



Department
for Transport

Light Rail (and other rapid transit solutions)

A Call for Evidence on the opportunities available to introduce new Light Rail Systems or other rapid transit solutions into towns and cities in England.

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1. Foreword



In recent years, the Department for Transport has provided funding to extend existing light rail systems in operation in a number of our cities. We have also been working closely with UK Tram and the sector in reducing the costs of systems for the future.

We have carefully considered recommendations from various reports. These include the 2010 All Party Parliamentary Light Rail Group Report on progress in developing modern trams within the UK, and how barriers to the development of further tram schemes could be tackled.

The 21st century is seeing rapid shifts in how mobility is provided, with the adoption of broader and more sustainable approaches, such as cycling and car sharing.

Social and economic trends are also changing people's behaviour and attitudes. The digital revolution, emphasis on smart cities and places, and a greater emphasis on sustainability and environmentally friendly ways of travel, create new transport challenges and opportunities. Transport is changing and over the medium to long-term we will be seeing radical changes to mobility services offered in our towns and cities.

It is clear from the evidence that light rail (and other forms of rapid transit system) continues to play a very useful role in many communities, and has the potential to play a still greater role in future. In England, there are currently eight light rail systems in operation and the latest light rail statistics for 2017/18 underline how popular they are with the travelling public. Over 267 million passenger journeys were made on the eight light rail and tram systems in operation. Three per cent of public transport journeys in England are made on a light rail or tram system.

The time is now right for us to consider how light rail, or similar rapid transit systems, could be incorporated into the transport networks in our towns and cities in the future, and how they will help to complement and integrate new modes and trends. These include autonomous vehicles, car sharing, bike sharing and initiatives that offer Mobility As A Service, in addition to rail, buses, cycling and walking.

This Call for Evidence invites your thoughts on how we can help harness the opportunities for building on the popularity of light rail, with the hope of introducing these systems into our cities and towns. A key further element is the need to look at how we can build industrial capacity for a new generation of light rail and related systems in the UK, in line with Government's industrial strategy.

We want this Call for Evidence to act as a trigger, as a stimulus for new ideas, and as a means to gather input from a wide range of stakeholders, including those overseas, on the scale of the opportunity for light rail. This will form an important part of our work on the Future of Mobility Grand Challenge established in the Industrial Strategy and on “smart places”, which is considering the use, value and deployment of emerging transport technologies and services.

I look forward to hearing from you.

Jesse Norman

Minister of State for the Department for Transport

2. Context

- 2.1 Today, the way people and goods move is on the cusp of a transformation. A host of new technologies and innovative services, coupled with rapidly changing demographic and socio-economic trends, are fundamentally reshaping mobility. From ride-sharing, to mobility as a service, to smart infrastructure, and the imminent emergence of autonomous vehicles, these developments have profound implications for our transport system. They offer the promise of mobility that is faster, cheaper, cleaner and safer than today.
- 2.2 Our mobility needs are evolving. Changing travel habits, demand for services that increase convenience, speed and predictability, as well as evolving customer expectations toward bespoke services and sustainability, create a need to consider our local transport systems both now and for the future.
- 2.3 Numerous reports and studies indicate that the world's population is becoming increasingly city-based. At present, fifty three per cent of the population live in urban areas, and this number is expected to reach sixty seven per cent by 2050. Today, sixty four per cent of all travel occurs within urban environments, and the total amount of urban miles travelled is expected to increase significantly in future.
- 2.4 Together, these trends create significant challenges and opportunities. Traffic congestion, air pollution and accidents impose human and economic costs on government and society. Access to affordable and convenient transport is unequal. The existing infrastructure of roads, bridges, railways and other critical assets imposes substantial maintenance costs. Looking ahead, the strains on our transport infrastructure is likely to increase, as urban populations continue to grow.
- 2.5 Overall, the need to make better use of existing assets and infrastructure is already becoming imperative. In this context, light rail and other related transit systems offer the potential to benefit our local economies, our environment and our future lifestyles.
- 2.6 Between the 1950s and the 1970s, many countries around the world dismantled their tram networks in order to provide space for cars. However, a few cities modernised and upgraded them with newer vehicles and (wholly or partly) segregated tracks, giving birth to Light Rail Transit (LRT) systems. Since the mid-80s, these and similar street rail systems have enjoyed a revival; many cities where tramways had disappeared started to build new LRT schemes, primarily in North America and Europe. Since the beginning of the new millennium, there have been numerous revivals with schemes introduced across the globe.
- 2.7 As our towns and cities develop and expand, new problems are arising. As a result, our transport needs and choices are changing. A growing number of people now live

in urban areas and therefore the country needs to explore new opportunities for helping people travel. Technology can offer new opportunities to not only reduce costs but also to help integrate different types and modes of travel.

