pteg
the voice of urban transport

February 2015

Delivering the future

New approaches to urban freight

This report forms part of ***pteg's*** wider role in stimulating debate around broader policy issues of relevance to transport. We hope that it will generate ideas, discussion and feedback and therefore welcome any comments you may have on the points it raises. You can find our contact details on the back cover of this report.

pteg represents the six strategic transport bodies which between them serve more than eleven million people in Greater Manchester (Transport for Greater Manchester), Merseyside (Merseytravel), South Yorkshire (South Yorkshire Passenger Transport Executive), Tyne and Wear (Nexus), the West Midlands (Centro) and West Yorkshire (West Yorkshire Combined Authority). ***pteg*** is also a wider professional network for Britain's largest urban transport authorities.

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Delivering the future

New approaches to urban freight

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01 Introduction

By road, rail, water, air or pipeline the freight and logistics industry transports the goods and materials we need from point to point – from the food in our supermarkets, to the fuel in our pipelines; office supplies to raw manufacturing materials; televisions to medicines; and small parcels to bulk consignments.

Freight is essential to the effective functioning of our economy and to our cities in particular, which are frequently the ultimate destination for goods. The way in which these goods reach the outskirts of our urban areas, how they are dealt with when they arrive, and how they are transported for the 'last mile' of their journey into the places people live and work has wide ranging implications. Implications for the economy, employment and growth but also for congestion, safety, emissions, road maintenance, noise, vibration, quality of life and the urban realm.

Freight forms part of a much wider debate about what kind of cities we want to live in and how we want them to look and feel. This report presents a vision for safe, smart and clean urban freight which maximises the benefits, and minimises the negative impacts, for local economies, the environment and communities.

It envisages that every opportunity should be taken for freight to make its way to urban areas by rail or water, either directly into those areas or into the major distribution parks that serve them. It argues that those distribution sites should be located so that it is practical for goods to travel the last mile(s) into urban centres using zero/low emission modes. These last mile journeys should be achieved as safely, unobtrusively and with as little environmental impact as possible.

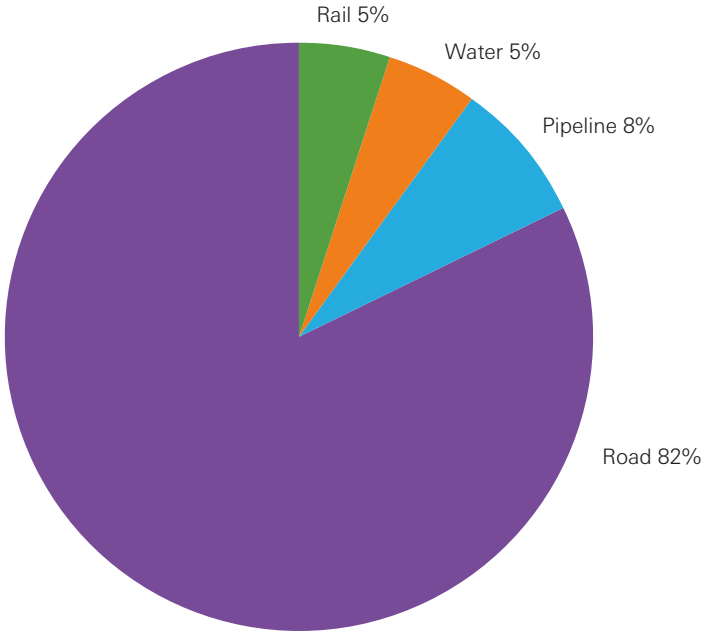
This report examines what it will take to achieve such a vision and ensure that urban freight works for cities and that cities work for urban freight.

What is freight?

Freight transport is the carriage of goods between an origin and a destination because goods available at one geographical location are required at another location for processing, storage or consumption[1]. Freight transport forms part of logistics – a broader concept that involves designing and managing supply chains, including purchasing, manufacturing and storage as well as transport[2]. This paper focuses on freight transport, rather than logistics, but attention is also paid to how goods are consolidated and stored as these facilities act as important nodes in the wider freight network.

As the chart opposite illustrates, the vast majority of freight in Great Britain travels by road.

Domestic freight transport: proportion of goods lifted by mode 2010



Source: DfT Transport Statistics Great Britain table TSGB0401.

What is urban freight?

The ultimate destination for many of these consignments will be our cities. Many UK city economies are based on the service industries, principally financial services, education, health, public administration and retail. These industries rely on timely deliveries of items such as office supplies, retail goods, medicines, documents and parcels. City regions more widely are also home to a diverse mix of industries, from metalworking to high tech companies, all in need of raw materials and the means to distribute their products.

City regions are also hubs for residential and commercial development projects meaning that large volumes of construction materials must travel into urban centres. Furthermore, with extensive residential areas come high volumes of e-commerce deliveries.

These urban journeys represent the 'last mile' of freight movement, as goods make their way from distribution hubs into the heart of city centres. It is these last mile journeys that generate the greatest benefits, but also concerns, for urban areas.

02 Benefits and concerns associated with urban freight

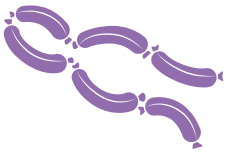
What benefits does urban freight bring?

The freight and logistics sector underpins most parts of the UK economy and is vital to the daily lives of communities. It contributes around £100bn each year to the UK economy[3]. The sector is a major employer. One in twelve working people in the UK are employed in freight and logistics, amounting to 2.3 million people spanning some 196,000 companies[4]. Over 900,000 additional workers are expected to be needed in the sector by 2020[5].

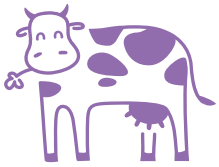
Often taken for granted, among many other things freight and logistics ensure supermarkets are stocked with food; parcels are delivered to our homes; construction sites have bricks and timber; hospitals have the medicines we require; stationery cupboards are filled with paper and pens; and cafés, bars and restaurants have the ingredients they need.

Looking at food and drink alone, each year logistics delivers...

Enough beer to fill Wembley Stadium



Enough sausages to reach beyond the moon



16,000 swimming pools of milk

4 billion meals to pubs and restaurants

Source: ***http://www.lovelogistics.co.uk/logistics_facts/*** *visited on 18/11/14.*

The industry is highly competitive, helping to ensure that all these services are provided at an attractive price to the customer. Without freight and logistics activity our economy would grind to a halt.

05

What concerns are there around urban freight?

The way in which goods are transported has implications for congestion; safety; emissions; road and track maintenance; noise and vibration; quality of life; and the wider urban realm. These issues are of particular concern in urban areas given that freight must often travel in close proximity to the places that people live and work. Each of these issues is considered in turn, below. It is important to note that many freight operators and other authorities recognise, and are taking steps to address, these issues. Examples of these activities are highlighted throughout this document.

Congestion

Congestion costs urban areas over £11bn each year, with the highest costs experienced during peak times of the day[6].

Road freight (by far the dominant freight transport mode[7]) contributes to, and suffers delays from, congestion on our urban road networks.

Cabinet Office analysis has found that heavy and light goods vehicles (HGVs and LGVs) make up the second largest proportion of motorised traffic in urban areas (15%, rising to 20% on urban trunk roads). Of that 15%, LGVs make up the largest proportion of vehicles at 13% of all motorised urban traffic[8] although it should be noted that not all LGV traffic is engaged in freight activity[9].

