THE PLACE TO BE

HOW TRANSIT ORIENTED DEVELOPMENT CAN SUPPORT GOOD GROWTH IN THE CITY REGIONS

URBAN TRANSPORT GROUP

URBAN TRANSPORT GROUP

The Urban Transport Group represents the seven strategic transport bodies which between them serve more than twenty million people in Greater Manchester (Transport for Greater Manchester), Liverpool City Region (Merseytravel), London (Transport for London), Sheffield City Region (South Yorkshire Passenger Transport Executive), Tyne and Wear (Nexus), West Midlands (Transport for West Midlands) and West Yorkshire (West Yorkshire Combined Authority). The Urban Transport Group is also a wider professional network with associate members in Strathclyde, Bristol and the West of England, Tees Valley and Nottingham.

Report authors: Clare Linton and Jonathan Bray

January 2019

CONTENTS

EXECUTIVE SUMMARY 1

Around the world, transit oriented developments are transforming cities for the better. They put good public transport access at the heart of dense, high quality residential and commercial developments, with attractive urban realm that supports walking and cycling.

Transit oriented developments are an idea whose time has come because they contribute to a host of wider public policy goals for city regions. These include:

- Improved physical and mental health and wellbeing through the promotion of active travel and the creation of attractive and sociable spaces;
- Facilitating agglomeration economies by creating environments that attract talent and at densities which help to promote and sustain clusters of high value businesses;
- Reducing road traffic congestion through making access by means other than the car much easier and, in doing so, helping to tackle poor air quality and reduce carbon emissions; and
- Helping to meet housing demand without leading to sprawl or loss of green space.

As city region governance in the UK and the wider world becomes more focussed and integrated, transit oriented development is a concept that is gaining considerable momentum – particularly in the US and Latin America where the car has previously dominated. It is also well established in Europe and there are plenty of examples in the UK too (although the term transit oriented development is less commonly used). As well as every scheme having practical benefits in their own right, transit oriented development also establishes a different way of thinking about how cities in the future could be healthier, more prosperous, sustainable and happier places to be.

However, if we are to embark on a new era of transit oriented development, where this type of development becomes common place across the UK, then there are a series of obstacles and barriers which need to be addressed.

In particular, we need to empower city region authorities to make more transit oriented developments happen. This is because it is city region authorities that are accountable to the people and places they serve, and because they understand the local issues, opportunities, businesses and funding opportunities and can make the right connections between them.

To do this, city region authorities require:

- A national planning framework that favours transit oriented developments rather than car-based low density sprawl.
- A national funding framework with more options for ensuring that value uplift from new developments can be used to improve transport connectivity. In particular, we need a joint programme of work between city region and national Government to examine the issues, and develop the options, on land value capture mechanisms.
- More influence over land held by agencies of national Government which would be prime sites for transit oriented developments. In particular, city region authorities in England need the same veto powers over Network Rail land sales that the Scottish Government currently enjoys.
- More devolution of powers over stations where a city region transport authority has the ambition and capacity to take on those responsibilities.
- Measures to improve the planning capacity of local authorities in order to respond effectively, rapidly and imaginatively to opportunities for high quality transit oriented development.

INTRODUCING TRANSIT ORIENTED DEVELOPMENT

2

Transit, or public transport, oriented development (TOD) puts public transport front and centre, with the aim to maximise access by public transport, encourage walking and cycling, and minimise the need to own and use private cars. C40 Cities describe TOD as *"an urban planning principle that promotes high-density, mixed use development integrated with a robust public transport system[1]".*

Transport infrastructure can be used to unlock new development sites for homes or commercial use, as well as providing wider benefits.

TOD can also be part of, and symbolise, wider moves to integrate land use with economic and transport planning – promoting happier, healthier and more prosperous cities with less traffic congestion. This creates neighbourhoods and communities which are more attractive places for living, working, investing in and visiting. This report looks at TOD schemes within this wider context.

TOD has become an increasingly popular concept in the US, parts of Northern Europe and Central and South America. While TOD as a term has not been widely adopted in the UK, there is a strong history of planning transport and land use together in a way that maximises public transport use – from the development of Metroland and other suburbs off the back of extensions to London's rail network in the 1920s and 1930s, through to the development of London's Docklands in the 1990s in tandem with the Docklands Light Railway.

We have adapted the Institute for Transportation and Development Policy (ITDP) TOD design and land use policy standards[2] to outline seven key factors for successful TOD, set out on pages 6 and 7.

The seven key factors for successful transit oriented development

1. **Transit should be at the heart of the development**, whether that's heavy rail, light rail or bus. This should be provided by high quality, high frequency services, making public transport a viable, and desirable, alternative to private car use.

2. **Developments need high density of housing and commercial properties** in order to provide critical mass for transit use. Density is also necessary to ensure that residents can walk or cycle to the nearest public transport station or stops. In the US, passengers will typically walk twice as far to access rail than bus stops, around half a mile and a quarter of a mile respectively[3].

3. **TOD neighbourhoods should support walking and cycling** as the first choices for accessing public transport and other services. This encourages healthy lifestyles and mode choices which have lower environmental impacts.

4. **Driving and ownership of private vehicles should be discouraged**. Alternatives, like car clubs, can be included. This can maximise the benefits of TOD and support walking and cycling. Public realm could include traffic calming measures and filtered permeability to disincentivise driving and parking restrictions can also be implemented.

5. **Services should be integrated into the development,** such as shops, healthcare and schools, in order to encourage more localised trips. Evidence shows that residents of TODs in the USA make a greater number of shorter trips, conducive to sustainable mode choices.

6. **Use of brownfield sites** (generally recognised as previously developed land) for TOD programmes should be first choice locations[4]. The Campaign to Protect Rural England (CPRE) suggest that brownfield sites, made up of redundant urban land, offer valuable opportunities for redevelopment[5].

7. **Public sector involvement** is a key enabler of TOD schemes and helps to ensure that new developments are high quality and deliver across multiple urban policy objectives including social inclusion and meeting housing need. Public sector involvement also provides the leadership and strategic vision needed to deliver successful TOD schemes[6].

In order to enable transport infrastructure to unlock new TOD schemes, appropriate funding and powers are needed at the city region level. Long term funding certainty is also needed to deliver strategic transport policies within city regions[7]. And this should be coupled with the freedoms and flexibilities that authorities need in order to utilise innovative funding mechanisms for TOD schemes (this is discussed further in section 5).

HOW DENSE IS DENSE ENOUGH?

As outlined above, density is one of the underlying principles for successful TOD schemes. There are no commonly accepted density thresholds for TODs but existing good practice provides a useful guide. For example:

- Minimum density for a bus service is suggested as 25 dwellings per hectare and for a tram service this is 60 dwellings per hectare[8].
- The average density in London is 42 dwellings per hectare[9] with high density flats in Kensington having a density of 80-120 dwellings per hectare[10].
- Vauban, in Freiburg, Germany, has an average density of 90-100 dwellings per hectare and is well served by frequent trams[11].
- Hammarby Sjöstad, Stockholm, has an average density of 145 dwellings per hectare[12], and is well served by trams, buses and ferries[13].

These places provide an indication of the levels of density that can support high frequency public transport infrastructure and demonstrate the level of density that some neighbourhoods have achieved. However, areas with lower population density can still support public transport services, such as services to towns and rural areas, and these services offer vital connections for communities.

Figure 1 plots population density in numbers of persons per hectare[14] against the percentage of people who travel to work by car (in grey) and sustainable modes, which includes public transport and active travel (in green)[15]. This demonstrates that as population density increases, the share of travel by public transport or active travel also increases. Many of the most densely populated areas (greater than 50 persons per hectare) are within London and have high shares of sustainable travel to work.