- 2.8 In effect, we need a next level and cross-modal approach to transport in our towns and cities. The escalating need is to create more accessible leisure, housing and workplace options, making it easier for the public to connect all parts of their lives. That means neighbourhoods that are destinations in themselves with attractive, low congestion and greener urban environments offering a high quality of life, which also has the added value of attracting inward investment.
- 2.9 Effective public transport systems can help to alleviate the challenges posed by rapid urbanisation, and lead to more liveable and sustainable communities. Light rail could play an important part of this change and it has many positive attributes
- 2.10 Light rail is an environmentally friendly form of mass public transit which can reduce the dependence on private cars. However, it is now clear that a minimum ridership (>3,000 pass/hour/direction) is necessary to ensure cost-effectiveness. This means that, in most contexts, light rail can only be implemented successfully if it is designed from the outset as part of a wider system which is integrated with other public transport modes.
- 2.11 Transport planners should consider how transport networks can be made more multi-modal, allowing the travelling public to transfer seamlessly from one mode to another based on their needs.
- 2.12 Light rail schemes should thus be designed in a way to develop the system's full potential for speed and reliability; i.e. with separate rights-of-way wherever possible, and priority at traffic lights to remove external disruption. In addition, long term success is most likely when promoters of these systems create effective working partnerships between all stakeholders. This means having a clear and solid urban development strategy in which light rail construction is part of wider urban regeneration that supports housing, jobs and public and private investment along the line. Improving sustainability and quality of the living environment is an important consideration. In some countries, where light rail is in operation, authorities have taken steps to integrate transport and urban planning and employ transit-oriented development strategies.

3. What is Light Rail?

- 3.1 The term “light rail” covers a range of different systems, the most familiar being trams. In general, they are public transport systems which use rail-based technologies and typically operate in urban settings. The vehicles are usually lightweight, run on steel rails and are propelled by overhead electrical wires, although there are some systems which use a third rail (such as the Docklands Light Railway) or, occasionally, diesel (outside the UK).
- 3.2 Earlier guidance attempted to distinguish between “tramways” and “light rail”. It stated that all “tramway” systems were deemed to have a significant element of their operation (measured either as a percentage of the system length, or as a significant economic element of the scheme) in the highway. As a system is given increasing levels of separation from, and priority over, other traffic, it moves from being considered a tramway to being a light rail system. However, it is convenient to distinguish between three broad types: tram-train, tram and very or ultra-light rail.

Light Rail/Trams

- 3.3 There are currently eight tram systems (and extensions) in operation in England at the following locations as the map overleaf highlights.



3.4 Light rail systems usually run on steel rails and are propelled electrically via overhead wires. In the future, with advances in technology, they are more likely to run via battery without the need for overhead wires. Transport for the West Midlands announced in 2017¹ they were to have catenary-free running in Birmingham to allowing tram vehicles to operate over short distances without the need for overhead cables and equipment. In addition, a scheme in China called the “smart bus” has been developed that equips vehicles with sensors, allowing them to follow white-dotted lines on the road².

¹ <https://www.tfwm.org.uk/news/first-midland-metro-tram-leaves-uk-to-be-fitted-with-batteries/>

² <https://mashable.com/2017/06/06/train-without-rails-china/?europa=true>



Picture courtesy of UKTram



Picture Courtesy of UKTram

Tram-Train

- 3.5 A tram-train is a light rail public transport system where trams run both on an urban tramway network and on main-line railways, in order to combine the tram's flexibility and availability with the train's greater speed. This concept was pioneered in Karlsruhe in Germany, and has since been adopted in other projects in Europe. More recently, Australia announced plans for tram-train operation. In the UK, a tram-train trial is currently under way between Sheffield and Rotherham.³ The Department for Transport also announced work with Network Rail and Transport for Greater Manchester (TfGM) to consider tram-train opportunities⁴.