The same Cabinet Office research found that 50% of urban traffic increases experienced between 1998 and 2008 were due to LGV traffic, a trend that – if unchecked – will continue as deliveries associated with e-commerce grow. They report that *'delivery and collection of goods can cause significant interruption to vehicle flows on important roads, particularly in town centres.'*[10]

This congestion is bad for cities and bad for freight operators and their customers – over 25% of all road freight journeys are delayed by congestion[11].

Meanwhile, rail freight can also suffer from, and be the cause of, congestion on the rail network as freight trains use scarce network capacity and can get caught up in delays caused by passenger services.

Freight operators will usually factor in the costs of congestion into their charges to receivers/shippers or absorb the costs within the business. These costs are ultimately borne by the wider economy.

Safety

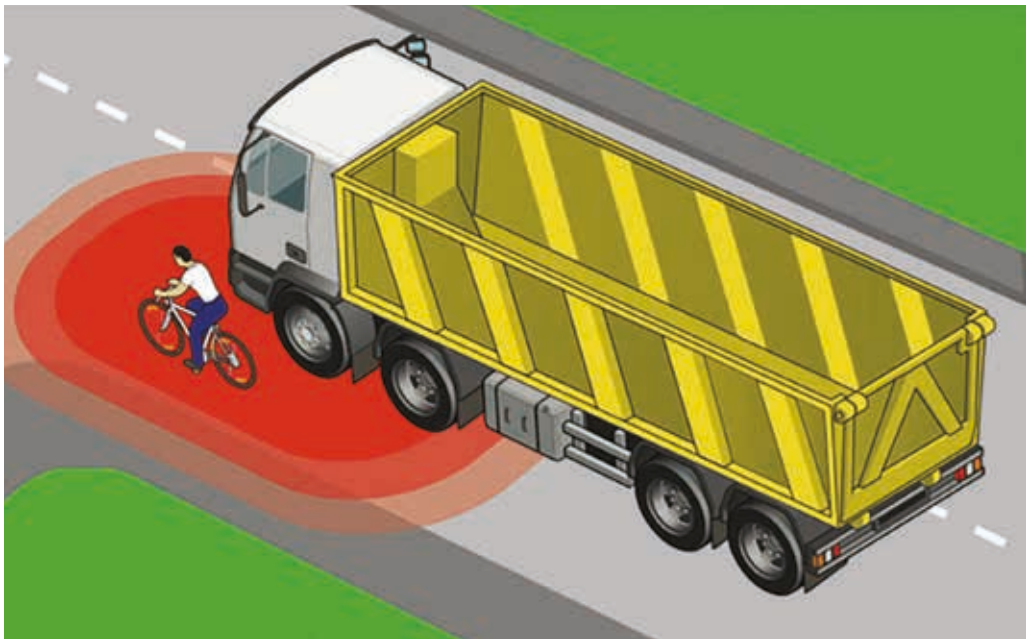
In urban areas, road freight is more likely to come into contact with vulnerable road users, such as cyclists and pedestrians, increasing the risk of injuries and fatalities. Designed for moving heavy loads, long distances along arterial routes and motorways, HGVs in particular are ill-suited for operation on streets where people live and work and can pose a particular danger to other road users.

HGVs make up just 5% of traffic in Great Britain but are on average involved in around 15% of pedestrian fatalities and 18% of cyclists' road deaths each year[12]. The size differential means that collisions with lorries are far more likely to prove fatal than collisions with cars. CTC report that in 2012, the cyclist was killed in nearly 25% of serious injury cyclist/goods vehicle collisions, compared to just over 2% for collisions between cyclists and cars[13].

A number of factors contribute to these statistics including:

- Level of training and awareness of drivers, cyclists and pedestrians on how to safely share the road.
- Design of vehicles – most lorries have large blind spots which cyclists and pedestrians can easily disappear into. The diagram below shows (in red) the area where cyclists are most at risk. The 'brick-like' design of many HGVs also means that cyclists are more likely to be dragged under the wheels in the event of a collision.
- Design of road layouts and junctions.
- Timing and routing of freight deliveries.

Traditional lorry designs have large blind spots

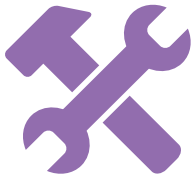


Picture: London Cycling Campaign

A further concern in respect of safety is the fact that a significant proportion of HGVs and LGVs checked by the Vehicle and Operator Services Agency[14] (now the Driver and Vehicle Standards Agency) in 2012/13 were issued with prohibitions following vehicle enforcement checks at the roadside or on operators' premises (see diagram below). It should be noted that whilst random enforcement checks are carried out, VOSA, and its successor the DVSA, targets enforcement activity at those operators most likely to be non-compliant, meaning that these figures cannot be taken to be representative of the freight industry as a whole. However, the VOSA/DVSA vision is one of full compliance with the law and any level of illegality is a significant cause for concern.

HGV/LGV enforcement checks

Of the vehicles checked by the Vehicle and Operator Services Agency in 2012/13...



Over two thirds of LGVs and nearly one third of HGVs issued with prohibitions for mechanical failures

One fifth of LGVs and HGVs issued with prohibitions for exceeding driver hours

90% of LGVs and almost two thirds of HGVs issued with prohibitions for failing weight checks

Source: VOSA effectiveness report 2012/13 Enforcement tables.

Emissions

Road freight traffic makes a significant contribution to carbon dioxide emissions and air pollution (in the form of nitrogen oxides and particulate matter), harming the environment and public health. The level of contribution varies between vans and HGVs.

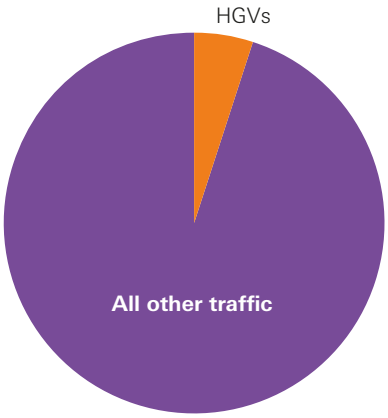
Vans make up 14% of road traffic and contribute the same proportion of total carbon dioxide (CO_2) emissions from road transport[15]. Some 95% of vans are diesel fuelled[16]. Whilst lower in CO_2 emissions and more fuel efficient than petrol equivalents, diesel vehicles produce higher levels of nitrogen oxides (NO_x) and particulate matter (PM) which contribute to air pollution and are harmful to public health[17]. These emissions are particularly problematic when vehicles pass through densely populated urban areas, as the risk of people being exposed to harmful pollutants is higher.

As yet, there has been no significant shift towards low emission vehicles in the LGV market – just 0.1% of vans registered for the first time in 2013 were gas or electric powered[18].

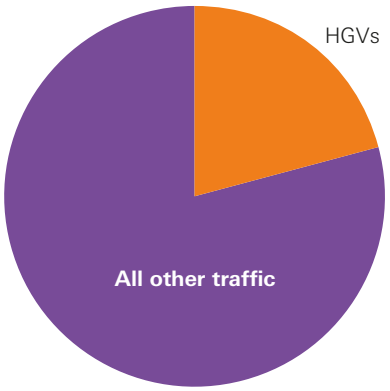
Meanwhile, HGVs comprise just 5% of road traffic but make a disproportionate contribution to CO_2 emissions, as the diagram on page 08 shows.