Figure 1 – Mode choice for travel to work against population density

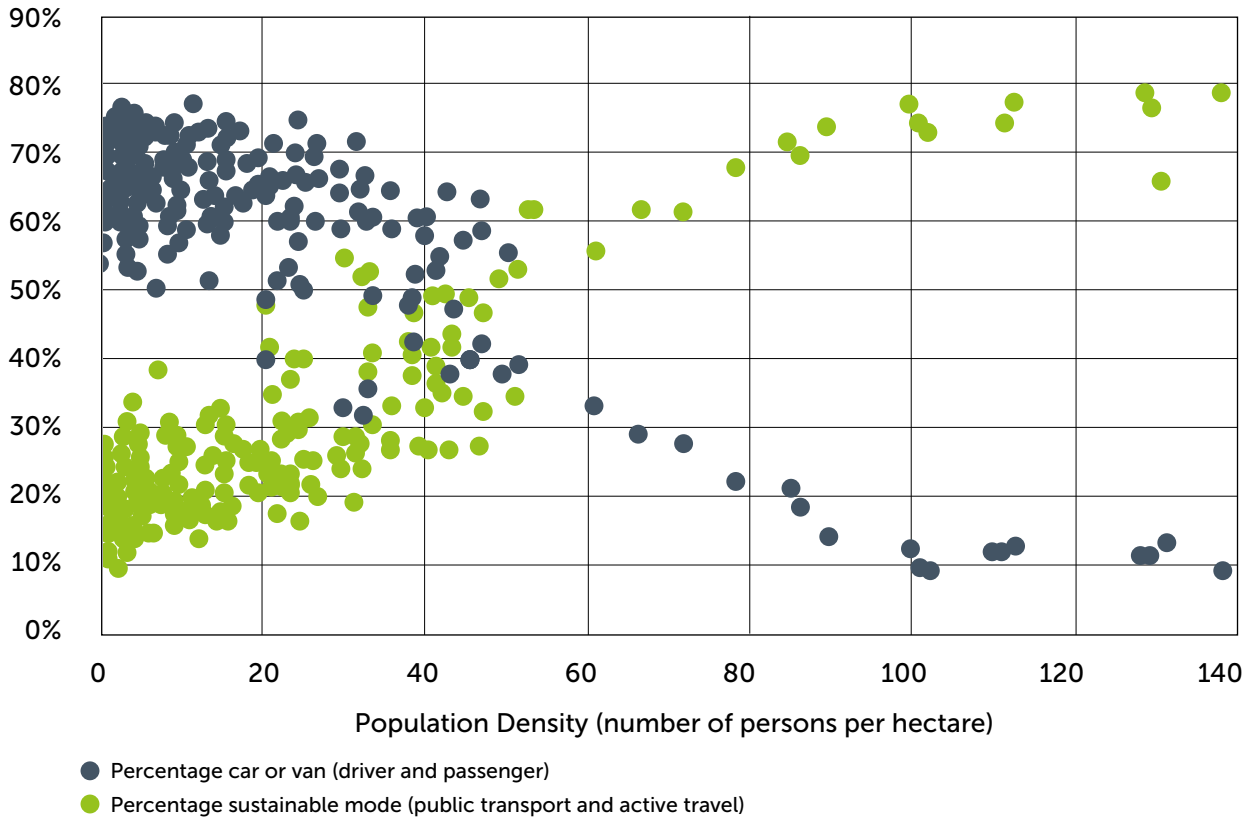
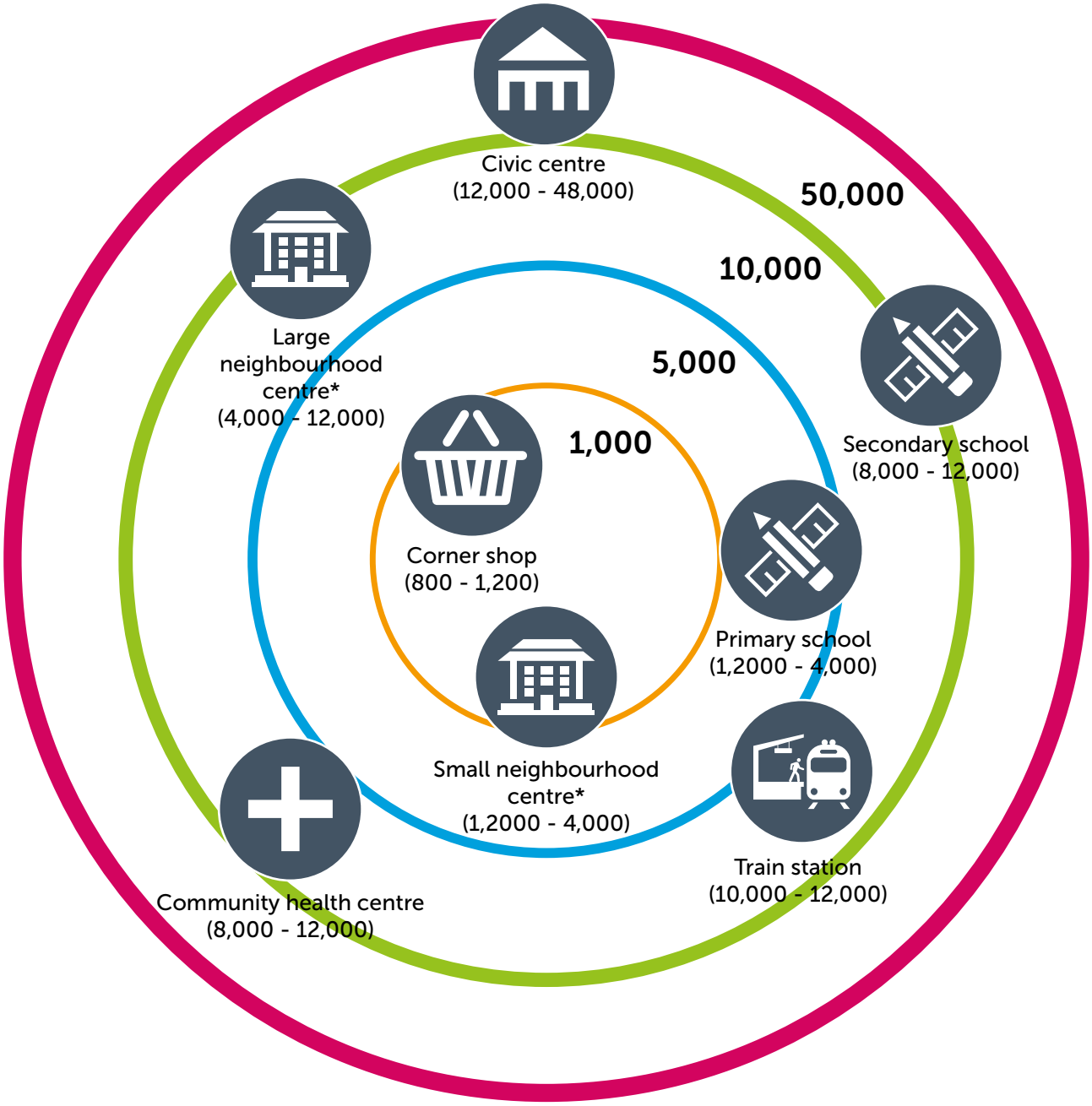


Figure 2 shows the population thresholds necessary for various commercial and community facilities to become viable, which must be considered alongside the density of development. Ideally, homes should be within a 5-10 minute walk of facilities to encourage walking and cycling, rather than car use[16].

Figure 2 – Community facilities population thresholds (number of dwellings) data taken from McPherson and Haddow (2011)[17]



*Shops, community centre, etc

THE CASE FOR TRANSIT ORIENTED DEVELOPMENT

Transit oriented development can play a key role in supporting agglomeration economies and meeting housing demand without making traffic congestion and air quality worse. They can also improve public health, reduce carbon emissions and support a better quality of life for city residents. TOD principles are increasingly being reflected in the better integrated decision making on transport, planning, housing and land use at the city region level. This is in part a result of governance changes at the city region level, through the creation of Combined Authorities and in some areas Mayoral Combined Authorities[18].

For example, the Draft Greater Manchester Spatial Framework highlights the need to deliver 227,200 new homes by 2040 of various types and tenure[19]. The Framework states that *'the density of residential development should reflect the relative accessibility of the site by walking, cycling and public transport, enabling more people to live in the most accessible locations. Opportunities should be taken to increase densities close to local centres and public transport stops with high frequency services, where this is consistent with the design context and the delivery of a broad mix of dwellings'*[20].

In London, where there has been a longer period of devolution, the Mayor's Transport Strategy (MTS)[21] sets out how transport policy will be reshaped over the next two decades to support a wider vision for 'good growth' and a more sustainable and inclusive economy where transport and land use planning is more fully integrated. The MTS outlines transport principles of 'Good Growth' to ensure that London grows in a way that works for its population.

These principles include good access to public transport; high density, mixed use developments; people choose to walk and cycle; car-free and car-lite places; inclusive, accessible design; carbon-free travel; and efficient freight[22].

These principles for Good Growth reflect many of the principles of TOD and, along with the Healthy Streets approach outlined below, will ensure that new developments make public transport access and active travel a priority.

EMBEDDING 'HEALTHY STREETS' IN TRANSIT ORIENTED DEVELOPMENT

'Healthy Streets' is an approach developed by Lucy Saunders for Transport for London (TfL) in order to address inactivity, encourage modal shift and improve the health of Londoners[23]. The approach prioritises walking and cycling, accessibility to public transport and good urban realm which makes people feel safe and relaxed, thus they can enjoy being in the space.

Healthy Streets principles are highly compatible with TOD, which aims to move away from the dominance of cars and deliver neighbourhoods and communities with good access to public transport and through which people can easily walk and cycle.

The indicators of Healthy Streets, shown opposite, could be embedded in the development of TOD schemes, in order to ensure that developments meet the goals of improving health of residents through the street scape.

3

Figure 3 – Ten Healthy Streets Indicators[24] (Image source: Transport for London)

Key strategic policy areas where TOD can help to deliver improved outcomes include:

- Agglomeration economies and the 'flat white' economy;
- Housing;
- Air quality and carbon emissions;
- Congestion;
- Social inclusion, employment and skills;
- Public health; and
- Public transport patronage.

Each of these policy areas is explored in turn below.

AGGLOMERATION ECONOMIES AND 'THE FLAT WHITE ECONOMY'

It is now generally accepted that the concentration of economic resources in cities is, in large measure, due to agglomeration economies[25]. This is the notion that firms benefit from proximity to other firms, as well as between their own employees. Put simply, proximity lowers the cost of exchanging goods and ideas, and increases the pool of shared resources available – which all lead to higher productivity[26].

In turn, households are attracted to areas which benefit from agglomeration economies because more productive firms will offer higher pay and larger job markets increase workers' chances of finding suitable work. Authors such as Richard Florida have argued that it is the ability to draw in larger numbers of highly qualified workers that gives cities their competitive edge[27].

Cities have long been places where high value sectors of the economy like finance and business services have concentrated. However, these sectors are now also being joined by what has been termed the 'new economy' or the 'flat white economy'. In his 2015 book of the same name, Douglas McWilliams shows how the expansion of these sectors can help explain London's sustained population and jobs growth after the 2007 recession, even as pay and employment in financial services began to fall[28].

McWilliams singles out digital marketing as a key source of competitive advantage for the UK but defines the flat white economy more broadly as encompassing the media, information and communication sectors. He suggests that by 2013, this group of activities had overtaken retail, financial services and wholesale to become the second largest sector of the UK economy outside the public sector, and only behind construction. By 2015, the sector was growing at 8% per year and was predicted to drive a third of the UK economy by 2025[29].

McWilliams makes a link between the growth of the flat white economy, easy access to large pools of skilled young workers and lifestyle changes which have drawn young people back into cities. *"The bicycle has replaced the Porsche, skinny jeans have replaced suits and, of course, flat white coffee has replaced champagne*[i]*"*. This is linked to the wider rise of 'hipster' culture, which places great emphasis on originality and unique, authentic experiences. This is in contrast with the pret-a-porter utilitarian culture of the 1950s and 60s; or the conspicuous consumption culture of the 1980s and 90s.

PwC's Millennials at Work survey (2011) found that working location was the deciding factor in accepting their current job for 20% of respondents. It also found that twice as many respondents thought they would end up working in a centralised hub in a major city than in a similar type of building outside a major city[30].

UK Census data from 1991, 2001 and 2011 shows that there has been a noticeable recent population increase in the inner cities and city centres of many large urban areas, in contrast with the trend of previous decades. This has gone hand in hand with a swelling of city centre jobs, which was temporarily halted in the immediate aftermath of the 2007 financial crisis, but has now resumed.

TOD is a good fit with the tendency in cities towards agglomeration economies and the flat white economy as it enables both the density that agglomeration economies require and the creation of the attractive and dynamic spaces and working environments that are a priority for the new economy.

i. McWilliams notes that champagne sales in the UK dropped a quarter since the 2007 recession, while the number of coffees sold increased by 50%

HOUSING

The UK has a target of building one million new homes by 2020, although it has been suggested by some that there is likely to be a significant shortfall in practice[31]. In particular, there is a shortage of affordable homes, with house prices now almost seven times people's incomes on average, and more people than ever are renting from private landlords[32].

Research by Transport for New Homes found that new developments are being built without considering public and active transport options, prioritising car-based travel and are failing to provide community services[33]. This leads to car-based sprawl and an embedding of unsustainable transport behaviours with few public transport alternatives and poor facilities for walking and cycling[34].

If we are to avoid car-based urban sprawl and traffic congestion, then housing needs to be built close to quality public transport links. However, between 2015 and 2017, more than half of the planning permissions for the 220,000 new homes within twelve of England's city regions were more than two kilometres from a railway station and only 20% were within 800m[35].

There is a debate around how to deliver housing in the UK and whether or not to build on the 'Green Belt', the protected areas of land around our towns and cities. The Green Belt amounts to 1,634,700 hectares and much of this falls within the boundaries of England's city regions[36].

TOD offers the potential to meet housing need without undermining the green belt or creating more traffic congestion and sprawl. TOD schemes can be located:

- In close proximity to, or as part of, existing stations or transit hubs.
- On brownfield former industrial sites, which are often located on rail corridors or are indeed former rail industry sites. This makes them easy to serve through new stations.
- At suburban locations with good access to rail stations where services have been improved through additional capacity or faster journey times.

Another option for development sites near to public transport infrastructure, and avoiding the Green Belt, can be over station development. A Centre for London report suggested that high density development over stations could increase housing supply and employment opportunities in a sustainable way[36]. However over station development can present complicated challenges in terms of engineering and operations, alongside planning and institutional barriers[38].