³ <https://www.sypte.co.uk/tramtrain/>

⁴ <https://www.gov.uk/government/news/grayling-and-burnham-hail-greater-manchester-tram-network-as-model-for-new-opportunities>



Picture courtesy of UK Tram

Very or Ultra-Light Rail (VLR/ULR)

- 3.6 Very or ultra-light rail is typically defined as an intermediate transport system that runs on a fixed track and may be self-powered or externally powered, with or without some form of energy storage. Vehicles have lower axle weights than light rail and are best suited to meeting the needs of smaller passenger flows. However, some ultra-light rail promoters are now working on proposals for a larger vehicle to cater for additional passenger numbers.
- 3.7 In England, these systems range from a very light rail system in Stourbridge, West Midlands⁵, to new concepts being developed in Coventry, Warwickshire⁶ and Preston, Lancashire⁷. This emerging very light rail (VLR) sector aims to harness technology from the automotive sector to create hybrid or all-electric self-propelled vehicles, which can be lightweight, energy efficient, cheap to manufacture and operate and geared to the needs of communities.

⁵ <http://www.parrypeoplemovers.com/>

⁶ <https://www.coventry.gov.uk/verylightrail>

⁷ <http://prestontrampower.co.uk/>



Picture courtesy of UKTram

Other Rapid Transit Forms

(Personal Rapid Transit/Automated Transit Networks)

- 3.8 However, there are other emerging forms of light rail technology which do not fit into any of the categories above. These include monorails and automated “people-movers”, which some call Automated Transit Networks (ATNs); Group Rapid Transit (GRT) or Personal Rapid Transit (PRT). Whilst these technologies have so far generally been linked to more specialist uses, such as at airports, they are now becoming increasingly popular across the world.



Picture courtesy of Heathrow Airports Limited

- 3.9 Only five major Personal Rapid Transit or Automated Transit systems installations exist around the world. These installations are in Morgantown West Virginia, USA; Heathrow Airport (see picture above), London, UK; Masdar City, Abu Dhabi; Rotterdam, The Netherlands; and Suncheon Bay, South Korea.
- 3.10 In England, a two-phased study was undertaken for Daventry District Council into whether a Personal Rapid Transit system should be considered for the area. A final report for Phase 2 of the Study was issued in 2008.⁸ The Study recommended the next main steps in implementation was to assess private sector interest and to prepare a full business case in consultation with funding agencies, as well as to determine the detail of the procurement approach. However, due to the downturn in the economy at the time, the proposed project was stalled.
- 3.11 Automated Transit Networks (ATN) is an umbrella term for two concepts that are now merging into one. These are Personal Rapid Transit (PRT) and Group Rapid Transit (GRT). PRT was conceived to use small driverless vehicles (2 – 6 seated passengers) containing individuals or parties travelling together nonstop from origin to destination. GRT uses large driverless vehicles (up to 20 or 30 seated and/or standing passengers), which often wait before departing to encourage ride sharing and stop at intermediate stations, if necessary. Modern PRT systems generally have 4 to 6 seats, encourage ride sharing and may make an intermediate stop or two.

⁸ Final Report for Daventry District Council, February 2008:
<http://faculty.washington.edu/jbs/itrans/big/Daventry%20PRT%20Scoping%20Study.pdf>

Other terms for these systems include Podcars (commonly used in Sweden) and Pod Taxis (commonly used in India).

- 3.12 Numerous Automated Transit Network systems are in various stages of development ranging from the concept stage to various stages of development.
- 3.13 Systems include the BeemCar⁹Jpods¹⁰, Metrino¹¹, Skytran¹², Swift ATN¹³ and TransitX¹⁴. Whilst some are taking forward their concepts, others face the hurdle of being unable to fund a full-scale test track to help demonstrate functionality, preventing many of the systems from emerging onto the market.
- 3.14 That said, there does seem to be a growing popularity in these types of developments, and the European Union has previously promoted this mode through its “Niches” innovative urban transport programme.^{15,16}

⁹ <http://beemcar.com/>

¹⁰ <http://www.jpods.com/>

¹¹ <https://metrino-prt.com/>

¹² <https://www.skytran.com/>

¹³ <https://swift-atn.com/>

¹⁴ <http://transitx.com/>

¹⁵ UK Tram Guidance Documents: <https://uktram.com/resources/guidance-documents/>