HGVs make a disproportionate contribution to carbon emissions

HGVs account for just 5% of motor vehicle traffic...



...but 21% of CO_2 emissions from road transport (DfT Transport Statistics)



Source: DfT Transport Statistics table TRA0101 (2011); DfT Transport Statistics table ENV0202.

Unsurprisingly, some 70% of UK HGV carbon emissions are generated by long haul and regional[19] deliveries[20]. Furthermore, like vans, HGVs are primarily diesel fuelled[21], contributing to poor air quality. Lorries account for 68% of harmful NO_x/NO_2 concentrations on motorways[22]. Given that urban centres are frequently the final destination for these trips, the emissions generated are an important concern for cities.

The air pollution generated on motorways and trunk roads can easily drift into more populated areas. For example, in Wakefield, Public Health England attributes air pollution as a factor in 5.7% of deaths[23]. The city's Director of Public Health has placed the blame on Wakefield's proximity to the M1, M62 and A1[24].

Analysis of air pollution contribution by vehicle type suggests that lorries are responsible for between 30 and 45% of air pollution from road transport in UK cities[25].

Road and track maintenance

Heavy freight vehicles travelling on urban roads and along railways cause more damage than their lighter counterparts. For example, the heaviest HGV axle does over 150,000 times more damage to road surfaces than a typical car axle[26]. This can cause particular issues in pedestrianised city centres where care has been taken to lay attractive paving but loading arrangements mean that heavy vehicles have to travel over them.

Noise and vibration

Deliveries and collections can generate noise and vibration, a particular issue in urban areas at night when residents' sleep can be disturbed.

Quality of life and urban realm

Perhaps less tangibly, heavy freight vehicles in particular impact on the overall quality of the urban realm and quality of life for urban communities. Noisy, large vehicles passing through city centres detract from human scale development, obstruct views and can make it difficult to create the smart 'café-culture' environments that many cities seek to emulate.

Freight forms part of a much wider debate about what kind of cities we want to live in and how we want them to look and feel. Will cities of the future be increasingly clogged with van and lorry traffic or can we find smarter, greener and more efficient means of moving goods around, helping to create places where people want to live, work and do business?

How can we maximise the benefits and minimise the negative impacts of urban freight?

The central policy objective for urban freight should be to ensure the safe, smart, clean, efficient and reliable movement of freight to support economic growth whilst, at the same time, minimising freight's negative impacts on the environment and quality of life.

This report presents a vision for urban freight where every opportunity is taken for freight to make its way to urban areas by rail or water, either directly into those areas or into the major distribution parks that serve them. It argues that those distribution sites should be located so that it is practical for goods to travel the last mile(s) into urban centres using zero/low emission modes. These last mile journeys should be achieved as safely, unobtrusively and with as little environmental impact as possible.

The remainder of this paper considers how this vision might be achieved, looking at the journey to urban areas, distribution and the last mile, including a detailed look at how the last mile of the journey can be made green, safe, smart and unobtrusive. It focuses primarily on those areas where action on the part of Government at national level may be required. Actions at local level are explored in a separate report for ***pteg*** by MDS Transmodal entitled 'Freight in the City Regions' which is available to download here:
http://pteg.net/resources/types/reports/freight-city-regions.

The paper concludes that there is a need for an overarching national freight strategy to provide leadership and direction for the freight industry and other stakeholders, including local government.

03 The journey to urban areas

In achieving safe, clean, smart, efficient and reliable movement of freight to support economic growth whilst also minimising negative impacts on the environment and quality of life in urban areas, the first consideration must be how goods make the journey to urban areas in the first place.

As Chapter One demonstrated, road freight dominates distribution, transporting over 80% of goods lifted, compared to just 5% by rail and 5% by water[27]. If goods start their journey by road, they are likely to continue to travel in this way right into city centres. For example, a lorry may make its way from a warehouse in Birmingham and travel right through into Newcastle city centre. If the initial long haul journey portions were to be transferred to rail or water, the numbers of lorries and vans on the strategic road network could be reduced and options for the last mile of the journey to be undertaken using smarter, greener modes could be opened up. Every opportunity should be taken for freight to make its way to urban areas by rail or water.

This ambition is reflected in the European Commission's goal that '*30% of road freight over 300km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors*.'[28]

It should be noted that in respect of urban environments in the UK, rail – rather than water – freight offers the greatest potential for modal shift, because not all urban areas are accessible by suitable waterways whereas the rail network is more extensive. However, both can have a role to play depending on local conditions and so are discussed together in the remainder of this chapter.

The benefits of rail and water freight

Increased use of rail and water freight has the potential to address many of the concerns outlined in Chapter Two.

Congestion

Compared to road, each year rail freight removes or reduces £772m in congestion costs[29]. Added efficiency benefits are gained from freight trains being able to travel much faster, and with fewer delays, than road freight.

Freight trains ease congestion by removing lorry journeys from our roads

One average freight train…

Source: Network Rail (undated) Britain relies on rail.

…takes 60 lorry journeys off our roads

Water freight also has the potential to cut congestion. A modern barge operating on an inland waterway can carry up to 550 tonnes in some areas and up to 1,500 tonnes on larger waterways[30]. In the UK (with some exceptions), the maximum cargo a lorry can carry is 29 tonnes[31].

Safety

A key advantage of rail and water freight over road freight is that it is largely separated from pedestrians, cyclists and motorists. Pro rata, rail freight is estimated to remove 42 road deaths at a value of £78.8m[32].

Emissions

Tonne for tonne, rail freight produces 70% less CO_2 than road freight[33].Tesco, for example, saves 12,000 tonnes of CO_2 per year by using alternatives to road transport[34], whilst Stobart Group saves over 33,000 lorry movements and 4,800 tonnes of CO_2 per year by using rail[35].

Freight can also travel a lot further by these modes, using less fuel. On a gallon of fuel, a tonne of freight can travel almost three times further by rail (246 miles) than by road (88 miles)[36]. Meanwhile barges can use as little as one quarter of the fuel of lorries[37].

The ability of rail and water transport to remove traffic from the roads is also likely to have a positive impact on air quality. Tonne for tonne, rail freight produces up to fifteen times lower NO_x emissions and nearly 90% lower PM10 emissions compared to road freight[38].

Road and track maintenance

Each year rail freight saves £133m in road infrastructure costs[39].

Noise and vibration

Water freight generates very little noise. Heavy rail freight trains can be very noisy and cause vibration, however, homes tend to be set further back from train tracks.

Quality of life and urban realm

Rail and water freight are generally separated from the city centre streets where people shop, socialise and do business and therefore unlikely to negatively affect the quality of the urban environment.

Transferring more road freight to rail and water

Despite the considerable benefits of rail and water transport, very little freight is moved in this way and the proportion has been largely unchanged for around 20 years[40]. According to research for ***pteg*** by MDS Transmodal, the main requirements to achieve greater modal shift from road to rail are adequate paths for freight services to share the capacity of the rail network and the availability of a network of rail-connected distribution parks. The same is likely to be true for water freight – we need to ensure that our extensive network of waterways is equipped to deal with more vessels and that water-connected distribution parks are available.