TOD schemes could contribute to meeting housing need, opening up new economic opportunities and deliver across multiple other public policy objectives, including those set out below.

AIR QUALITY AND CARBON EMISSIONS

City regions face the dual challenge of reducing both air pollution and carbon emissions from transport. Increasing public transport use, as well as walking and cycling, through TOD schemes could help to improve air quality and reduce carbon emissions by reducing private car use. C40 Cities argue that concentrating land use in walking distance of transit stops reduces private vehicle traffic, thus reducing emissions and improving air quality[39].

Evidence from Chicago shows that households within half a mile of public transport have lower transport related CO_2 emissions, 43% lower than the average household in the Chicago Metropolitan Area[40]. Households in the downtown Chicago area, with the highest density of jobs and housing and the best public transport connections, have 78% lower transport related CO_2 emissions than the wider area[41].

The high density required for successful TOD schemes also offers opportunities to reduce domestic energy use through district heating and the use of sustainable energy generation. In Vauban, in Freiburg, Germany, public energy and heat are generated through combined heat and power generation, fuelled by woodchip, and households are connected to a district heating grid[42].

The buildings in Vauban have low energy consumption, around half the German average[43]. Homes in the new development around King's Cross, London, highlighted as a case study in Section 4, are also connected to a low carbon district heat network[44]. This shows how there can be additional sustainability benefits to TOD schemes, beyond transport emissions.

CONGESTION

Congestion cost the UK economy £20.5bn in lost productivity in 2013[45]. Congestion is worst on urban A roads and has negative effects on air quality, and consequently impacts on public health.

Congestion has detrimental impacts on the quality and experience of the public realm and the ability of cities to create places that people want to spend time in[46]. It undermines bus services by slowing journey times thus reducing the attractiveness of bus services as an alternative mode choice[47].

Congestion also acts as a drag on the economic benefits of new developments, with a 10% reduction in economic growth impacts associated with transport congestion when compared to a new development without congestion[48]. Where investment in public transport is implemented alongside new developments, it can lead to a 50% uplift in the economic growth impacts of a new development near to the regional centre[49].

TOD neighbourhoods encourage public transport use along with walking and cycling, which represent sustainable transport choices with positive impacts on levels of congestion in urban areas.

Evidence from existing TOD schemes suggest that residents make more sustainable transport choices. For example, in Vauban, in Freiburg, Germany, car only accounts for 16% of trips (significantly lower than the comparable Freiburg district of Rieselfeld where car makes up a 30% mode share), public transport accounts for 19% of trips and 64% of trips are made by walking or cycling[50].

The public realm design within a TOD should discourage car use, leading to neighbourhoods free of congestion and creating pleasant environments to live and work in.

Dealing with congestion is a key goal of the UK's National Infrastructure Commission (NIC), amongst other priorities such as decarbonising the energy supply and boosting housing growth[51]. Championing TOD could offer a way for multiple priorities of the NIC to be delivered.

PUBLIC HEALTH AND WELLBEING

Well-designed urban realm, delivered through TOD schemes, can have a number of public health benefits.

Reducing traffic within developments can deliver health benefits through improved air quality, encouraging active travel and reducing the number of accidents for vulnerable road users. In New York City, improvements to the public realm which encourage walking and cycling have reduced pedestrian injuries by 35% and led to lower volumes of traffic[52].

Physical inactivity is thought to be responsible for one in six deaths in the UK[53]. Encouraging walking and cycling, whether for a whole journey or as part of a public transport trip, is one way of increasing activity levels and improving health outcomes[55 56]. Two Swedish studies found that neighbourhood walkability increases walking levels[57]. Increased walking and cycling can improve cardiovascular fitness, reduce risk of cancer and improve mental health[57]. Ensuring that TOD neighbourhoods have suitable public realm to enable walking and cycling can encourage more active lifestyles and improve public health.

Most cities now have stated goals around becoming healthy and liveable places which include green spaces and environments that encourage leisure and social activities. Areas with accessible green space are associated with better mental and physical health[58], so integrating these into TOD schemes can have multiple benefits for improving quality of life.

The NHS has developed a 'Healthy New Towns' programme, working with ten new developments in England to embed health and wellbeing in the development of the sites and explore how to deliver effective health care for residents[59]. This includes encouraging active travel in these new towns, and one of the case studies, Northstowe in Cambridgeshire, presented in Section 4, demonstrates how this is being implemented in practice.

SOCIAL INCLUSION, EMPLOYMENT AND SKILLS

TOD can help to promote social inclusion as well as improving access to employment and education opportunities.

The creation of high quality urban realm through TOD programmes offers opportunities for people to meet and socialise in the neighbourhood. This will have benefits for social inclusion, by reducing isolation and associated negative impacts.

Affordable housing can be delivered as part of a TOD scheme, offering benefits for social inclusion. Indeed, targets can be set for the proportion of affordable housing delivered through TOD. In the San Francisco Bay Area in the US, Bay Area Rapid Transit (BART) set a target of delivering 35% affordable housing through their TOD schemes[60]. BART also have targets of job creation in the vicinity of their stations, in order to create employment opportunities that are accessible via public transport[61].

Expanding and extending public transport services, as well as accessibility to them, can improve access to jobs and services, especially where developments integrate the planning of housing and commercial developments with transport provision[62].

Recent research by KPMG suggests that a 10% improvement in transport connectivity by bus, can lead to a 3.6% improvement in economic, social and environmental deprivation, through improvements in income, skills and wellbeing[63].

One of the key factors in the success of a TOD scheme is the integration of services within the residential development, including schools, and commercial properties. This improves access to education, skills and employment opportunities within the neighbourhoods, having positive impacts for residents.

PUBLIC TRANSPORT PATRONAGE

While the bus remains the most used form of public transport, with 70% of public transport journeys being made by bus in England in 2016/17, patronage is in long term decline[64]. Investing in high-quality, high-frequency bus networks to serve TOD schemes, could be one way of reinvigorating the bus market.

The case study of Northstowe, in Cambridgeshire, in section 4 of the report, shows how the Cambridgeshire Guided Busway is connecting people to the city of Cambridge through high-frequency services which are not subject to delays from congestion due to their segregated infrastructure.

Both regional rail services and light rail and expanded tram systems have seen strong patronage growth in recent years[65].

The case study of Salford Quays, Manchester, in Section 4, demonstrates the key role played by the extension of Manchester Metrolink in facilitating TOD. Additional bus services (which were subsidised at first but now run commercially) also played a role.

Public transport services for new TOD schemes often perform better than expected. At Kirkstall Forge, in West Yorkshire, the new station was forecast to have 20,200 journeys in its first year of operation, but surpassed these numbers within five months of opening, catalysing an increase in service frequency to meet demand[66]. Kirkstall Forge is explored further in Section 4.

Evidence from the San Francisco Bay Area suggests that BART TOD schemes have resulted in increased ridership[67]. This is expanded in Section 4.

TRANSIT ORIENTED DEVELOPMENT – IN PRACTICE

The following section highlights case studies of interesting and successful transit oriented development schemes both in the UK and overseas. These case studies cover both light and heavy rail systems and bus services, showing the breadth of approaches to TOD delivery. Additional case studies of integrated approaches to transport and land use can be found in the Campaign for Better Transport report 'Getting there: How sustainable transport can support new development'[68].

KING'S CROSS, LONDON, UK

The development of land around King's Cross station in London represents a flagship scheme in the UK, transforming a 67 acre unused industrial site into a vibrant mixed-use development[69].

The proximity to London underground, bus and national and international rail services, along with the integration of other factors for successful TOD schemes, make this an exemplary UK based TOD programme.

It is anticipated that on completion of the scheme in 2020 there will be 2,000 homes, 3.4 million square feet of office space and 50,000 square feet of retail and leisure space[70]. The homes include a range of types and tenures, from family homes to student housing and retirement communities, with a significant proportion of homes at King's Cross being affordable housing[71]. Apartments are connected to a low carbon district heat network and the homes achieve Level 4 of the Code for Sustainable Homes[72].

Figure 4 – Regents Canal Waterfront and Granary Square beyond (Image source: RPM[78])

4

Figure 5 – King's Cross station concourse (Image source: Chris Beckett[82])

Nearly half (40%) of the 67 acre development is open space, creating a network of streets and footpaths through parks, gardens and squares[73]. These green spaces contribute to quality urban realm, with benefits for residents and visitors, but also delivering environmental benefits for biodiversity and air quality[74].

The success of the scheme is also demonstrated by Google's decision to locate its new headquarters in the area[75]. Construction began in 2017 and when finished it will house Google's 7,000 London based employees[76]. The building has been termed a 'landscraper', as opposed to a skyscraper, as it will be an 11 storey, 200 metre long building, running parallel to the platforms at King's Cross station[77].

King's Cross station has also undergone extensive refurbishment, with a new passenger concourse, creating an enjoyable experience for travellers passing through the station and improved retail opportunities within the station.

The scheme is being delivered by the King's Cross Central Limited Partnership, which consists of UK property developer Argent, state owned London and Continental Railways Limited (LCR) and DHL Supply Chain[79]. LCR acted as the guardian of the public land around King's Cross, supporting the Government drive for homes, jobs and economic growth. The original value of the land at Kings Cross provided to LCR in 1996 was £32m, LCR sold its stake in the development for £371m in 2016[80].

Public ownership of the land is important as it allows control over the pace and quality of regeneration and capturing of the land value uplift in order to fund infrastructure, and has contributed to the success of the King's Cross regeneration[81].

NORTHSTOWE, CAMBRIDGESHIRE, UK

Northstowe is a new town being developed by Gallagher Estates and Homes England, with close partnerships with the local authorities in the area. The area is a brownfield site, using a former RAF base. The area is served by the Cambridgeshire Guided Busway. This provides frequent, rapid connections to the city of Cambridge and to the new Cambridge North Railway Station, which opened in 2017 and is 10 minutes away from Northstowe[83].

At completion, it will provide 10,000 new homes as well as community facilities such as schools, leisure facilities and healthcare. Of the first 5,000 homes, 2,000 will be designated as affordable. The development also prioritises walking and cycling facilities within the neighbourhood and the guided busway offers a cycle route into Cambridge.

The developers at Northstowe are promoting public transport, walking and cycling to new residents by offering subsidised bus taster tickets, walking and cycling equipment vouchers up to £50 and cycle taster sessions[84], and have produced a Travel Options Map (see opposite).

In the map, the Cambridgeshire guided busway can be seen running to the north of Northstowe Phase 1 and cycle routes are also shown. The map demonstrates how services, including schools, health and leisure facilities are being integrated into the development. This will help to facilitate use of local services, within walking and cycling distance, as well as the public transport infrastructure facilitating journeys further afield.

Northstowe is part of NHS England's Healthy New Towns' programme, which aims to improve health through integrating health and social care services into the new development and by encouraging active lifestyles[86].

The average density of housing in Northstowe will be around 45 dwellings per hectare, which is comparable to the average housing density in London[87]. This level of density should be conducive to encouraging active travel and public transport use. Parking provision in the town centre and residential areas is lower than the district council maximum standards[88].