¹⁶ European Commission Niches Website:

https://www.polisnetwork.eu/uploads/Modules/PublicDocuments/21582_policynotesWG4_2.indd_low.pdf

4. The Opportunity, Benefits and Costs

The Opportunity

- 4.1 Transport, infrastructure, housing, land development, and other essential services are the foundations of economic growth and prosperity. To ensure our future long-term wellbeing and quality of life, this country needs to plan thoughtfully to make the best use of our resources and opportunities as we improve and expand key services and facilities.
- 4.2 The role of light rail can play an important part in assisting local areas deliver their aspirations for economic growth. Transport connectivity can play a key role in promoting higher employment rates, by improving access to centres of employment, and in promoting higher productivity, by improving the attractiveness of an area for investment. This can be achieved by improving access to markets, increasing the pool of workers available to work in higher productivity urban locations, and increasing the effective scale of cities and the associated benefits of agglomeration through the introduction of a coherent, user-friendly, joined-up transport network, involving frequent rail services, light rail and bus, all supported by smart, multi-modal ticketing.
- 4.3 In the 2016 Centre for Cities report, “Building the Northern Powerhouse, Lessons from the Rhine-Ruhr and Randstad”¹⁷ case studies from elsewhere in Europe demonstrate that conurbations, such as the Rhine-Ruhr in Germany and The Netherlands’ Randstad, out-perform their national economies by the presence of strong agglomeration benefits which are derived, in part, from excellent public transport links within these major urban areas. The report argues that successful city regions require a combination of increased city density and a larger pool of skilled workers. To facilitate these, investment in sustainable transport links is essential to provide reliable, affordable mass transit links.
- 4.4 The Centre for Cities report recommends that the best way to improve the economic performance of individual city regions is to focus investment on removing barriers to the creation of a wider labour pool and increasing economic and social agglomeration. It suggests that the high-performing city regions of Rhine-Ruhr and the Randstad do not act as one labour market, but as a number of them. This means that transport systems within city regions are more important for enabling businesses to access workers and workers to access jobs than transport links between cities, and that if a local area is to be successful, then it must primarily focus on making its

¹⁷ <https://www.centreforcities.org/wp-content/uploads/2016/06/16-05-31-Building-the-Northern-Powerhouse-Lessons-from-the-Rhine-Ruhr-and-Randstad.pdf>

cities and towns more attractive to business investment. The introduction of a light rail system could potentially play a key role in this evolving process.

- 4.5 Opportunities to help increase economic growth includes capitalising on the Government's Industrial Strategy and drawing on this country's recognised strengths in manufacturing, as well as exploring and undertaking research and development in areas such as automation and engineering. There is no doubt that a number of areas when developing their local industrial strategies should consider the development and manufacturing of light rail vehicles or other elements which make up a system.

Benefits

- 4.6 Light rail also has the potential to stimulate associated investment activity, such as urban renewal projects and residential and commercial development, often in areas that were previously inaccessible or unviable. The longevity, durability and branding appeal of light rail infrastructure sends a positive message to planners and developers.
- 4.7 Due to this light rail offers the potential to unlock wider community benefits, promoting new lifestyle opportunities for our cities and towns. It is a recognised catalyst for urban improvement and design, which can reflect the character and lifestyle of an area, while supporting a higher intensity of use and activity. Cities around the world demonstrate that higher property values and increased commercial and community activity occur within walking distance of new light rail stops and stations.
- 4.8 Light rail can provide public transport networks in medium-sized cities and towns (with 200,000 to 600,000 inhabitants), and can also serve as a feeder to higher capacity metros or commuter railways in larger conurbations.
- 4.9 Light rail could also help improve air quality with reductions in greenhouse gases, noise and local air pollution from particulates and emissions. It could play a part in meeting some of the objectives as set out in the United Kingdom's 25 Year Environment Plan, published by the Government in 2018¹⁸.
- 4.10 With a fixed alignment and station locations, and more frequent services, light rail has the ability to shift perceptions of public transport. It can give developers greater confidence to invest in areas around light rail where the infrastructure is fixed. The report, "An Investigation into the Economic Impacts on Cities of Investment in Light Rail Systems"¹⁹, alluded to the fact that investment in light rail can have positive economic impacts on cities. However, the report did suggest that light rail alone is unlikely to be the main catalyst for economic change without other supporting policies.