Rail and water-connected distribution parks are discussed in the next chapter. In respect of capacity, the Institution of Civil Engineers estimates that even a 10% modal shift from road to rail would overwhelm the rail network[41]. Meanwhile, our extensive networks of inland waterways are a neglected and underused resource in comparison with other European countries where larger inland waterways are used as major freight routes as well as for making deliveries directly to city centre businesses.

To enable more road freight to transfer onto rail and water, network capacity enhancements will be required.

For waterways, this could include support for ongoing maintenance and the removal of barriers (such as low bridges or narrow locks) to ensure that they can accommodate more freight traffic if required.

For rail, improvements to local and national passenger rail networks, such as HS2 and rail electrification, present opportunities to improve rail freight capacity.

For example, whilst rail freight will not use HS2 directly, a proportion of the capacity released by migration of passengers onto the new line could be allocated to enable more rail freight to travel on major north-south routes[42]. According to Government estimates, the released capacity from HS2 could provide space for an extra 20 West Coast Main Line freight paths per day[43]. The potential of high speed rail to release capacity for freight is acknowledged by DfT in its National Policy Statement for National Networks[44].

Further electrification of the rail network could also open up capacity – passenger trains will be able to travel faster, freeing up more space in the timetable for freight traffic. In addition, the electrification programme will allow more whole rail freight journeys to be electrically hauled, reducing the amount of diesel working 'under the wires' and bringing corresponding emissions benefits.

An integral part of the planning process for these and other major rail projects should be to explore the potential to undertake simultaneous improvements to support rail freight. This could include, for example, gauge enhancements that allow trains to carry larger containers and the addition of passing loops to open up more opportunities for track sharing between freight and passenger services.

Summary

In achieving safe, clean, smart, efficient and reliable movement of freight in our cities to maximise economic growth and minimise negative impacts, the first step is to look at how goods make their way to urban areas.

The chapter has argued that freight should ideally make its way to urban areas by rail or water, rather than by road. Doing so has the potential to reduce congestion, improve safety, cut emissions, save on maintenance costs, minimise the impacts of noise and vibration and protect quality of life and the urban realm compared to road alternatives.

In order to transfer more freight onto railway tracks and waterways, capacity enhancements will be necessary to meet and generate demand. To maximise efficiency, opportunities to undertake these enhancements at the same time as existing planned projects should be sought. It will also be necessary to deliver more rail and water-connected distribution parks, something which is discussed in more detail in the next chapter.

04 Distribution and the last mile

To maximise the benefits described in the previous chapter, every opportunity should be taken for goods to travel by rail or water for as much of the journey into urban areas as possible.

For rail in particular, the use of goods facilities located in city centres – including within railway stations – made it a dominant element of urban freight transport in the past. Over time, competition from road transport has meant that such facilities have all but disappeared. However, there is evidence to suggest that the potential of city centre rail freight facilities is once again being recognised, as the case studies below demonstrate.

Case study: Colas Rail and TNT Express central London freight trial[45]

On the night of 4-5 June 2014, Colas Rail and TNT Express operated a trial freight train from Rugby to London Euston, carrying express parcels and perishable products for distribution in central London. On arrival into Euston, the goods were sorted on the platform before being transferred in less than an hour, to a fleet of TNT electric and low emission road vehicles waiting on the platform.

Case study: Monoprix rail freight deliveries into central Paris[46]

With 90 retail stores in central Paris, Monoprix struggles daily with the city's traffic congestion and limited road and parking space. These challenges, plus growing customer awareness of climate change, led Monoprix to utilise rail freight to deliver goods directly into central Paris.

Every week, five trains carry Monoprix products from suburban warehouses to the Paris-Bercy freight facility in the city. From there, low emission gas-powered delivery vehicles handle the 'last mile' to Monoprix stores.

As these examples demonstrate, city railway stations have great potential as central hubs for freight distribution – these facilities are barely used at night and can be served by trains acting as high speed mobile warehouses. The fact that all the sorting and loading could take place within the station building helps to minimise the noise and disturbance for local residents. It also opens up opportunities to use short-range low emission vehicles to transport goods over the last mile.

Infrastructure for the loading and unloading of waterborne freight can also be available in cities that have rivers or canals passing through them, although freight must often compete against potentially more remunerative uses for the land, such as residential and office developments. Furthermore, it is unusual for barges to be used for last mile deliveries because final origins and destinations are not generally located nearby. However, there are exceptions to this, as the case study opposite illustrates.

Case study: Utrecht Beer Boat[47]

The city of Utrecht in the Netherlands uses a zero emission electric boat to make deliveries in the city centre. Owned and run by the city and known as the 'Beer Boat', the vessel makes six trips, four days a week supplying more than 60 catering businesses located along the canal network. Funding for the boat came from the city's air quality improvement budget.

In the UK, there are currently comparatively few examples of freight being delivered straight into the heart of cities by rail or water, although there is clearly untapped potential (particularly in respect of city railway stations) which should be further explored.

Where it is not possible to deliver freight by rail or water directly into city centres, the focus should be on ensuring that the largest distribution parks serving those areas are rail and/or water-connected. The Government's National Policy Statement for National Networks acknowledges the need for more Strategic Rail Freight Interchanges (SRFIs), defined as large, multi-purpose rail freight interchanges linked to both the rail and trunk road system[48]. The Statement finds that reliance on existing rail freight interchanges, on road-based logistics or on a larger number of smaller rail freight interchange terminals are not viable options to address the need for modal shift. Instead it argues for an expanded network of SRFIs *'located near the business markets they will serve – major urban centres, or groups of centres – and linked to key supply chain routes.'*[49] It recognises that the number of suitable locations will be limited and that this will restrict the scope for developers to identify viable sites but does not suggest how this barrier might be addressed.

To specifically encourage the development of SRFIs (and water-connected distribution sites, although these will play a more limited role), Government, in partnership with local authorities, could work to ensure that all major new distribution parks are planned with a presumption of rail and/or water connections and that suitable sites are identified nationally and protected for freight use.

In addition to rail and water-connected distribution sites, there are a number of other distribution hub formats that can assist in minimising the volume and impact of road freight movements in urban areas, including Urban Consolidation Centres, micro-consolidation hubs and parcel lockers.

Despite the highly competitive nature of the road freight industry, the efficiency of the last mile cannot be taken as a given[50]. Inefficiencies in the last mile can lead to more vehicle movements and more time on the road than necessary, exacerbating congestion. These inefficiencies could include:

- Low load factors and empty running.
- Multiple vehicles from various companies delivering goods to the same neighbourhoods or businesses.
- A high number of low volume or weight deliveries made to individual premises within a given time period.
- Long dwell times at loading and unloading points, where these are located on-street.

The development of Urban Consolidation Centres (UCCs) has the potential to reduce these inefficiencies and ensure that low emission modes are a practical option for the last mile. Benefits could be maximised further if UCCs were also rail or water-connected.

Located on the outskirts of urban centres, UCCs receive freight from a number of different transport operators, with loads for a variety of customers in the surrounding urban area. At the UCC, these goods are consolidated into full loads for last mile deliveries using short-range low/zero emission vehicles (such as electric vans or cargo bikes).