Figure 6 – Cambridgeshire Guided Busway (Image source: Ed Webster[85])

Figure 7 – Travel Options Map for Northstowe[89] (Image source: Gallagher Estates)

MEDIACITYUK / SALFORD QUAY, GREATER MANCHESTER, UK

Figure 8 – The Imperial War Museum North at Salford Quays

Salford Quays is a former dockyard area, lying 5km west of Manchester City Centre[90]. The dockyard closed in 1982 and the present redevelopment includes the flagship 'MediaCityUK' site, which is a joint venture between Peel Land and Property Group and Legal and General Capital[91].

MediaCityUK is an 81 hectare mixed use development at Salford Quays, which includes the BBC and ITV as well as other commercial, residential, retail and cultural organisations[92]. There are around 250 businesses in Media City, employing around 7,000 people and a further 1,000 business in the wider Salford Quays area, employing 27,500 people[93]. One in seven BBC employees are now based at Media City[94] and this is set to grow over the coming decade with further expansion of Salford Quays creating greater TV studio capacity[95].

While the Manchester Metrolink Tram has served the Salford Quays area since 1999, this would have been insufficient to cope with increased demand due to the development[96]. Additional transport capacity was planned during the development stage through discussions with various stakeholders, including the strategic transport body, Transport for Greater Manchester (TfGM)[97]. The tram line was extended with new stops and trams added to the system[98]. The developer and regional development agency invested £25 million in the improvements[99].

Additional bus services have been introduced to provide public transport access to Salford Quays for residents of North and West Salford[100]. The location of Salford Quays means that access by active travel modes is available via canal towpaths and the urban realm has been improved to provide an attract environment for walking and cycling[101].

As of 2015, there were around 3,500 residents at Salford Quays[102]. House prices have risen faster in Salford over 2016/17 than most other areas in Greater Manchester, at 8.4%[103]. The only area with higher price rises is Bury, with an increase of 13%, and the average across Greater Manchester is 6.4%. According to property site Zoopla, house prices in Salford have increased 48% over the last 5 years[104], compared to 23% for the wider North West of England[105]. The improved employment opportunities and increased transport connectivity have contributed to this uplift in property prices following the investment at Salford Quays.

The integration of housing and commercial properties at Salford Quays creates retail, cultural and employment opportunities within the area. This, along with the improvements in access by public and active travel modes, demonstrate the principles of TOD and the successes that can be delivered by integrating the planning process.

Figure 9 – Manchester Metrolink Tram

KIRKSTALL FORGE, WEST YORKSHIRE, UK

Kirkstall Forge is a development in Leeds, transforming a brownfield site adjacent to an existing railway line. A new station has been opened at the site, and, on completion, the development will provide 1,050 new homes, 300,000 square feet of office space and 100,000 square feet of retail, leisure and community facilities, including a school[106]. The public realm will support walking and cycling within the development and access to the nearby canal path for longer active travel trips[107].

The development is being led by CEG, working with Leeds City Council and West Yorkshire Combined Authority, and secured £10.3 million from DfT to support the new stations at Kirkstall Forge and nearby Apperley Bridge, with additional funding from the LEP[108]. CEG has been active in engaging with the local community, including holding a stall at the local annual festival and working with resident associations and community groups[109].

Figure 9 – Kirkstall Forge Rail Station (Image source: West Yorkshire Combined Authority)

Kirkstall Forge railway station connects the site with Leeds (a six minute journey) and Bradford (15 minutes), as well as other local stops[110]. The station exceeded projected demand of 20,200 passengers in the first year, achieving those numbers in the first five months of operation, prompting service frequencies to be increased[111].

VAUBAN, FREIBURG, GERMANY

Vauban is a new development 3km from the centre of Frieburg which was planned from the outset to be a sustainable neighbourhood. It was built on a brownfield site, which was a former barracks. The area prioritises walking and cycling, with low speed limits and 'home zone' rules meaning cars should give way to pedestrians[112]. The area is served by a tram, which operates a peak service every five minutes and all households are within 400 metres of a tram stop[113]. There are many local facilities and housing density is around 90-100 dwellings per hectare[114].

Vauban is a great example of an ambitious TOD scheme, using a brownfield site and delivering 2,000 houses and 600 jobs at completion in 2010[116].

The use of measures to discourage car use and encourage public transport use and active travel mean that 40% of households do not own a car and 57% of residents of non-car owning households gave up the car when they moved to Vauban[117].

Figure 11 – Vauban Urban Realm (Image source: Tom Brehm[115])

Car ownership is lower than the wider Freiburg area, at 150 cars per thousand residents, compared to 270, however residents have access to the local car club for when they need to use a vehicle[118].

Domestic energy use is also lower in Vauban than the average German household, due to sustainable housing design and combined heat and power generation connected to a district heat network[119].

BAY AREA RAPID TRANSIT (BART), CALIFORNIA, USA

BART provides rapid transit connections across the San Francisco Bay Area and has been involved in a number of TOD schemes[120]. The network area map below has TOD schemes highlighted in red. Since 2000, there has been growth in ridership of BART, and public transit made up 34% of travel to work and 24% of all trips. Walking and cycling have also increased over this time period[121].

The Contra Costa Centre is one development on the BART network, centred on the BART stop Pleasant Hill / Contra Costa Centre, which can be seen on the top right of the network map.

The scheme is a mixed-use, multi-phase programme. There are currently around 600 rental properties at the site, with 20% of these designated affordable homes and 35,000 square feet of retail properties. There are a range of commuter offers available to residents of Contra Costa to incentivise sustainable transport choices, including savings on public transport tickets and food vouchers for cycling or walking to work.

Figure 12 – Bay Area Rapid Transit network map[122] with TOD schemes shown by the red houses (those which are commercial development only have been omitted) (Image source: BART)

BART has a number of targets for expanding TOD in the future including:

- 20,000 new residential units on BART property by 2040;
- 84% increase in housing units within half a mile of BART stations from 2010 to 2040, which equates to 155,800 new units;
- 53% increase in jobs within half a mile of BART stations between 2010 and 2040 (277,500 new jobs); and
- To ensure all station areas (surrounding half a mile) have a grocery store by 2040[123].

BART is exploring how to implement successful value capture mechanisms to finance transit improvements. Properties within half a mile of BART stations have a 15-18% value premium attributed to their proximity to the station[124]. At present, the BART TOD programme negotiates lease revenue and benefit fees from developments to capture value over time, and this is reinvested to BART for maintenance and service improvements[125].

Evidence suggests that BART TOD schemes result in increased ridership. As of 2017, completed and under construction projects generated a million extra trips a year, with an additional farebox revenue of $3.9 billion, supporting the long term sustainability of BART[126].

RATP, FRANCE

RATP is a French state owned, public transport operator, and it has engaged in operations beyond buses, trams and trains, including TOD schemes.

Its subsidiary company, SEDP, manage real estate, including redevelopment of bus stations[127]. It expects to deliver over 3,200 housing units in Paris by 2024, including 2,100 social housing units[128].

One scheme is the redevelopment of the Montrouge bus station, in the south of Paris. Here it will be delivering an underground vehicle maintenance facility for 195 vehicles. Above ground there will be retail units, office space, 650 new flats, a primary school, crèche and a social club for elderly people. The development will have green roofs, creating a 1.2ha rooftop garden[129].

A further subsidiary of RATP is Logis-Transports, which acts as a social landlord and seeks to improve housing conditions for RATP employees. It manages 10,000 rental flats across greater Paris, and are building more flats at a rate of 350 per year[130].

TACKLING THE BARRIERS AND OBSTACLES TO TRANSIT ORIENTED DEVELOPMENTS

The preceding sections of this report have demonstrated how transit oriented development can help support good growth and change cities for the better. However, to make more high quality TOD happen, there are a number of barriers and obstacles that must be overcome. The barriers relate to the planning framework, funding, land and resourcing of local planning services. These are explored below.

THE PLANNING FRAMEWORK

The National Planning Policy Framework (NPPF) sets out National Government approaches to planning for residential and commercial developments. In order to promote the principles of TOD we need a NPPF (and wider planning policies) which are in line with those principles.

Close involvement of transport authorities and providers

The Chartered Institute for Highways and Transportation (CIHT) suggests that transport authorities and operators need to be involved at every stage of the planning process to ensure that sustainable transport is integrated into new developments and not an obstacle to overcome in the process. Without this, present patterns of development which deliver areas which are dependent on private car travel will continue, with implications for a range of policy objectives from congestion to air quality and carbon emissions.

The Homes England strategic plan 2018 to 2023 highlights the need for collaboration and indicates its intention to align housing delivery with strategic infrastructure projects such as High Speed 2 and Northern Powerhouse Rail[131].

Densities

The NPPF suggests that minimum densities should be in place for town and city centres and areas well served by public transport[132].

However, it does not define what these densities should be. Whilst this allows for local decisions to take into account specific circumstances, there could be missed opportunities to make the best use of land near to transport infrastructure. For example, Centre for Cities has called on the Government to "stipulate that all land within a 1km radius of a train station should have a minimum density for new housing"[133].

Work by Transport for New Homes suggests that transport is often an afterthought in the planning process, which results in improvements to road access being the easiest add-on solution. This is further exacerbated by the fact that strategic transport authorities and the transport industry are not statutory consultees in the planning process.

Housing

Local plans[134] are developed by local authorities, using the 'Housing and economic land availability assessment'[135] and 'Housing need assessment'[136], to establish five year land supply for housing. These plans should lead to a strategic approach to site selection for new housing. However, it can lead to a focus on deliverability, rather than sites which can offer opportunities to meet multiple public policy goals, as TOD schemes can.

When sites for development are selected for deliverability it can lead to large greenfield sites being allocated for housing that are difficult to access by public transport and can result in neighbourhoods designed for car-based lifestyles[137].

5

In order to support the principles of TOD, selection of multiple smaller brownfield sites could be more appropriate and could deliver on wider goals around dense neighbourhoods, public transport use and active lifestyles[138]. Site selection for new developments is also linked to other barriers around land, which are explored further in this section.

The Local Government Association (LGA) has also raised concerns around the potential prioritisation of housing over other kinds of development (e.g. retail, commercial) in the NPPF. A focus solely on housing could disrupt the principles of TOD, which emphasises the need to integrate services (e.g. healthcare, leisure, education) and commercial development with new housing, in order to deliver localised services and job opportunities, reducing the need to travel and ensuring that services are within walking or cycling distance.

Regional spatial strategies

Planning of new developments needs to be integrated into a wider regional spatial strategy, taking into account local geographies, in order to meet TOD principles. There is some evidence of this happening where devolution of powers is most established, for example, the MTS in London and the Greater Manchester Spatial Framework. However, other areas need greater powers to also be able to move towards this integrated approach to spatial planning and transport.

Appraisal

In order to support TOD schemes, appropriate appraisal mechanisms are needed to assess the transport impacts of new developments, potential solutions and also to explore where new transport schemes can unlock developments.

Transport assessments are required as part of the planning application process, which examine the potential transport impacts of new developments and how these can be mitigated[139]. However, these tend to look at a 'business as usual' type approach, assuming continuation of historic trends around private car use, which result in prioritisation of car based travel[140]. Integrating transport planning throughout scheme development could help to move away from the prioritisation of car based travel and expand public, and active, transport choices in new schemes.