¹⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

¹⁹ <http://www.railforthevalley.com/wp-content/uploads/2014/06/LR-UK-LightRailReport-An-investigation-into-the-economic-impacts-on-cities-of-investment-in-light-rail.pdf>

4.11 In a number of cases light rail, where implemented, has led to increased private investment and economic activity surrounding the route and stations, transforming main roads dominated by cars into vibrant, liveable, pedestrian-friendly streets. This has been referenced in the work undertaken by the Urban Transport Group, in which they state the following in their light rail briefing note published in April 2018²⁰:

“Higher quality urban realm, attracting new visitors, new investment and changing the overall perception of urban areas: in Croydon, surveys of residents and businesses before the opening of Tramlink suggest that many viewed Croydon as in decline. After the opening, most saw the area as experiencing regeneration and expansion. In Manchester, it seems unlikely that the successful regeneration of Salford Quays would have taken place without the Metrolink connecting the former industrial area to the centre of the city. The Salford Quays extension cost £150 million but created over 3,000 permanent jobs, stimulated £60 million of investment by business and boosted the economy of Greater Manchester by £70 million a year.”

4.12 Light rail also has the ability to support a city’s liveability and help bring about targeted streetscape improvements. New development at nodes along the corridor can be complemented with improvements to major arterial routes to boost street life and support local business, helping to ensure the future of our high streets and allowing small businesses to continue to thrive. It is important to explore the wider opportunities this mode can offer, especially as part of the work on high streets currently under way by the Ministry of Housing, Communities and Local Government (MHCLG).²¹ In England, opportunities for the wider introduction of light rail could include how we can build upon the Government’s Industrial Strategy. We also have witnessed the strengthening of leadership at a local level, with a generation of new “Metro Mayors”, who are actively pursuing new ways to address the complex transport needs of English cities.

4.13 Many observers suggest that light rail has the ability to offer benefits over other conventional forms of transport. In busy corridors, light rail has the potential to carry flows of up to 20,000 passengers per hour per direction (around four times more than conventional buses and twice that of the largest, tram-like bus alternatives). Light rail can also provide more attractive journey times by making best use of traffic signal priority. In these corridors, the higher capacity offered by light rail can reduce the congestion caused by large numbers of buses circulating in city centres, while bringing economies of scale in the costs of provision. However, light rail is not as flexible as the bus and is unable to respond to new/changing passenger markets which a bus, or other mode, can. There is the issue of disruption associated with the construction of light rail and the lengthy lead times taken to develop, fund and build these systems. This needs to be taken into account when considering this system. Light rail may not be the optimal solution in all areas.

4.14 The benefits of light rail can, in certain places, include:

²⁰ <http://www.urbantransportgroup.org/system/files/general-docs/Light%20Rail%20briefing%202018%20FINAL.pdf>

²¹ <https://www.gov.uk/government/news/expert-panel-appointed-to-advise-on-the-future-of-the-high-street>

- **Deployment of permanent, visible, and attractive urban infrastructure:** direct access can be provided to city centre jobs, shopping and other facilities in a way that is highly visible and perceived as reliable and dependable.
- **Predictable, regular and reliable journey times and service patterns:** service levels are generally high (5 to 20 more trams per hour) on simple, easily understood routes, generally operating at a high level of reliability due to segregation from traffic.
- **Accessible and visible stops:** Vehicles are highly accessible to users and can provide 100 per cent level boarding at stops. Other features include highly visible stops, good information, easy to purchase tickets and security measures (visible staff or police on or around the system, CCTV etc.).
- **A high quality ride throughout the entire journey:** whether or not a system is fully segregated or mixes on-street and off-street running;
- **Short dwell times:** Multiple doors and off-vehicle ticketing ensure light rail has the benefit of short dwell times at stops, with consequent journey time benefits;
- **High passenger carrying capacity:** In radial road corridors in urban areas, light rail can provide a more efficient and sustainable use of existing capacity by making the best use of available junction priority. It is essential to provide this priority for light rail to avoid reliability problems on street-running sections. Light rail can increase capacity on an existing rail corridor by providing more stops and higher frequency services – made possible by the provisions of dedicated routes in city centres, avoiding congested rail terminuses;
- **Additional capacity in a sustainable way:** Light rail can provide additional passenger carrying capacity to existing city centres or major developments, where new road capacity would not be acceptable;
- **Integration with new developments:** The development of light rail in conjunction with major changes in the urban fabric can be an effective way of supporting development activity, as has been demonstrated in places such as London Docklands.
- **Linking major traffic generators/attractors:** Routes that serve more than one major travel market are particularly efficient as they help to provide balanced, all day flows with better use of the infrastructure. Examples include from city centres to town centres and major stand-alone developments;
- **Integration:** Physical integration of light rail routes is often “designed-in” (e.g. to major rail or bus stations or major developments).