UCCs are particularly popular in European 'heritage' cities where excess traffic can spoil people's enjoyment of the special urban environment as well as inflict damage on historic streets[51]. In England, UCCs have been established to serve the core shopping areas in Bristol and Bath (see case study opposite) as well as Regents Street in London and the Meadowhall Shopping Centre near Sheffield[52]. There is a lack of evidence, however, as to how a UCC would work for a more complex urban area in the UK, as opposed to the more self-contained nature of many existing UCCs which serve historic city centres or particular streets or shopping centres.

Case study: Bristol and Bath UCC[53]

A UCC has been successfully serving Bristol's central shopping area since 2004 and Bath's since 2011. The scheme is run in partnership with courier DHL Excel Ltd by Bristol City Council and Bath and North East Somerset Council.

Over 100 businesses use the service across the two cities. Some – or all – deliveries for businesses joining the scheme are diverted to the site where they are bundled for more efficient transit and delivered at a pre-arranged time.

Congestion in the two cities has been greatly reduced because fewer trips are being made. Further environmental benefits come from the use of electric vehicles to travel the last mile from the UCC.

Delivering in this way has resulted in a reduction in delivery vehicles of up to 80%. The scheme has directly saved over 380,000 lorry kilometres with a resulting reduction in emissions of 102 tonnes of CO_2.

As the example above illustrates, the primary objective for UCCs from a public sector point of view is to maximise load factors in delivery vehicles so that fewer trips have to be made in city centres and consequently vehicle kilometres, emissions and road congestion are reduced. The use of smaller vehicles also reduces safety and quality of life concerns for communities. For these reasons, UCCs in Europe have often been subsidised, for example, by providing grants towards the costs of vehicles or short-term operating subsidy for an operator.

UCCs could also be beneficial to freight operators and their customers. For example, a DfT study[54] investigated their potential to:

- Reduce the unit costs of transportation for the last mile by increasing the volume of goods carried on vehicles.
- Reduce the number of deliveries that have to be received at a location; thereby reducing the disruption and labour requirements.
- Reduce the time spent driving to the delivery address and accessing the point of delivery by the driver, who may only have a small quantity or a single item to deliver.

Despite this potential, it has proved difficult to capture these savings in a way that could help to cover the cost of UCCs. Indeed, there is a degree of scepticism about the commercial viability of UCCs, with the same DfT study suggesting that public subsidy is necessary because '*there is no strong evidence that any self-financing scheme yet exists*'[55].

Many UCCs have struggled to operate on a commercial basis without some degree of start-up funding and ongoing subsidy, mainly because the additional handling involved is perceived to result in additional costs compared to direct (even inefficient) deliveries[56]. In addition, the approach entails loss of control, brand recognition and market sensitive data for the logistics operators that use the service.

Analysis by CILT[57] suggests that leaving it to the market to find and exploit opportunities for UCCs is not working and that leadership and support is required from national Government to kick-start development. One way to do this would be to make planning for UCCs a priority under national planning guidelines, backed by powers for local authorities to contract for these sites and mandate their use for categories of business should they consider this to be appropriate. Alternatively, or in addition to this, local authorities could indirectly subsidise and encourage the use of UCCs by, for example, allowing participating operators wider time windows to make deliveries or by restricting access to city centres by larger lorries. Another approach could be to find ways of capturing the savings that can accrue to the users of UCCs to cover more of the running costs of the facility.

It is important to note that as well as land-hungry urban fringe 'sheds', consolidation facilities can also operate on a micro-scale in city centres locations, requiring less land and making use of otherwise unused spaces, such as railway arches or empty shops. Here, large loads (e.g. from a HGV) are delivered to a single, city centre location (rather than making multiple drops to customers) from where they are consolidated and loaded onto low/zero emission vehicles. The picture below shows a micro-consolidation centre close to the City of London run by gnewt Cargo to serve Office Depot clients. Cargo cycles are used to deliver the office supplies to individual businesses.

Picture: gnewt Cargo

A variation on this model is the growing practice of vehicles making deliveries for multiple customers to single click and collect locations or banks of parcel lockers for customers to pick up themselves, ideally on foot or by public transport to further reduce the amount of traffic on the road. Integration benefits are maximised where these facilities are located within or close to public transport hubs, as in the case studies below.

Case study: Network Rail and Doddle parcel shops[58]

Doddle parcel shop in Milton Keynes station

Picture: Network Rail

Network Rail has invested £24m in the co-owned online shopping collection and returns business, Doddle, and plans to launch parcel shops at more than 300 stations. Customers can use the shops to collect and return parcels. Many of the parcel shops will feature changing rooms to enable customers to try on any clothing purchases before deciding whether to keep them. The parcel shops are open to all retailers and parcel delivery companies to use, with brands such as online clothing store ASOS and New Look already on board. This open access approach allows consumers to combine collections and returns from multiple retailers into one trip, at a time that suits them or coincides with an already planned journey.

Case study: Click and collect at London Underground stations

InPost Locker at Buckhurst Hill Station

Picture: Transport for London

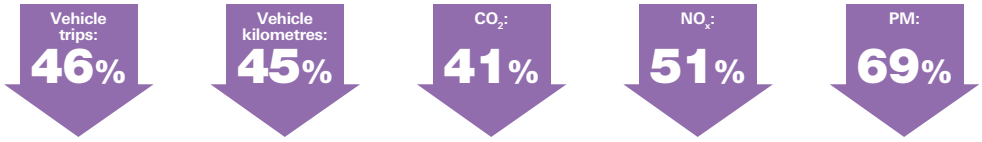
Transport for London has been developing a network of click and collect services based in London Underground station car parks since November 2013[59]. Tesco, Waitrose, Asda, Ocado, Sainsbury's, Amazon and automated parcel locker company InPost have all established or trialled facilities. With more than 10,000 orders in ten months, the services have proved very popular and, as at September 2014, click and collect services are to be expanded to cover 42 stations[60].

Consolidation of deliveries and collections has potential that expands beyond high street and online retailers. The public sector can also work together to consolidate their orders and reduce the number of deliveries and collections they deal with, as illustrated in the case study below.

Case study: London Boroughs Consolidation Centre[61]

The London Boroughs Consolidation Centre brings together and seeks to reduce the volume and frequency of deliveries for Enfield, Waltham Forest and Camden councils. It began by consolidating orders for stationery and cleaning products and is now used by up to 41 council suppliers.

Goods are consolidated for onward delivery by two 7.5 tonne Euro 5 emissions standard vehicles which operate to specified safety and quality standards. As a result, vehicle trips, vehicle kilometres and CO_2, NO_x and PM emissions have reduced significantly:



It is clear that there is much scope for innovation in the last mile to help reduce the volume and impact of city centre freight operations whilst still delivering the service that customers expect. Consideration could be given as to how to encourage and incentivise such innovation, potentially through some form of challenge fund.

Encouraging innovation in this respect could help grow local economies, from boosting efficiency and productivity, to creating a more attractive urban realm for inward investment and from supporting small start-up cycle logistics companies, through to providing large companies with opportunities to invest. The case study below provides an example of what can be achieved when small and large freight operations come together with a desire to innovate.