WebTAG forms the basis for transport appraisal in the UK and the Department for Transport has developed guidance for capturing housing impacts in transport appraisal[141]. The aim of this is to demonstrate how transport schemes which facilitate or unlock new housing or commercial developments have a greater value for money. They highlight the case study of Kirkstall Forge, West Yorkshire, where the value for money of the new railway station opening increased from low to high when the housing benefits, calculated on the basis of land value uplift, were included[142].

In London, Public Transport Access Level (PTAL)[ii] is used to assess whether new developments are accessible by public transport[143]. Sites are given a score from 6b, for the highest level of connectivity through to 0 for the lowest. PTAL supports the London Plan by ensuring that new developments are better connected, reducing the need to travel by car and encouraging developments which are high density[144].

ii. PTAL is also known to refer to Public Transport Accessibility Level, but to avoid confusion with other meanings of accessibility they are now using Public Transport Access Level. They remain the same indicator.

FUNDING

Alongside a supportive planning policy framework, we also need a supportive funding framework which gives the city regions the funding flexibilities they need to pursue whichever mechanisms are appropriate and viable within different local contexts. Among the range of mechanisms that are currently available, issues and opportunities around the main options are discussed below.

Planning Obligations and Community Infrastructure Levy

Section 106 (S106) planning obligations can be used to make development proposals acceptable.

S106 contributions must only be sought when they meet the following conditions:

- Necessary to make the development acceptable in planning terms;
- Directly related to the development; and
- Fairly and reasonably related in scale and kind to the development[145].

The Community Infrastructure Levy (CIL) was introduced as a new planning obligation in 2010 and can be charged by local authorities in order to fund new infrastructure or support refurbishment of existing infrastructure. Facilities that can be funded under CIL includes transport, flood defences, schools, hospitals and other health and social care facilities[146].

CIL, unlike S106 contributions, can be levied on all new developments within a defined geography and used for strategic projects. In London, since 2012, most new developments granted planning permission were charged a Mayoral CIL to raise funds for Crossrail[147].

An example of the positive use of CIL powers is Bristol City Council which imposed a CIL on new developments since 2013, using 80% of this for new infrastructure including transport[148]. One of the major beneficiaries is Metrobus, a new bus rapid transit system using segregated busways and bus lanes[149]. At present, there is one route operating, connecting the Emersons Green area to the city centre, via a park and ride site, Bristol and Bath Science Park and the University of the West of England[150].

Two further routes are to be added to the Metrobus network, which has state of the art buses which will be powered by biogas within two years and are fitted with free WiFi and USB charging[151]. The scheme also includes improvements for walking and cycling infrastructure within the city[152].

Viability tests are used at the plan stage to assess the financial viability of a development and should take into account the cost implications of CIL and S106[153]. There are reports that developers use viability tests to negotiate reductions in S106 contributions and proportions of affordable housing in new schemes[154].

In the Autumn 2018 budget, the Government indicated that it would simplify developer contributions, making it easier to pool developer contributions for a single piece of infrastructure[155]. It also suggested that it will introduce a Strategic Infrastructure Tariff for Combined Authorities[156]. These measures could support TOD schemes in the future and allow new developments to be better integrated with transport infrastructure, funded, in part, by developers.

Tax increment financing (TIF)

Tax increment financing (TIF) is a method of using additional tax revenues from an area, for example increased council tax and business rates, to repay loans taken out to pay for new infrastructure serving that area[157]. In this way it can be used to help fund the transport improvements that will unlock the developments that will generate higher business rates and council tax rates in the future. This method was used to fund the Northern Line extension to Battersea, along with CIL and other developer contributions[158].

TIF has also been promoted in the USA as a method for funding TOD schemes[159]. It was used in Atlanta to deliver the 'BeltLine' project, a 22 mile transit and greenway corridor, which also delivered affordable homes, created jobs and improved quality of life[160].

Figure 13 – Birmingham New Street station concourse[164]

Land value capture

Investing in improved transport can increase the value of both residential and commercial property through increases in land values. For example, there has been a 33% increase in passengers at Birmingham New Street since 2015 and this has contributed to property price increases of 44% within 2km of the station, a 14% premium compared to elsewhere in the city[161]. The affects have also been felt across the region with increases in rail passengers and house prices seen in Rugby, Coventry and Long Buckby[162].

In London, evidence suggests that the property price premium of being located within 500 metres of a Tube or National Rail station is 10.5%, falling to 7.6% at 750 metres and 4.9% at 1km[163].

Clearly, capturing some or all of these increases in land value that transport schemes can bring could help pay in part, or in total, for those transport schemes in the first place. Conversely, not having a mechanism to capture that value can lead to transport schemes not happening because of lack of funding, or if schemes are built, it can lead to windfall gains for owners of commercial and residential property as well as landowners. This in turn can have knock on effects for local property markets and the wider economy.

At the same time, mechanisms that seek to capture increases in land value can be politically contentious depending in part on how far reaching they are. Schemes which capture only the value uplift for new or comprehensively repurposed developments, or for larger businesses, are likely to be less contentious.

There are a number of mechanisms that can be used to capture land value uplift including, but not limited to:

- Business rate revaluation, retention and supplements;
- Development rights auction model (DRAM);
- Stamp Duty and Land Tax (SDLT) retention; and
- A new land value capture charge, e.g. transport premium charge[165].

Each of these mechanisms is explained further below. Both CIL and TIF, explained above, can be used as part of the suite of measures for capturing value and funding infrastructure, along with those defined specifically as land value capture mechanisms.

Business rates retention and supplements offer a way of leveraging funding. Revaluation of business rates can be used to capture the uplift in the value of commercial properties associated with infrastructure improvements[166]. Supplements can also be levied on business rates to capture land value uplift with additional receipts being used for strategic projects[167]. In order for this revenue stream to support transport infrastructure improvements, business rates (or the supplement) would need to be retained locally.

The **DRAM** approach involves auctioning off the development rights for an area which will benefit from a new transport intervention (such as the zone around a new station). This is similar to the approach by MTR in Hong Kong to fund transport infrastructure improvements[168]. However, the DRAM approach is best suited to a site where there is little or no existing development or where existing land holdings and property has been acquired for the auction.

Under the **SDLT approach**, the higher value of residential and commercial property resulting from a new transport intervention is captured through a premium on SDLT at the point of sale [169]. This would require local retention of SDLT, otherwise the revenue would be accrued by central government. This is a politically challenging approach to land value capture, as charges would fall on existing properties.

There is also the potential for specific **new land value capture charges**, such as a transport premium charge, which could be used to capture a portion of the uplift premium paid to landowners by new purchasers or tenants of residential property for access to new or improved transport infrastructure[170]. This would be challenging to implement because, as for SDLT, charges would fall on existing properties. But, as the numbers below show, could deliver the highest value capture.

Modelling undertaken for Transport for London shows that land value capture mechanisms applied to eight sample transport projects, including Crossrail 2 and the Bakerloo line extension, could raise between £29bn and £44bn, with the eight sample projects having a capital cost of £36bn[171].

The mechanisms identified and funds generated include:

- £13bn – £28bn through a transport premium charge;
- £6bn through zonal retention of SDLT;
- £7bn through retention and revaluation of business rates; and
- £3bn from implementation of DRAM[172].

In Singapore, land value capture has been used to fund infrastructure improvements through taxation of development and the sale of public land to developers on a leasehold basis, which allows the Government to define the parameters of development[173].

In Montreal, Canada, the regional authority has captured uplift in land value from transit stations through developer charges, which are levied on new constructions, major alterations and redevelopment[174]. This has been seen as more politically acceptable as it only charges new developments or changes in use, and doesn't penalise existing property owners.

In Germany and the Netherlands land values are lower than in the UK, enabling faster development and greater availability of suitable land for development. Freezing of land prices on 'under used or poorly used land' designated for development is used in Germany to bring forward land[175]. The public sector role in this process allows land value uplift of new developments to be captured and re-invested[176].

In the Netherlands, housing supply was increased by 7.6% in just over a decade, largely through urban extensions which were strategically planned[177] . The Government supported these housing developments with funding for infrastructure, which was matched by local authorities[178].

Land value capture mechanisms are being used on the BART network to fund infrastructure improvements[179], as discussed in Section 4. Other examples of cities that have used land value capture mechanisms to fund transport infrastructure include Chicago, Paris, Melbourne and Copenhagen[180].

The Housing, Communities and Local Government Committee suggested in its report about Land Value Capture, that local and national governments could benefit from mechanisms that allow a greater proportion of land value increases to be captured[181].

At present, some of the mechanisms that could be used, such as the transport premium charge, are unavailable and could be politically difficult to implement.

TfL recommended that the Government, along with themselves and the Mayor of London, should look at developing a paper for wider consultation on land value capture mechanisms. We would support this recommendation (enhanced to take in the country's other major urban areas) and their suggestion that the paper should set out the objective of land value capture, the need for and principles of a charge, and the advantages and disadvantages of design options for a charge.

LAND

For high quality TOD to take place, land is needed for them to be built on and public authorities need to be able to either control or influence the nature of those developments.

Issues around the ownership of use of land surrounding transport infrastructure, in particular around railway stations, can be a significant obstacle. This is especially true when rail land, stations and land in close proximity to stations is owned by Network Rail or other national entities.

The issues here include:

- Land that could be used for high quality TOD is sold off for alternative use for the highest return developments;
- Revenue raised from land sales is recycled into the Treasury or the rail sector rather than reinvested in part or in whole in ensuring high quality TOD;
- Land that could be used for TOD is retained for operational convenience or land banked;
- Schemes can be developed without local influence, input or oversight leading to missed opportunities for ensuring integration with wider local housing, transport and economic planning and opportunities;
- Difficulties in accumulating land of sufficient scale;
- While brownfield sites should be prioritised for TOD schemes, there are issues around land preparation and remediation which can create additional challenges in bringing these sites forward for development, though there are benefits to developers in being located close to urban amenities[182].

In the case of Network Rail, the company is seeking to address its funding shortfall through the sale of £1.8bn worth of assets in England and Wales including retail units in stations and commercial estate[183].

As of 2018, land already released created capacity for 3,250 homes[184], and by March 2020 there should be land for 12,000 homes released across 200 sites[185].

Network Rail's strategy around land released for housing seeks to support the growth of rail use and the company aims to work closely with local authorities, developers and Homes England to bring sites forward for housing[186]. It is critical that strategic transport bodies are included in this process to ensure that wider regional objectives are considered and that schemes can deliver across multiple policy objectives.

As the case studies in section 4 show, local and regional authorities can play a key role in ensuring high quality TOD but at present they have too little leverage or influence over rail land. The situation is very different in Scotland, where Transport Scotland has the powers to ensure that no railway assets on the Scottish network should be sold or disposed of without Scottish Ministerial approval[187]. Scottish Ministers also require Network Rail to optimise the availability of redundant or underused assets, including land, for the benefit of the local community[188]. Similar powers are required in England too, ideally at the Combined Authority level for the city regions and the London Mayoral level in London.

Such powers over land disposal could complement greater powers for devolved authorities over stations themselves. In Greater Manchester, the Mayor has made the case for devolved control of stations in order that decisions could be made at a local level and improvements around accessibility, quality of stations and redevelopment opportunities could be delivered[189].