4.15 There is evidence that all of the schemes implemented to date in England have had a positive effect on the image of the city where they were built, even when, initial public reactions may have been adverse (usually owing to disruption during construction). This in turn has brought benefits in terms of attracting inward investment, as well as business and tourist visitors.

- 4.16 The physical presence of the infrastructure needed for light rail, compared with the less tangible presence of bus-based schemes, is a key factor in the public's favourable perception of trams. The confidence instilled from a visible, long term commitment to improved public transport, and the feeling that this indicates that an area is "going places" are a common response in user surveys and focus groups. It is also clear that light rail can have a distinct role in the "branding" of places.
- 4.17 There is evidence that light rail schemes have provided business with better access for customers and to labour markets, supported business expansion and given greater confidence to make investment decisions. Evidence from UK schemes demonstrates that light rail is safer for passengers than travelling by road. Therefore, modal shift from car to light rail could help to improve overall safety. There is no evidence that pedestrians and other road users are more at risk in areas where trams run on-street than in other areas.

Costs

- 4.18 The capital cost of light rail can vary greatly, depending on the alignment and the need for tunnelling or bridges, adoption of new technologies, whether the system is separated or integrated into existing road infrastructure, whether it is an extension of an existing system or a new system and so on. Due to this, there has been some concern that light rail schemes are expensive. But it would appear the basis of the work already undertaken, that the cost of UK systems is not necessarily any greater than European or North American schemes.
- 4.19 However, there are a number of variables in making this assessment. It is only with more comprehensive data that proper assessments will be possible. The key difference between the UK and European schemes is the reliance on heavy rail conversions rather than the use of a street running tramway. This has led to a major impact on construction costs.
- 4.20 In some countries there has been a local drive to deliver light rail schemes. These projects, often spearheaded publicly by a local Mayor, are seen as a matter of civic pride. As a result, there has been a relatively quick delivery of schemes. This was the case in Besancon, France²²²³, where the Mayor set a budget and through careful management ensured that the budget and timeframe from design to opening was maintained. As with other construction projects, hands-on civic leadership such as this can have a positive impact in driving through light rail schemes.
- 4.21 In recent years, a streetcar scheme in Portland, Oregon, United States, has been used as an example of effective delivery of lower cost light rail systems. The approach adopted utilised a lightweight track slab and minimised expensive utility diversions, thereby generating savings on construction costs. These and similar

²² <http://www.sparvagnsstaderna.se/sites/sparvagnsstaderna.se/files/articles/files/christopheschor.pdf>

²³ International Rail Journal, September 2014: <http://www.railjournal.com/index.php/blogs/keith-barrow/low-cost-light-rail-what-can-we-learn-from-besancon.html>

ideas are already permeating this country's market, though it is not yet clear whether they can yield savings on any new schemes within England.

- 4.22 It will be important to look closely at the cost of developing light rail and how this can be reduced. This could be through new types of vehicle design, reduction in the amount of utilities diversion required, increased use of batteries removing the need to provide overhead wires with all the costs and environmental issues these cause, as well cost savings by adopting lower specifications for stops.

