up to 7,500 miles.

A few years ago, we suggested considering a hyperloop link between Gatwick, Heathrow, Stansted, Birmingham, and Manchester Airports as an alternative to airport expansion as it would allow these airports to function together as a hub. There are many issues about the hyperloop that need examination, and it may well not prove to be technically feasible, but we do believe that this examination should be in progress.

Hyperloop

The hyperloop is a form of transport in which a pod travels in a depressurised tube. It was first invented over a century ago but the depressurisation technology available at the time meant that it was not able to achieve high speeds. Elon Musk has suggested that with the technology now available it could travel at 750mph and in the future it might be possible for it to travel at thousands of miles an hour.

The tube can be elevated, laid on the ground, buried or underwater and it is much less environmentally damaging than other transport infrastructure. It can be solar-powered from panels on the outside of the tube.

However, the technology is not fully developed, there are questions as to whether it can work at the intensity (120tph) suggested by Elon Musk, even at that intensity it only has a capacity of 3,600pph, and there are questions of whether the acceleration would be excessive leading to a barf ride. It would not be compatible with existing railways. It is also envisaged as an end to end journey so that to link 100 stations would require 20,000 tubes (10,000 in each direction).

However, if the technology can not only work as Elon Musk suggested but also be developed to have larger pods, fitted with deployable road and rail wheels to complete their journeys on existing systems and have a capacity to make intermediate stops, then it could have potential.

We discussed this potential in our document "Can The Hyperloop Be An Alternative To HS2, HS3 And Airport Expansion" which can be found on our website **www.transportandhealth.org.uk**.

We are not advocating the hyperloop. We are suggesting that we should keep an eye on its development and be ready with plans for its use if it begins to appear viable.

As we said in our paper **"**If we reflect on how the technology of the railway developed between 1830 and 1855, it is not impossible to imagine such developments taking place within the timescale of major infrastructure projects. Imagine that in 1830 somebody had not just bought a set of state-of-the-art stagecoaches but had ordered them for delivery in tranches between 1845 and 1855?.....The debate then becomes whether to run the risk of relying on a developing new technology or to run the risk of building something which might be outdated as soon as it is open. Either is a risk. This is the same decision that the directors of the Stockton & Darlington Railway faced when they were considering whether to use steam traction or open a horse tramway, and that the directors of the Liverpool & Manchester Railway faced when deciding whether to use cable haulage or to organise the Rainhill Trials. In so many ways history depended on which risk they chose to take. Luckily, they got it right. Did they have a courage that we should emulate? Or was it a foolhardiness which just happened to turn out OK?"

We can see both sides of this debate. What worries us is that the debate isn't happening.

Flaws in Treasury Assessment Processes

The following flaws exist in Treasury assessment processes for prioritising transport Investment

- They attach a value to relief of congestion by road improvements when, as we have explained above, these are unlikely to materialise.
- They do not attach a road congestion value to rail improvements when, as we have explained above, these are very likely to materialise.

- They systematically underestimate the usage of new railway services and lines.
- One of the reasons for this is that they systematically underestimate feeder effects and ignore Metcalfe's Law that the utility of a network is proportional to the square of its size.
- They value the time of cyclists less than the time of motorists but the rationale for that (that cyclists have chosen a slower mode) is outdated in most cities.
- They place too low a value on the negative effects of community severance and poor air quality.
- They assume that many of the external benefits (including health and environmental benefits) will not contribute funding, but in many cases a mechanism of benefit-capture could be framed.
- They disbelieve very high cost/benefit ratios, which leads to failure to fund some cycling schemes that have very high cost/benefits.
- There is a strong tendency to favour individual large schemes over packages of smaller schemes creating widespread network benefits. This is unfortunate since network improvements in alternatives to the car are more likely to improve congestion than individual schemes.
- Schemes tend to be considered in isolation, in dedicated funding packages devoted to particular types of spend, which makes it difficult to consider the transport system as a whole. For example, the Woodhead Rolling Motorway would deliver a vehicle-carrying rail service as a direct alternative to an expensive and damaging road scheme and would also deliver major improvements in rail services in and between Greater Manchester and South Yorkshire, but these two sets of benefits lie in different funding packages and it is very hard to find a way to add them together. We wrote in February about this to Andrew Stephenson MP, Minister for HS2 and Northern Powerhouse Rail. Our proposal for combined greenways and high-speed miniature railways is another example of an innovative proposal that falls between two stools.

  [end of extract]