In the West Midlands, a Stations Alliance (WMSA) has been established to bring together the stakeholders working on stations, including West Midlands Rail, Network Rail and the Station Facility Owner[190]. The key aims of the WMSA is to provide quality gateways and support the wellbeing and development of the areas they serve[191]. This could help to align stakeholders involved in station assets and enable local decision making and prioritisation of policy areas.

There are challenges around accumulating land at sufficient scale to deliver strategic new developments and this is highlighted in a report by Urbed to the Greater London Assembly[192]. These challenges relate to a number of factors including unifying multiple interests, providing infrastructure to land which would not otherwise be developed and land remediation[193].

The report also suggests a number of measures that could improve how land for development can be assembled with greater powers around land assembly and purchase, and supporting boroughs to overcome some of the challenges in bringing strategic sites to development[194]. In 2017, the Government commissioned Oliver Letwin MP to undertake an Independent Review of Build Out Rates in order to understand the gap between housing completions and the amount of land allocated[195].

Findings of the Letwin review included the following recommendations to Government:

- Adopting new planning rules to apply to large sites (more than 1,500 units) to diversify these sites;
- Establish a National Expert Committee to advise local authorities on interpreting diversity requirements for large sites;
- Provide incentives to diversify sites of over 1,500 units in areas of high housing demand;
- Consider allocating funding to prevent interruption of development on existing large sites;
- Introduce a power for local planning authorities to designate areas within local plans as land that can only be developed as single large sites and to create master plans for these; and
- Give local authorities statutory powers to purchase land designated for such large sites compulsorily at prices which reflect the value of those sites once they have planning permission and a master plan[196].

As highlighted above, building on brownfield sites can offer additional challenges around land remediation, but also brings significant locational benefits, where these are located in dense urban areas with good existing or potential transport connectivity.

Local authorities are required to produce registers of brownfield sites available for housing to aid developers in identifying sites for new homes[197].

The Government allocated £4.5 billion to the Home Building Fund in 2017, which included funding to unlock homes on brownfield sites[198]. The Home Builders Federation indicated in 2015 that there could be potential to explore further incentives for development of brownfield land for development[199].

RESOURCING LOCAL PLANNING

Beyond the wider points regarding planning and funding for TOD schemes, it is also important to note the impacts of local government cuts on neighbourhood services, including planning. It is often suggested that planning services are a barrier to housebuilding but councils approve nine out of ten applications[200].

However, in 2017, the LGA estimated that planning departments were missing out on £70 million a year due to funding cuts and that this hampers their ability to process applications[201]. This constraint on planning services is also likely reducing the ability for authorities to focus on strategic developments, master-planning and ensuring that sustainable transport is considered throughout the process. The LGA argues that local authorities should be able to set planning fees locally[202], in order to cover costs and adequately resource planning services – a call that we support.

The Housing Communities and Local Government Committee highlighted that local authorities need to be able to negotiate robustly with developers[203]. It recommended that the Government should work with the LGA to provide additional resources and training to this end, and this could help to ensure that new developments are integrated with transport infrastructure and that appropriate developer contributions can be collected[204]. The Home Builders Federation also called for planning authorities to be adequately resourced in order to boost housing supply[205].

This section has drawn together some of the key barriers and obstacles to TOD schemes related to the planning and funding framework and issues around land.

CONCLUSION 6

Transit oriented development has the potential to help cites become happier and healthier places to live and work, contributing to reduced congestion and air pollution. It can also help support urban agglomeration economies by opening up new housing and employment opportunities, accessible by public transport.

This report has sought to make the case for high quality transit oriented development in the UK and demonstrate the benefits of such schemes for achieving multiple public policy goals.

In doing so the report has set out seven key factors for successful transit oriented development:

1. Transit / public transport should be at the heart of the development, whether that's heavy rail, light rail or bus.
2. Developments need to have high density of housing and commercial properties in order to provide critical mass for transit use.
3. TOD neighbourhoods should support walking and cycling as the first choice for accessing public transport and other services.
4. Driving, and ownership, of private vehicles, should be discouraged through parking restrictions and traffic calming.
5. Services should be integrated into the development, such as shops, healthcare and schools, in order to encourage more localised trips.
6. Use of brownfield sites (generally recognised as previously developed land[206]) should be first choice locations for TOD.
7. Public sector involvement is a key enabler of TOD schemes and helps to ensure that new developments deliver across multiple urban policy objectives.

The report has also set out the barriers and obstacles to accelerating the take up of transit oriented development.

The report's summary recommendations on how to address those barriers and obstacles are:

- A national planning framework that favours transit oriented development rather than car-based low density sprawl.
- A national funding framework with more options for ensuring that value uplift from new developments can be used to improve transport connectivity. In particular we need a joint programme of work between city region and national Government to examine the issues, and develop the options, on land value capture mechanisms.
- More influence over land held by agencies of national Government which would be prime sites for transit oriented development schemes. In particular city region authorities in England need the same veto powers over Network Rail land sales that the Scottish Government currently enjoys.
- More devolution of powers over stations where a city region transport authority has the ambition and capacity to take on those responsibilities.
- Measures to improve the planning capacity of local authorities in order to respond effectively, rapidly and imaginatively to opportunities for high quality transit oriented development.

REFERENCES

1. ITDP (2017) TOD Standard [online] **www.itdp.org/tod-standard**
2. Victoria Transport Policy Institute (2017) Transit Oriented Development – Using Public Transit to Create More Accessible and Liveable Neighbourhoods [online] **http://www.vtpi.org/tdm/tdm45.htm**
3. Ministry of Housing, Communities and Local Government (2017) Brownfield land registers – Guidance [online] **https://www.gov.uk/guidance/brownfield-land-registers**
4. CPRE (2014) Removing Obstacles to Brownfield Development – How Government can work with communities to facilitate the re-use of previously developed land, Foresight Paper No.2 [online] **https://www.cpre.org.uk/resources/housing-and-planning/housing/item/download/3752**
5. Cervero (2009) 'Public Transport and Sustainable Urbanism: Global Lessons', in Curtis, Renne and Bertolini (ed.) Transit Oriented Development: Making in Happen, Routledge, Abingdon
6. Urban Transport Group (2018) Policy futures for urban transport, [online] **http://www.urbantransportgroup.org/system/files/general-docs/UTG%20%E2%80%93%20Policy%20futures%20for%20urban%20transport%202018%20FINAL%20web.pdf**
7. Barton, Davis and Guise (1996) Sustainable Settlements: a guide for planners, designers and developers, The Local Government Management Board
8. CABE (2005) Better Neighbourhoods: Making higher densities work, [online] **http://webarchive.nationalarchives.gov.uk/20110118185901/http://www.cabe.org.uk/files/better-neighbourhoods.pdf**
9. Planning for Sustainable Travel (n/k) Density, **http://www.plan4sustainabletravel.org/key_themes/density/ date accessed 26/02/2018**
10. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] **http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf**
11. Planning for Sustainable Travel (n/k) Density, **http://www.plan4sustainabletravel.org/key_themes/density/ date accessed 26/02/2018**
12. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] **http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf**
13. Office for National Statistics (2013) KS101EW – Usual resident population – 2011 Census
14. Office for National Statistics (2014) DC7701EWla – Method of travel to work – 2011 Census
15. McPherson and Haddow (2011) Shall we dense? [online] **http://www.sjb.com.au/docs/shall-we-dense_policy-potentials.pdf**
16. Ibid.
17. Campaign to Protect Rural England (2016) Making the Link: Integrating land use and transport planning through Public Transport Oriented Development, Foresight Paper No.6, [online] **https://www.cpre.org.uk/resources/housing-and-planning/housing/item/4345-making-the-link**
18. Greater Manchester Combined Authority (2016) Draft Greater Manchester Spatial Framework (October 2016) [online] **https://www.greatermanchester-ca.gov.uk/downloads/file/371/draft_greater_manchester_spatial_framework_october_2016_-_full_version**
19. Ibid.
20. Mayor of London (2018) Mayor's Transport Strategy [online] **https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf**
21. Ibid.
22. Transport for London (2017) Healthy Streets for London [online] **http://content.tfl.gov.uk/healthy-streets-for-london.pdf**
23. Ibid
24. Pteg (2014) Transport works for growth and jobs – why urban transport drives successful economies [online] **http://www.urbantransportgroup.org/system/files/general-docs/Transport%20Works%20report%20final%20version%20Mar14.pdf**
25. Ibid.
26. Florida, R. (2003), The Rise of the Creative Class: and How It's Transforming Work, Leisure, Community and Everyday Life, Basic Books.
27. McWilliams D (2016) The Flat White Economy, Duckworth Overlook, London
28. Ibid.
29. PWC (2011) Millennials at work: Reshaping the workplace, [online] **https://www.pwc.de/de/prozessoptimierung/assets/millennials-at-work-2011.pdf**
30. Shelter (2016) Achieving the ambition – Building one million homes this Parliament [online] **http://england.shelter.org.uk/__data/assets/pdf_file/0009/1277325/2016_08_23_Achieving_the_Ambition_v.7.pdf**
31. Shelter (2018) What is the housing crisis? [online] **http://england.shelter.org.uk/campaigns_/why_we_campaign/the_housing_crisis/what_is_the_housing_crisis**
32. Transport for New Homes (2018) Project Summary and Recommendations [online] **http://www.transportfornewhomes.org.uk/wp-content/uploads/2018/07/transport-for-new-homes-summary-web.pdf**
33. Ibid.
34. Royal Town Planning Institute (2018) Settlement Patterns, Urban Form & Sustainability – An evidence review [online] **http://www.rtpi.org.uk/media/2822766/settlementpatternsurbanformsustainability.pdf**
35. Garton Grimwood (2017) Green Belt – House of Commons Library Briefing Paper [online] **https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN00934#fullreport**
36. Hanna and Bosetti (2017) Ideas above you station: Exploring the potential for development at London's stations, Centre for London [online] **https://www.centreforlondon.org/reader/ideas-above-your-station-exploring-the-potential-for-development-at-londons-stations/**
37. Ibid.
38. C40 Cities (2016) Transit Oriented Development Good Practice Guide [online] **www.c40.org/networks/transit-oriented-development**
39. Haas, Miknaitis, Cooper, Young and Benedict (2010) Transit Oriented Development and the Potential for VMT-related Greenhouse Gas Emissions Growth Reduction, [online] **https://www.cnt.org/sites/default/files/publications/TOD-Potential-GHG-Emissions-Growth.FINAL_.pdf**
40. Ibid.
41. Thorpe (nk) The World's Most Successful Model for Sustainable Urban Development? Smart Cities Drive [online] **https://www.smartcitiesdive.com/ex/sustainablecitiescollective/words-most-successful-model-sustainable-urban-development/229316/**
42. Ibid.
43. King's Cross Central Ltd. (2018) About the homes at King's Cross [online] **https://www.kingscross.co.uk/about-homes-at-kings-cross**
44. Centre for Economics and Business Research (2014) The future economic and environmental costs of gridlock in 2030 – An assessment of the direct and indirect economic and environmental costs of idling in road traffic congestion to households in the UK, France, Germany and the USA, [online] **https://www.cebr.com/wp-content/uploads/2015/08/INRIX_costs-of-congestion_Cebrreport_v5_FINAL.pdf**
45. Urban Transport Group (2017) Urban Congestion – Consultation Response to Transport Select Committee [online] **http://www.urbantransportgroup.org/system/files/general-docs/Urban%20Congestion%20final%20UTG%20response.pdf**