5. Conclusions

- 5.1 Light rail and other such systems have many positive attributes. Its development has been highly successful in a range of countries around the world and there is good reason for this trend to continue.
- 5.2 Experience suggests that light rail faces a series of apparent constraints. In the first place a ridership of 2,500 to 3,000 passengers per hour in each direction is necessary if a scheme is to be cost effective.
- 5.3 It is also important that any new system be integrated and made fully complementary with other public transport modes.
- 5.4 Schemes must also be designed to develop their full potential for speed and reliability. That is with, where possible, segregated rights of way and traffic signal priority to remove external disruption. Incorporating light rail into the planning phase enables the usual problems of competition for road space and signal priority to be mitigated prior to construction, creating greater efficiency once the operation commences.
- 5.5 By encouraging increased investment, economic activity and higher returns for property owners, light rail can be a sound plan for existing medium to high density areas and a sensible transport option for targeted areas requiring urban renewal.
- 5.6 Light rail improves liveability and amenity by attracting investment along routes. A study of resident attitudes and travel behaviour in Salt Lake City, Utah, United States, found that light rail commuters have more healthy walking habits, lower car use, lower prevalence of obesity, higher place attachment and neighbourhood satisfaction, and are more positive about transit-oriented development²⁴. In addition, light rail commuters report that light rail enhances city liveability.
- 5.7 Overall a successful light rail scheme must rely on good partnership between all stakeholders. This in turn relies on a clear and robust urban development strategy to make sure the project is suited for longer term development to carry out parallel urban regeneration schemes and to drive the creation of new housing, jobs and investment along the corridor it serves.
- 5.8 This Call for Evidence looks at light rail (and other rapid transit systems) to help form the choices that could be offered for urban mobility. Integrated public transport will be essential if our towns and cities are to meet the economic, social and environmental

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https://www.researchgate.net/publication/224906100_Walkable_Route_Perceptions_and_Physical_Features_Converging_Evidence_for_En_Route_Walking_Experiences

challenges of the years to come, and light rail could play an important part in delivering urban productivity, liveability and sustainability.

6. Call for Evidence Questions

- Q1** What is the potential scale of the opportunity for further light rail (or other rapid transit) systems to be introduced in England?
- Q2** Is there an appetite for new systems to be introduced in our cities and towns?
- Q3** Is there evidence to support this appetite?
- Q4** What would the environmental, economic and congestion benefits be?
- Q5** What impact would it have on jobs?
- Q6** Does light rail open up new housing or business developments or improve the urban fabric of the area?
- Q7** What can we learn from the experience of other countries in adopting new systems?
- Q8** What issues have helped progress light rail schemes or acted as barriers to their development?
- Q9** What and where are the future opportunities here in England for new light rail systems or alternatives?
- Q10** What are the key issues that are preventing light rail schemes from being delivered?
- Q11** How can we deliver systems within a budget as has happened?
- Q12** What are the key lessons from Europe in progressing light rail and in what way are these different to the U.K.?
- Q13** What does the future of light rail look like with new generation transport schemes coming forward?
- Q14** How do you see light rail aligning with new initiatives such as autonomous vehicles; cycling and walking; and wider Mobility As A Service initiatives?
- Q15** How can promoters leverage funding from sources beyond central Government?

Other Rapid Transit System Alternatives

- Q16** Is there an appetite for considering Very/Ultra-light rail or Personal Rapid Transit as an alternative transport solution to light rail?
- Q17** What are the estimated costs of delivering such systems and the wider benefits on offer? Please provide evidence.
- Q18** Should such a system be a concept that is promoted?
- Q19** How would this system provide a positive contribution to the economic productivity and development of a city or town? Please provide evidence.
- Q20** What are the barriers for developing such systems, particularly those with elevated sections? For example, public acceptance, or environmental sensitivities?

7. Follow Up

- 7.1 This Call for Evidence seeks ideas and evidence from all those with an interest in introducing new light rail systems or alternative rapid transit systems in cities and towns. Due to the devolved nature of this issue, this call for evidence applies in England only.

How to Respond

- 7.2 You are invited to respond to the consultation by sending your response by email to **Steve Berry, Head, Light Rail, Department for Transport:** steve.berry@dft.gsi.gov.uk or in writing to the following address:
Steve Berry, Department for Transport, Zone 2/14, Great Minster House, 33 Horseferry Road, London, SW1P 4DR
- 7.3 Please also contact the above address for alternative formats (Braille, etc.)
- 7.4 The consultation period will run from 7 February until 19 May 2019. Please ensure that your response reaches us by the closing date.

Next Steps

- 7.5 The Department for Transport will analyse the responses, and may publish proposals in due course.
- 7.6 A summary of responses, including the next steps, will be published within three months of the close of the consultation. Paper copies will be available on request.

Freedom of information

- 7.7 Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the Freedom of Information Act 2000 (FOIA) or the Environmental Information Regulations 2004.
- 7.8 If you want information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory code of practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

- 7.9 In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.
- 7.10 The Department will process your personal data in accordance with the Data Protection Act (DPA) and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.