Case study: Last Mile Leeds and DHL[62]

Last Mile Leeds operates a fleet of cargo cycles, delivering everything from magazines to large parcels in the city. Set up two years ago, the company now counts logistics giant DHL among its clients. The company allows DHL couriers to drop parcels at a depot from where Last Mile Leeds cargo cycles complete the last mile of the journey within the city centre. The partnership has allowed DHL to cut the number of vans it uses into Leeds city centre in half, with larger trikes able to carry loads of up to 250kg.

The bikes can make it through congested areas more quickly than vans could and can reach places that vans cannot, without having to find parking. The bikes are also unobtrusive in the urban realm, operate with zero emissions and are safer for other road users and pedestrians than their van equivalents.

Summary

Before reaching their ultimate destination, every opportunity should be taken to ensure that bulk freight travels as far as possible by rail or water. This chapter has shown how bulk freight could be delivered to city centre railway stations acting as hubs for deliveries out of hours. Where freight is delivered to the large distribution centres that serve urban areas, this chapter has made the case for these centres to be rail or water-connected wherever practicable.

This section has also shown the potential of Urban Consolidation Centres, if the right incentives and policies are in place to make them economically viable. It has also demonstrated the role the public sector can play in consolidating its own deliveries and the potential for the private sector to innovate around micro urban distribution centres, click and collect points and cycle logistics operations. Finally there is the role that public transport providers can play in enabling the development of pick up points for parcel deliveries at stations. Such innovation should be encouraged and incentivised, potentially through some form of challenge fund.

By taking every opportunity to get freight carried by alternatives to HGVs (particularly in built-up areas) there are major benefits to be realised in safer, less congested, greener and more liveable streets. Innovation by both the private and public sector in making the last mile of freight delivery smarter and greener is happening already. The right public policy framework could rapidly accelerate these positive developments, creating new jobs in the dynamic and entrepreneurial freight and logistics sector in the process.

The next chapter looks in more detail at how last mile deliveries, which will usually be made by road, can be achieved with minimal negative impacts on urban environments and communities.

05 Making the last mile green, safe, smart and unobtrusive

The vast majority of freight travels by road and this mode will continue to play a key role in distribution networks in the future, particularly for the last mile. Rail and water networks will never have the capacity or coverage to take over from road freight, not least because these modes lack the flexibility to deliver to the door of the customer. As the previous chapter illustrated, cargo cycles are playing a growing role, but their carrying capacity will always be limited compared to lorries and vans, again meaning that these modes will still be required. It is therefore vital that lorry and van journeys into city centre environments are made as green and as safe as possible, both now and in the future.

Good industry standards, and enforcement of these standards, are the foundation for safe, clean and effective freight operations. Whilst many operators are committed to maintaining high standards and undergoing continuous improvement, there are currently no national schemes to help operators comply with – and go beyond – the numerous regulations and standards governing the industry. This can result in the kinds of issues around safety and environmental performance discussed in Chapter Two of this report.

Fleet recognition schemes are one way in which operators can be supported and incentivised to maintain high standards. Such schemes provide operators with a framework against which they can judge their performance, ensure they are meeting the required legal standards and identify areas for improvement, including how they can go beyond legal compliance and demonstrate best practice. In doing so, they can work towards minimising any negative effects on communities and the environment.

The schemes often recognise and reward operator performance, for example, in the form of star ratings and certificates that they can display or in providing them with a competitive advantage when it comes to winning contracts. Some tendering organisations require potential contractors to actively participate in such schemes before they can bid for work.

There are a number of vehicle and fleet recognition schemes and standards already in operation across the country. The focus of these schemes varies. Some, for example, centre primarily on safe operations, others on improving environmental performance. The schemes and standards tend to be led either by local authorities or by industry bodies and their design will be influenced by their priorities in relation to road freight. Examples include:

- **Fleet Operator Recognition Scheme (FORS)**[63]: was introduced by Transport for London (TfL) in 2008 with the aim of making the capital's roads safer, cleaner and less congested. Participants in the scheme can apply for Bronze, Silver or Gold accreditation, with progression dependent on the fulfilment of a range of criteria covering management, vehicles, drivers, emissions, safety and operations. The framework has since been taken up by the Tyne and Wear Freight Partnership. In 2015, TfL appointed a concessionaire to run and develop the scheme nationally.

- **ECO Stars:**[64] was initially established by the four constituent local authorities in South Yorkshire in response to the need to improve ambient air quality across the region. The scheme provides guidance and recognition to operators seeking to improve efficiency and reduce fuel consumption and emissions. At the time of writing, 17 local authorities across Great Britain have rolled out ECO Stars[65] and the scheme is also operating in a number of areas across Europe[66].
- **CLOCS (Construction Logistics and Cyclist Safety):**[67] developed by the construction logistics industry, this programme of work includes a 'Standard for construction logistics: Managing work related road risk' that is implemented by construction clients through contracts. It bought together eleven existing standards, codes of practice and policies relating to work related road safety into a single common standard with a particular focus on cyclist safety.
- **Logistics Carbon Reduction Scheme:**[68] an industry-led initiative backed by the Freight Transport Association and aimed at reducing carbon emissions from road freight by recording and reporting reductions in CO_2. Members are collectively committed to reducing the carbon intensity of their freight operations.

Whilst it is important that different areas of the country and sections of the industry are able to adopt schemes and standards that best suit their needs and priorities, there is a danger that the volume of separate schemes could lead to inconsistencies, confusion and cost for operators.

There may be merit in mapping existing recognition schemes and standards in order to identify the potential for simplification, without compromising the ability of particular areas and sections of the industry to implement standards that best fit their requirements and goals.

Consideration could also be given as to how more fleet operators could be encouraged to sign up to schemes and standards. With any voluntary fleet recognition scheme, there is always the risk that the least safe and least green vehicle operators will either not sign up or will sign up but not work to improve standards. As discussed in Chapter Two, a proportion of lorries and vans checked at the roadside or on operator's premises are failing to meet required legal standards, with checks identifying mechanical failures, long driver hours and vehicle overloading[69]. It is therefore vital to ensure that the development and encouragement of vehicle recognition schemes is accompanied by robust enforcement of legal standards.

In addition to supporting freight operators to maintain high standards of safety and environmental performance, and enforcing these standards, there are a number of specific issues in relation to these areas which require additional attention.

Improving safety

As described in Chapter Two, there is evidence that HGVs continue to be overrepresented in pedestrian and cyclist fatalities. With many urban areas sharing an ambition to dramatically increase the numbers of people walking and cycling, the need for action is only set to become more pressing.

The All Party Parliamentary Cycling Group (APPCG) included a specific recommendation to improve HGV safety in its Inquiry report 'Get Britain Cycling'.

> *"Improve HGV safety by vehicle design, driver training, and mutual awareness with cyclists; promote rail freight and limit use of HGVs on the busiest urban streets at the busiest times, and use public sector projects to drive fleet improvements".*
>
> ***All Party Parliamentary Cycling Group, 2013[70]***

A number of the APPCG's recommendations are dealt with elsewhere in this document. The promotion of rail freight is discussed in Chapter Three and limiting the use of HGVs on the busiest streets at the busiest times is explored in Chapter Four in respect of distribution, last mile innovation and consolidation. The fleet recognition schemes and standards described above could (and have) been employed by the public and private sector to drive fleet improvements. The two remaining recommendations concern vehicle design and training and education.