46. KPMG, (2017), Reimagine Places: Mobility as a Service, [online] **https://assets.kpmg.com/content/dam/kpmg/uk/pdf/2017/08/reimagine_places_maas.pdf**

47. KPMG (2018) Sustainable transport – The key to unlocking the benefits of new housing, A report to Greener Journeys [online] **https://transportknowledgehub.org.uk/wp-content/uploads/2018/05/CRT090572_Sustainable-Transport_Housing_FINAL.pdf**

48. Ibid.

49. Field (2011) Case Study: Vauban, Freiburg, Germany, ITDP Europe [online] **https://www.itdp.org/wp-content/uploads/2014/07/26.-092211_ITDP_NED_Vauban.pdf**

50. National Infrastructure Commission (2017) Congestion, Capacity, Carbon: Priorities for national infrastructure [online] **https://www.nic.org.uk/wp-content/uploads/Congestion-Capacity-Carbon_-Priorities-for-national-infrastructure.pdf**

51. ITDP (2011) Our Cities Ourselves: Principles for Transport in Urban Life [online] **https://www.itdp.org/our-cities-ourselves-principles-for-transport-in-urban-life/**

52. Lee, I. Shiroma, E. Lobelo, F. Puska, P. (2012), Effect of Physical Inactivity on Major Noncommunicable Diseases Worldwide: an Analysis of Burden of Disease and Life Expectancy, The Lancet, Vol. 380, pp. 219-229

53. Urban Transport Group (2016) The Case for Active Travel [online] **http://www.urbantransportgroup.org/system/files/general-docs/The%20Case%20for%20Active%20Travel_0.pdf**

54. Arvidsson, D. Kawakami, N. Ohlsson, H. Sundquist, K. (2012), Physical Activity and Concordance between Objective and Perceived Walkability, Med Sci Sports Exerc, Vol. 44, No. 2, pp. 280-287

55. Sundquist, K. Eriksson, U. Kawakami, N. Skog, L. Ohlsson, H. Arvidsson, D. (2011), Neighborhood walkability, physical activity, and walking behavior: the Swedish Neighborhood and Physical Activity (SNAP) study, Social science & medicine, Vol. 72, No. 8, pp. 1266- 1273

56. Urban Transport Group (2016) The Case for Active Travel [online] **http://www.urbantransportgroup.org/system/files/general-docs/The%20Case%20for%20Active%20Travel_0.pdf**

57. Parliamentary Office of Science and Technology (2016) Green Space and Health [online] **http://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-0538**

58. NHS England (2016) NHS Chief announces plan to support ten healthy new towns – Press release [online] **https://www.england.nhs.uk/2016/03/hlthy-new-towns/**

59. BART (2018) BART Board of Directors: Transit-Oriented Development Policy Performance Measures and Targets [online] **http://www.bart.gov/sites/default/files/docs/B-%20TOD%20Performance%20Targets%202040%20Adopted%2012-1-16_0.pdf**

60. Ibid.

61. C40 Cities (2016) Transit Oriented Development Good Practice Guide [online] www.c40.org/networks/transit-oriented-development

62. KPMG (2018) Sustainable transport – The key to unlocking the benefits of new housing, A report to Greener Journeys [online] https://transportknowledgehub.org.uk/wp-content/uploads/2018/05/CRT090572_Sustainable-Transport_Housing_FINAL.pdf

63. Urban Transport Group (2018) Number Crunch: Transport Trends in the City Regions [online] **http://www.urbantransportgroup.org/system/files/general-docs/UTG_Number%20crunch%20transport%20trends%20in%20the%20city%20regions_digital.pdf**

64. Ibid.

65. West Yorkshire Combined Authority (2018) Train service improvements for Kirkstall Forge passengers welcomed [Press release – online] **https://westyorks-ca.gov.uk/news/train-service-improvements-for-kirkstall-forge-passengers-welcomed/**

66. BART (2018) Transit Oriented Development (TOD) [online] **https://www.bart.gov/about/business/tod**

67. Campaign for Better Transport (2015) Getting there: How sustainable transport can support new development [online] **https://bettertransport.org.uk/sites/default/files/research-files/Getting_there_final_web_0.pdf**

68. King's Cross Central Ltd. (2018) About the development [online] **https://www.kingscross.co.uk/about-the-development**

69. Urban Land Institute (2014) ULI Case studies – King's Cross [online] **https://casestudies.uli.org/kings-cross/**

70. King's Cross Central Ltd. (2018) About the homes at King's Cross [online] **https://www.kingscross.co.uk/about-homes-at-kings-cross**

71. Ibid.

72. King's Cross Central Ltd. (2018) A Green King's Cross [online] **https://www.kingscross.co.uk/green-infrastructure**

73. Ibid.

74. Price R (2017) Google is finally, officially starting work on its new $1.3 billion London HQ, Business Insider, [online] **http://uk.businessinsider.com/google-finally-breaks-ground-new-1-billion-pound-london-hq-2017-11**

75. Ibid.

76. Hern A (2017) Google submits plans for 'landscraper' London headquarters, The Guardian, [online] **https://www.theguardian.com/technology/2017/jun/01/google-submits-plans-million-sq-ft-london-hq-construction-kings-cross**

77. RPM (2015) Granary Square & UAL [online] **https://flic.kr/p/yqvA6U**

78. Urban Land Institute (2014) ULI Case studies – King's Cross [online] **https://casestudies.uli.org/kings-cross/**

79. Kerr J (2018) LCR: Unlocking difficult sites around transport hubs - presentation to the Rail Stations and Property Summit, February 2018

80. MnNulty J (2017) HS2 station-led development: future opportunities for regeneration (LCR and HS2 Growth Partnership), presentation to Transport-led development in the North of England conference

81. Beckett (2012) New concourse, King's Cross Station, London [online] **https://flic.kr/p/brr8yY**

82. Northstowe **http://www.northstowe.com/ date accessed 26/02/2018**

83. Northstowe (2018) Travel plan **http://www.northstowe.com/content/travel-plan date accessed 01/03/2018**

84. Ed Webster (2012) Cambridge Busway – 21225 on route A at Science Park stop https://flic.kr/p/c3dQW3

85. NHS England (2016) NHS Chief announces plan to support ten healthy new towns – Press release [online] **https://www.england.nhs.uk/2016/03/hlthy-new-towns/**

86. Planning for Sustainable Travel (2018) Case study: Northstowe, South Cambridgeshire [online] **http://www.plan4sustainabletravel.org/case_studies/northstowe_cambridgeshire/**

87. Ibid.

88. Gallagher Estates (n/k) Northstowe Walking and Cycling Booklet, [online] **http://www.northstowe.com/sites/default/files/Northstowe%20Walking%20and%20Cycling%20Booklet%20%28map%20excerpt%29.pdf reproduced with the kind permission of Gallagher Estates**

89. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] **http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf**

90. Department for International Trade (2017) Regeneration Project: MediaCityUK, Salford, Greater Manchester [online] **https://www.gov.uk/government/publications/regeneration-project-mediacityuk-salford-greater-manchester/regeneration-project-mediacityuk-salford-greater-manchester**

91. Media City UK (2018) Key Occupiers [online] http://mediacityuk.co.uk/whos-here/key-occupiers/

92. Pidd H (2016) Salford's Media City UK gets £1bn expansion, The Guardian [online] https://www.theguardian.com/media/2016/sep/01/salfords-mediacityuk-gets-1bn-expansion.

93. New Economy (2016) Deep Dive: 04 Digital and Creative Industries [online] http://www.neweconomymanchester.com/media/1761/04-digital-creative-deep-dive-report-final.pdf

94. Pidd H (2016) Salford's Media City UK gets £1bn expansion, The Guardian [online] https://www.theguardian.com/media/2016/sep/01/salfords-mediacityuk-gets-1bn-expansion

95. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf

96. Ibid.

97. Ibid.

98. Ibid.

99. Ibid.

100. Ibid.

101. Salford City Council (2017) Salford Quays and MediaCityUK [online] https://www.salford.gov.uk/planning-building-and-regeneration/regeneration/projects/salford-quays-and-mediacityuk/

102. Miller and Smithers (2017) Bury is the UK's property hotspot and house prices are soaring in Salford, but how does your area compare? Manchester Evening News [online] https://www.manchestereveningnews.co.uk/news/property/bury-uks-property-hotspot-house-13644344

103. Zoopla (2018) House prices in Salford [online] https://www.zoopla.co.uk/house-prices/greater-manchester/salford/ date accessed 10/04/2018

104. Zoopla (2018) House prices in North West England [online] https://www.zoopla.co.uk/house-prices/browse/north-west-england/?q=north%20west date accessed 10/04/2018

105. Commercial Estates Group (2018) Kirkstall Forge Case Study [online] http://www.ceg.co.uk/case-studies/kirkstall-forge

106. CEG (2018) Kirkstall Forge, [online] https://www.kirkstallforge.com/life/ date accessed 01/03/2018

107. LGA (2018) Planning Positively Through Partnership [online] https://www.local.gov.uk/sites/default/files/documents/5.24%20Planning%20positively_v06.pdf

108. Commercial Estates Group (2018) Kirkstall Forge Case Study [online] http://www.ceg.co.uk/case-studies/kirkstall-forge

109. West Yorkshire Combined Authority (2018) Train service improvements for Kirkstall Forge passengers welcomed [Press release – online] https://westyorks-ca.gov.uk/news/train-service-improvements-for-kirkstall-forge-passengers-welcomed/

110. Ibid.

111. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf

112. Field (2011) Case Study: Vauban, Freiburg, Germany, ITDP Europe [online] https://www.itdp.org/wp-content/uploads/2014/07/26.-092211_ITDP_NED_Vauban.pdf

113. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf

114. Tom Brehm (2010) Quartier Vauban, Freiburg https://flic.kr/p/7EMyXj

115. Field (2011) Case Study: Vauban, Freiburg, Germany, ITDP Europe [online] https://www.itdp.org/wp-content/uploads/2014/07/26.-092211_ITDP_NED_Vauban.pdf

116. Ibid.

117. pteg (2011) Thriving Cities: Integrated land use & transport planning, produced by Transport for Quality of Life, [online] http://www.urbantransportgroup.org/system/files/20112706ptegThrivingCitiesReportforWebFINAL.pdf

118. Thorpe (n.d.) The World's Most Successful Model for Sustainable Urban Development? Smart Cities Drive [online] https://www.smartcitiesdive.com/ex/sustainablecitiescollective/words-most-successful-model-sustainable-urban-development/229316/

119. BART (2018) Transit Oriented Development (TOD) [online] https://www.bart.gov/about/business/tod

120. San Francisco Municipal Transportation Agency (2016) 2015 SMFTA Factsheet [online] https://www.sfmta.com/sites/default/files/reports/2016/2015%20SFMTA%20Transportation%20Factsheet.pdf

121. BART (2018) BART map (Creative Commons licensed) [online] https://www.bart.gov/schedules/developers/maps

122. BART (2018) BART Board of Directors: Transit-Oriented Development Policy Performance Measures and Targets [online] http://www.bart.gov/sites/default/files/docs/B-%20TOD%20Performance%20Targets%202040%20Adopted%2012-1-16_0.pdf

123. BART (2018) Transit Oriented Development (TOD) [online] https://www.bart.gov/about/business/tod

124. Ibid.

125. Ibid.

126. Passenger Transport (2018) Paris – a city of big challenges and big ideas [online] http://www.passengertransport.co.uk/2018/04/paris-a-city-of-big-challenges-and-big-ideas/

127. RATP Group (2016) Activity and sustainable development report [online] http://rapportannuel2016.ratp.fr/ratp-content/uploads/2017/03/RATP_RADD_UK_complet.pdf

128. Ibid.

129. Passenger Transport (2018) Paris – a city of big challenges and big ideas [online] http://www.passengertransport.co.uk/2018/04/paris-a-city-of-big-challenges-and-big-ideas/

130. Homes England (2018) Homes England strategic plan 2018 to 2023 [online] https://www.gov.uk/government/publications/homes-england-strategic-plan-201819-to-202223

131. Ministry of Housing, Communities and Local Government (2018) National Planning Policy Framework [online] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf

132. Breach, A (2018) Four reforms needed to ensure the planning system supports economic growth in cities, Centre for Cities Blog [online] http://www.centreforcities.org/blog/four-reforms-needed-ensure-planning-system-supports-economic-growth-cities/

133. Ministry of Housing, Communities and Local Government (2018) Local Plans – Guidance [online] https://www.gov.uk/guidance/local-plans--2

134. Ministry of Housing, Communities and Local Government (2018) Housing and economic land availability assessment – Guidance [online] https://www.gov.uk/guidance/housing-and-economic-land-availability-assessment

135. Ministry of Housing, Communities and Local Government (2018) Housing need assessment – Guidance [online] https://www.gov.uk/guidance/housing-and-economic-development-needs-assessments

136. Transport for New Homes (2018) Project Summary and Recommendations [online] http://www.transportfornewhomes.org.uk/wp-content/uploads/2018/07/transport-for-new-homes-summary-web.pdf

137. Ibid.

138. Gordon Stokes (nk) Understanding Transport Assessment [online] http://www.gordonstokes.co.uk/transport/ta.html

139. Ibid.

140. DfT (2018) Capturing housing impacts in the appraisal of transport schemes [online] https://www.gov.uk/government/publications/capturing-housing-impacts-in-the-appraisal-of-transport-schemes

141. Ibid.

142. Transport for London (2018) Accessibility & connectivity, [online] https://tfl.gov.uk/info-for/urban-planning-and-construction/transport-assessment-guide/transport-assessment-inputs/accessibility-analysis

143. Ibid.

144. Ministry of Housing, Communities and Local Government (2018) National Planning Policy Framework [online] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf

145. Ibid.

146. Transport for London (2018) Section 106 and CIL [online] https://tfl.gov.uk/info-for/urban-planning-and-construction/transport-assessment-guide/mitigation-and-implementation/section-106-and-cil

147. Sustrans (2017) Linking Active Travel and Public Transport to Housing Growth and Planning, Toolkit Part 1: Aligning housing growth and planning with active travel and public transport, [online] https://www.sustrans.org.uk/sites/default/files/activetraveltoolbox_housinggrowthand_planning_part1v6.pdf

148. Ibid.

149. Metrobus Bristol (2018) https://metrobusbristol.co.uk/say-hello/ date accessed 09/08/2018

150. Ibid.

151. Sustrans (2017) Linking Active Travel and Public Transport to Housing Growth and Planning, Toolkit Part 1: Aligning housing growth and planning with active travel and public transport, [online] https://www.sustrans.org.uk/sites/default/files/activetraveltoolbox_housinggrowthand_planning_part1v6.pdf

152. MHCLG (2018) Viability – Guidance [online] **https://www.gov.uk/guidance/viability**

153. Transport for New Homes (2018) Project Summary and Recommendations [online] **http://www.transportfornewhomes.org.uk/wp-content/uploads/2018/07/transport-for-new-homes-summary-web.pdf**

154. HM Treasury (2018) Budget 2018: Philip Hammond's speech [online] **https://www.gov.uk/government/speeches/budget-2018-philip-hammonds-speech**

155. Ibid.

156. Hanna and Bosetti (2017) Ideas above you station: Exploring the potential for development at London's stations, Centre for London [online] **https://www.centreforlondon.org/reader/ideas-above-your-station-exploring-the-potential-for-development-at-londons-stations/**

157. Ibid.

158. US Environmental Protection Agency (2013) Infrastructure Financing Options for Transit-Oriented Development [online] **https://www.epa.gov/sites/production/files/2014-02/documents/infrastructure_financing_options_for_transit-oriented_development.pdf**

159. Ibid.

160. Savills Research (2018) Market in Minutes – New homes and infrastructure [online] **http://pdf.euro.savills.co.uk/uk/market-in-minute-reports/market-in-minutes-new-homes-and-infrastructure---february-2018.pdf**

161. Ibid.

162. Transport for London (2017) Land Value Capture – Final Report [online] **https://www.london.gov.uk/sites/default/files/land_value_capture_report_transport_for_london.pdf**

163. **https://www.istockphoto.com/gb/photo/grand-central-station-gm915128270-251858406**

164. Ibid.

165. Dosad (2018) Funding infrastructure through land value capture (KPMG), presentation to the Rail Stations and Property Summit, February 2018.

167. Ibid.

168. Ibid.

169. Dosad (2018) Funding infrastructure through land value capture (KPMG), presentation to the Rail Stations and Property Summit, February 2018

170. Transport for London (2017) Land Value Capture – Final Report [online] **https://www.london.gov.uk/sites/default/files/land_value_capture_report_transport_for_london.pdf**

171. Ibid

172. Ibid.

173. Loo (2017) Lessons from Singapore about land value capture, Royal Town Planning Institute [online] **http://www.rtpi.org.uk/briefing-room/rtpi-blog/lessons-from-singapore-about-land-value-capture/**

174. Desjardins L (2018) The integration of urban planning and PT in the Montreal Region: From planning to funding, presentation to the UITP Organising Authorities Committee, Gothenburg, May 2018

175. Urbed (2018) Capital Gains: A better land assembly model for London, report to the GLA [online] **https://www.london.gov.uk/sites/default/files/gla_capital_gains_report_.pdf**

176. Harman and Falk (2016) 'Swift Rail'—funding local rail transit through smarter growth, in Public Money & Management [online] **https://www.tandfonline.com/doi/full/10.1080/09540962.2016.1206759**

177. Falk (2016) Planning for posterity, in Town & Country Planning September 2016

178. Urbed (2007) Learning from Dutch new towns and suburbs – Report of the Harlow Renaissance Study Tour [online] **http://urbed.coop/sites/default/files/Report_1.pdf**

179. BART (2018) Transit Oriented Development (TOD) [online] **https://www.bart.gov/about/business/tod**

180. Future of London (2015) Capturing Value – A London 2050 briefing paper **https://www.futureoflondon.org.uk/?ddownload=14008**

181. Housing, Communities and Local Government Committee (2018) Land Value Capture, Tenth Report of Session 2017-19 [online] **https://publications.parliament.uk/pa/cm201719/cmselect/cmcomloc/766/766.pdf**

182. Building Talk (2016) Facing the challenges of brownfield sites [online] **http://www.buildingtalk.com/facing-the-challenges-of-brownfield-sites/**

183. Network Rail (2015) Report from Sir Peter Hendy to the Secretary of State for Transport on the replanning of Network Rail's Investment Programme [online] **https://cdn.prgloo.com/media/download/0b15cab5ccbc4e96af6c9182b97b6ef0**

184. McGinley K (2018) All change for Network Rail's Property Portfolio, presentation to the Rail Stations and Property Summit, February 2018

185. Network Rail (2016) Network Rail to unlock land for 12,000 new homes by 2020, press release [online] **https://www.networkrailmediacentre.co.uk/news/network-rail-to-unlock-land-for-12000-new-homes-by-2020**

186. Ibid.

187. Transport Scotland (2017) The Scottish Ministers' High Level Output Specification for Control Period 6 [online] **https://www.transport.gov.scot/media/39496/high-level-output-specification-hlos-for-control-period-6-final.pdf**

188. Ibid.

189. Burnham (2017) A 21st Century Transport System for Greater Manchester, speech to the Urban Transport Group [online] **https://www.greatermanchester-ca.gov.uk/news/article/241/mayor_sets_out_major_transport_overhaul**

190. West Midlands Rail (2018) Strategy [online] **http://www.westmidlandsrail.com/strategy/**

191. Ibid.

192. Urbed (2018) Capital Gains: A better land assembly model for London, report to the GLA [online] **https://www.london.gov.uk/sites/default/files/gla_capital_gains_report_.pdf**

193. Ibid.

194. Ibid.

195. Ministry of Housing, Communities and Local Government (2018) Independent Review of Build Out Rates – Draft Analysis [online] **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718878/Build_Out_Review_Draft_Analysis.pdf**

196. Ministry of Housing, Communities and Local Government (2018) Independent Review of Build Out Rates – Final Report [online] **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752124/Letwin_review_web_version.pdf**

197. MHCLG (2017) New measures to unlock brownfield land for thousands of homes [online] **https://www.gov.uk/government/news/new-measures-to-unlock-brownfield-land-for-thousands-of-homes**

198. Ibid.

199. Home Builders Federation (2015) Maximising the private sector's contribution to solving our housing undersupply crisis [online] **https://www.hbf.co.uk/documents/6418/HBF_Report_-_Private_sector_priorities_for_New_Government_-_May_2015.pdf**

200. Local Government Association (2018) LGA responds to Royal Town Planning Institute report on Planning, [online] **https://www.local.gov.uk/about/news/lga-responds-royal-town-planning-institute-report-planning**

201. Local Government Association (2017) Development deadlock: council planning departments 'hampered by missing out on £70million, LGA warns [online] **https://www.local.gov.uk/about/news/development-deadlock-council-planing-departments-hampered-missing-out-ps70-million-lga**

202. Ibid.

203. Housing, Communities and Local Government Committee (2018) Land Value Capture, Tenth Report of Session 2017-19 [online] **https://publications.parliament.uk/pa/cm201719/cmselect/cmcomloc/766/766.pdf**

204. Ibid.

205. Home Builders Federation (2015) Maximising the private sector's contribution to solving our housing undersupply crisis [online] **https://www.hbf.co.uk/documents/6418/HBF_Report_-_Private_sector_priorities_for_New_Government_-_May_2015.pdf**

206. Ministry of Housing, Communities and Local Government (2017) Brownfield land registers – Guidance [online] **https://www.gov.uk/guidance/brownfield-land-registers**

Wellington House,
40-50 Wellington Street,
Leeds LS1 2DE

T 0113 251 7204
E info@urbantransportgroup.org
www.urbantransportgroup.org

URBAN TRANSPORT GROUP