Vehicle design

In respect of vehicle design, the requirement from October 2014 for all new vehicles in the UK to be fitted with side guards is a positive step in the right direction[71]. The UK government also supported the European Parliament's proposal to extend the maximum allowed length of lorry cabs, enabling manufacturers to introduce life-saving designs. The proposal would allow for bigger windscreens to be fitted (reducing blind spots) and the introduction of rounded cabs with a 'crumple zone' to help prevent cyclists from being dragged under the wheels in the event of a collision.

The European Parliament – supported by the UK and a number of other member states – proposed that manufacturers should be allowed to introduce new designs straight away if they choose to. However, insufficient backing from other member states means that there will be a delay of eight years before redesigned lorry cabs can be driven on Europe's roads[72] meaning even those manufacturers who are ready to introduce new designs will be prevented from doing so.

The UK Government should continue to push for the new designs to be bought forward and, in the meantime, should take steps to ensure that existing lorries are retrofitted with safety equipment such as cameras, mirrors, sensors and side guards to help protect cyclists and pedestrians. Retrofitting of such safety equipment can be implemented at the relatively low cost of around £1,250 per vehicle[73].

Training and education

Measures to promote safer vehicle designs must be pursued in tandem with those to train and educate drivers, cyclists and pedestrians to travel safely and considerately. Wider use of 'Exchanging Places' style training programmes could be considered (see case study overleaf), including, potentially, its introduction as a mandatory element of the initial and continuing professional development cycle for drivers.

Case study: Exchanging Places programmes in London and Tyne and Wear

In London, the Metropolitan Police Service Cycle Task Force (funded by Transport for London) runs an award-winning 'Exchanging Places' programme[74]. The Exchanging Places events allow people to sit in the driver's seat of a HGV (or bus) to get a better understanding of what the driver can and cannot see, especially in relation to cyclists on the nearside and directly in front of the vehicle[75].

The Tyne and Wear Freight Partnership offer a similar exchanging places experience through their 'Safe Urban Driving' course[76]. This aims to raise the HGV driver's awareness of the vulnerable road user in shared road space. The course comprises a 3.5 hour classroom session outlining potential hazards involving vulnerable road users and a 3.5 hour practical cycling session for drivers, taking place on urban roads. The course is Driver CPC accredited.

Improving environmental performance

As outlined in Chapter Two, HGVs make a disproportionate contribution to carbon emissions, and both HGVs and vans – which are usually diesel powered – contribute significantly to poor air quality.

The pressing need to cut emissions from freight in urban areas is recognised at European, national and industry level, however, questions remain as to whether actions taken thus far in the UK will be sufficient to achieve the level of emission reductions required.

At European level, the UK faces fines of up to £300m a year after the European Commission launched legal proceedings against it for failing to reduce what it describes as 'excessive' levels of nitrogen dioxide (NO_2). The majority of identified air quality infractions are in urban areas. In a statement, the Commission said[77]: *'Nitrogen dioxide is the main precursor for ground-level ozone causing major respiratory problems and leading to premature death. City-dwellers are particularly exposed, as most nitrogen dioxide originates in traffic fumes.'*

The Commission is also targeting carbon emissions and has set a policy goal for urban freight transport of *'essentially CO_2-free city logistics in major urban centres by 2030'*[78] – a more ambitious target in terms of CO_2 reduction than that set for passenger transport.

The UK Government has recognised the need to address emissions from freight through measures such as Plug-In Van Grants, Plugged in Places, the Low Carbon Vehicle Procurement Programme (which provides funding for public sector fleets purchasing hybrid vans), the Low Emission HGV Task Force and the trialling of low carbon truck technology.

Sections of the freight industry have also been proactive in implementing low or zero emission operations (see case study boxes on page 27 and 28, for example) – but progress is patchy.

Case study: Zero emission urban freight deliveries – gnewt cargo and TNT Express

Operating in London, logistics company gnewt cargo delivers 1.5 million parcels per year using their all zero-emission fleet of cargo bikes and electric minivans. Independent analysis found that as a result, CO_2 emissions were cut by 62% per parcel on like-for-like deliveries. Use of bikes also helps to cut congestion, whilst both the bikes and electric minivans are quiet, reducing noise pollution. Micro-consolidation hubs help to minimise unnecessary trips.

gnewt cargo recently completed a successful 18 month pilot partnership project with leading express delivery company, TNT Express which saw them trial gnewt's vehicles at their London City depot. TNT Express announced in early 2014 that following the successful trial it would more than double its use of zero emission delivery vehicles in the capital[79].

Given that they are lighter and more likely to undertake 'short-hop' trips, there are many viable options for greening van fleets including, as in the case study above, fully electric vehicles. Take-up, however, as noted in Chapter Two, remains low with gas or electric powered vans accounting for less than one per cent of vehicle registrations in 2013[80]. Factors such as cost and confidence in the technology may play a part in this low take-up.

For HGVs, there is an added barrier in that there is a lack of widespread, viable options for operators to transfer to greener vehicles. Whilst greater uptake of Euro VI vehicles is expected to gradually help reduce emissions, the size and types of journey made by these vehicles means that full electric operation, for example, is unlikely to be practical in the near future. Instead, research by Ricardo-AEA suggests that for the long haul and regional deliveries typically made by HGVs, a shift from diesel to gas fuel (particularly biomethane) could have the biggest impact on reducing both CO_2 emissions and air pollution[81]. The European Commission agrees that the best immediate solution for reducing emissions from HGVs over medium to long distances is likely to be the use of gas propulsion[82].

A small but growing proportion of operators are already trialling or mainstreaming gas HGVs, as illustrated in the case study overleaf.

Case study: Coca-Cola gas HGV Trial[83]

Picture: Cenex

Wishing to explore the potential to dramatically reduce fleet CO_2 emissions, Coca-Cola Enterprises (CCE) worked with low carbon technology body Cenex to compare the emissions, fuel consumption, economics, reliability and operability of a 26 tonne biomethane gas vehicle with a diesel equivalent.

Temporary gas refuelling infrastructure was installed at the CCE depot to service vehicles during the trial. The gas vehicle reduced harmful air pollutants nitrogen oxide and particulate matter by 85.6% and 97.1% respectively. It also achieved a 50.3% saving in well-to-wheel greenhouse gas (GHG) emissions compared to the diesel. Cenex calculate that a permanent filling station would raise the GHG saving to 60.7%. The gas vehicle also reduced fuel costs by 12.8%.

Following the success of the trial, CCE invested in a fleet of 14 gas HGVs and a permanent filing station at its depot. CCE also takes a number of other steps to reduce environmental impact, including utilising otherwise empty vehicles, using smaller vehicles and working on a dedicated rail freight route[84].

According to the Office for Low Emission Vehicles (OLEV)[85], there are several hundred gas HGVs in use in the UK. However, given that there are close to 470,000 licensed HGVs in Great Britain[86], this is a drop in the ocean and more could be done to encourage uptake.

The aforementioned Ricardo-AEA research found that the biggest barrier to wider uptake of gas vehicles is the lack of refuelling infrastructure and the costs associated with installing it[87].OLEV also identifies the availability of gas refuelling infrastructure as a major barrier to uptake. They argue that *'better public refuelling infrastructure would provide confidence to the market and allow operators who generally refuel at base to increase payloads or cover longer distances'*[88]. The Freight Transport Association also backs action on the cost of refuelling infrastructure, arguing that it is required to enable companies, especially smaller operators, to invest in gas[89].

The European Commission is proposing that gas refuelling stations should be developed every 400km on the Transport Trans-European Network (TENT-T)[90]. In support of this goal, the European Union is to further investigate[91] the potential of bio-LNG as a fuel for HGVs.

The £11.3m OLEV/Technology Strategy Board co-funded 'Low Carbon Truck and Refuelling Infrastructure Demonstration Trials' to pump prime procurement of low emission HGV technologies and their supporting infrastructure is also well underway and includes consideration of gas options[92].

These studies are positive developments but it is yet to be seen how emerging findings will be translated into action on the ground. Overall, although there are increasing pockets of good practice, take-up of low emission van and lorry technology continues to be low and suggests that the cumulative impact of Government and industry action on freight emissions has so far been somewhat limited. Research to evaluate existing schemes and review the relative efficacy of alternative approaches could be valuable in advancing efforts to encourage greater take-up of green vans and HGVs. The research should consider interventions to tackle carbon emissions as well as air pollutants from road freight.

One policy option for tackling freight emissions which has not been tried in the UK is that of road user charging. Most EU states charge lorries for using their roads and, in April 2014, the UK Government took steps towards aligning with the rest of Europe by introducing the HGV Road User Levy.

The aforementioned research could explore whether more could be achieved in terms of making road freight greener and more efficient if the levy were to migrate to more of a European style scheme, covering all roads and taking into account distance travelled, HGV type (including weight and emissions standard) and time of day, for example.

Under such a scheme, hauliers using heavier or more polluting vehicles would pay more. Companies using greener vehicles and minimising their mileage (through consolidation of loads, for example, or use of alternative modes) would pay less. If the scheme also took account of time of travel, it could also be used to reduce congestion at peak times and avoid conflicts with other road users. Income from the scheme could be ploughed back into driving up standards for the freight industry, including from an environmental point of view.

Summary

Setting aside efforts to encourage more freight onto rail and water as well as those to promote innovation and efficiency in the last mile, this chapter has focused on how we might ensure that more conventional van and lorry journeys are as safe and green as possible.

It has argued that the foundation for this is good industry standards that are robustly enforced and are supported by greater use of fleet recognition schemes. A number of these are already in existence and it is suggested that a mapping exercise take place to identify any potential sources of inconsistency, confusion and cost for operators.

In addition, it discusses the need to address a number of specific areas in respect of improving safety and environmental performance namely pressing ahead with improvements to vehicle design; more education of road users; and steps to understand and encourage greater take-up of green vehicle technologies.

The final chapter of this report summarises its overall vision for freight and suggests that the achievement of this vision could be greatly assisted by the development of an overarching national freight strategy from Government.

06 Conclusion

Freight is vital to the effective functioning of the UK economy, bringing great benefits in terms of economic output and employment and in ensuring we have access to goods when and where we need them.

The ultimate destination for many of these goods are our cities. As this report has illustrated, the way in which these goods are delivered has the potential for both positive and negative impacts on the places that people live and work. It has presented a vision which could help to make freight work for cities in a way that is safe, smart, clean and good for local economies, the environment and communities.

That vision would see freight making its way to urban areas by rail or water wherever possible. To facilitate this, the capacity of these modes must be enhanced and a more extensive network of rail and water-connected distribution sites established. To increase rail capacity, this report has argued that an integral part of the planning process for major rail projects (such as HS2 and the electrification programme) should be to explore the potential to undertake simultaneous improvements to grow rail freight. For waterways, there could be more support for ongoing maintenance and the removal of barriers which currently restrict capacity.

To support capacity enhancements, there is a need to develop a more extensive network of rail and water-connected distribution sites. Greater use of city centre opportunities – such as making more use of city railway stations as freight hubs – should be explored and, beyond this, the largest distribution parks serving urban areas should be rail and/or water-connected. This report has suggested that Government at national level, in partnership with local authorities, could encourage this by working to ensure that all major new distribution parks are planned with a presumption of rail and/or water connections and that suitable sites are identified nationally and protected for freight use.

More broadly, this report has argued that distribution sites serving urban areas should be located so that it is practical for goods to travel the last mile(s) into urban centres using zero/low emission modes.

Alongside rail and water-connected sites, other distribution hub formats should be explored with a view to minimising the volume and impact of road freight movements in urban areas. Backed by the right incentives and policies to make them economically viable, Urban Consolidation Centres (UCCs) could prove a worthwhile model in this respect. Beyond this, this report has highlighted the considerable scope for further innovation around last mile distribution – from cargo cycles to micro-consolidation hubs – innovation that could be encouraged and incentivised, potentially through a dedicated challenge fund.

This report has called for last mile journeys to be achieved as safely, unobtrusively and with as little environmental impact as possible. It has argued that achieving this requires a foundation of good industry standards and robust enforcement of these standards. Fleet operator recognition schemes can support operators to meet, and exceed, legal standards and consideration should be given to how more operators could be encouraged to sign up to such schemes. As a first step, existing schemes should be mapped to identify the potential for simplification, whilst maintaining the ability of local areas and industry sectors to implement standards that best meet their priorities.

In addition to the encouragement and enforcement of good industry standards, this report has suggested a number of more specific measures to encourage safer, greener freight operations over the last mile. On safety, the UK Government should continue to push for new, safer lorry designs to be bought forward; take steps to ensure the existing fleet is retrofitted with equipment designed to protect cyclists and pedestrians; and pursue measures to train and educate drivers, cyclists and pedestrians to travel safely and considerately – including wider use of 'Exchanging Places' style programmes, potentially as a mandatory element of the initial and continuing professional development cycle for drivers.

On the environment, this report has found that take-up of low emission van and lorry technology continues to be low and suggests research is needed to evaluate the effectiveness of existing (and alternative) schemes and initiatives aimed at encouraging more use of greener road freight vehicles.

The vision presented in this report feeds into a much wider debate about how our cities should look and feel in the future. Smart cities will embrace the opportunity it presents to create cleaner, safer and more attractive urban environments for residents, businesses and investors alike.

As summarised above, this report has set out a number of ideas for how this vision might be achieved, focusing on areas that could be usefully supported by Government action at national level.

We believe that there is currently a policy vacuum at national level on freight, with Government restricting itself to influencing the decision making of the freight industry at the margins. There is an absence of an overarching strategy to ensure freight operates in a way that is efficient for the industry and the taxpayer, but which is not at the expense of our environment and communities.

The Department for Transport, in partnership with other relevant departments (such as the Department for Business, Innovation and Skills) needs to provide direction and leadership to this vitally important industry – and to cities and other stakeholders – in the form of a national strategy for freight. It is essential that any such strategy provides a shared framework for action that national and local government, as well as freight operators and their customers can work towards.

From an urban perspective, we hope that the vision and ideas contained in this report provide some inspiration and a starting point for this broader, nationwide strategy which could help to ensure that urban freight works for cities and that cities work for urban freight.

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