



London Freight Data Report: 2013 Update

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for

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Executive Summary

- The success of London is dependent on the efficient movement of goods and services as well as people.
- Logistics is a major source of employment with approximately 5 per cent of the London workforce directly employed in organisations whose main activity involves freight transport and logistics in 2011.
- Road is by far the dominant mode for goods transport in London in terms of the weight of goods lifted. The next most important mode is Port of London traffic on the river Thames within London, followed by rail and air.
- Light goods vehicles (LGVs) and heavy goods vehicles (HGVs) accounted for 13 per cent and 3 per cent respectively of all vehicle kilometres travelled on London's roads in 2011. Goods vehicles are second only in scale to car traffic on London's roads.
- In 2011, 98 people were killed and seriously injured in collisions involving HGVs in London (compared with 99 people in 2010).
- In 2011, 283 people were killed and seriously injured in collisions involving LGVs in London (compared with 236 people in 2010).
- The number of fatal and serious injuries in collisions involving HGVs per vehicle kilometre travelled in London was 33 per cent lower in 2011 than the 2005-2009 annual average, while for LGVs was 9 per cent higher.
- TfL estimates indicate that LGVs and HGVs were responsible for 10 per cent and 13 per cent of road transport CO₂ emissions in London in 2010 respectively.
- Transport for London (TfL) developed a Road Freight Management Programme for the 2012 Olympic and Paralympic Games to help businesses and freight operators to put in place suitable plans and preparations so that London would remain well stocked and serviced.
- The Road Freight Management included the development and promotion of the '4Rs', namely options to 'reduce', 're-time' and 're-route' activity, as well as to 'revise' the transport mode for freight transport operations.
- Road traffic data indicates that a relative shift towards a greater proportion of HGV and LGV journeys being made in the evening, night and early morning took place during the Games period, especially in central London.
- A close working relationship developed prior to and during the Games between public sector bodies (especially TfL and the London boroughs) and the freight transport industry including companies and trade associations. Both the public and private sectors have expressed a desire to continue to work together to build on the innovative and flexible freight practices employed during the Games.

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1. Introduction

The London Freight Data Report is an annual summary of freight transport statistics in London. This report has been prepared for Transport for London (TfL) by Julian Allen, Michael Browne and Allan Woodburn in the Planning and Transport Department at the University of Westminster.

The report contains data from a wide range of sources both in TfL and other organisations. We would like to thank all these organisations for their help and assistance. Data sources and acknowledgements can be found at the end of the report.

2. London¹ freight and logistics industry

- The success of London is dependent on the efficient movement of goods and services as well as people. The growth of London in the medium- to long-term, as set out in the London Plan, will lead to an increase in freight movement to construct, supply and service London's economy in a sustainable way.
- Despite the current economic conditions, the Mayor's London Plan forecasts that approximately 1.25 million more people and 750,000 more jobs will have to be accommodated in London by 2031. This will result in additional passenger and freight transport demand.
- Light goods vehicles (LGVs) and heavy goods vehicles (HGVs) accounted for 13 per cent and 3 per cent respectively of all vehicle kilometres travelled on London's roads in 2011. Goods vehicles are second only in scale to car traffic in London.
- TfL has implemented several projects to improve the efficiency, safety and environmental impacts of road freight transport across London including the Fleet Operator Recognition Scheme (FORS), Distribution and Servicing Plans (DSPs), Construction Logistics Plans (CLPs), and the Low Emission Zone. The London Freight Plan (2007) explains the steps being taken in more detail.
- Logistics is a major source of employment with approximately 220,000 people (5 per cent of the London workforce) directly employed in organisations whose main activity involves freight transport and logistics in 2011. Wholesaling is the logistics sub-sector with the greatest number of employees in London – approximately 145,000 people in 2011.
- There were estimated to be approximately 30,000 transport and logistics workplaces in London in 2012. About 70 per cent of these workplaces were involved in wholesaling activities.
- Workplaces employing 10 or fewer people accounted for approximately 85 per cent of all transport and logistics workplaces in London in 2012, while those employing over 100 people accounted for only 2 per cent.
- The total warehousing floorspace in London in 2008 was 4 per cent higher than in 1998. This growth in total warehousing floorspace in London between 1998 and 2008 was substantially less than in all other Government regions in England and Wales, suggesting that some businesses may have been relocating their storage locations from London to the area surrounding London during this period as a result of land values and accessibility issues.

¹ The use of the term 'London' in the report refers to Greater London (i.e. the whole of London comprising 33 London boroughs).

3. London freight transport activity

- Road is by far the dominant mode for goods transport in London in terms of the weight of goods lifted. The next most important mode is Port of London traffic on the river Thames within London, followed by rail and air.
- The weight of freight lifted by water and rail in London was greater in 2011 than in 2010, while for air it remained stable. Road freight increased in 2010² compared with 2009.

Table 1: Freight lifted by mode on journeys to, from and within London, 2011

	Million Tonnes
Road ²	131.7
Water (Thames inside London)	9.0
Rail	7.3
Air	1.6

Notes:

Road - only goods vehicles over 3.5 tonnes gross weight (i.e. light goods vehicle activity not included). Water (Thames inside London) – does not include traffic handled by PLA wharves on the Thames outside London, or waterways in London other than the Thames. Air – only includes freight and mail handled at Heathrow Airport (other London Area Airports not included).

Sources: DfT, 2012a; Network Rail, 2013, PLA, 2013; CAA, 2013.

- London is a net importer, meaning that more freight was unloaded in London than loaded by rail, water and air in 2011 (and by road in 2010).
- Rail and water transport and being increasingly used for major infrastructure projects in London. For instance, Crossrail aims to ensure that 85 per cent of the excavated material is transported by rail or water. The Lee Tunnel sewage project is also making use of river transport for excavated material, as will the Thames Tideway sewage project.

4. Freight transport by road

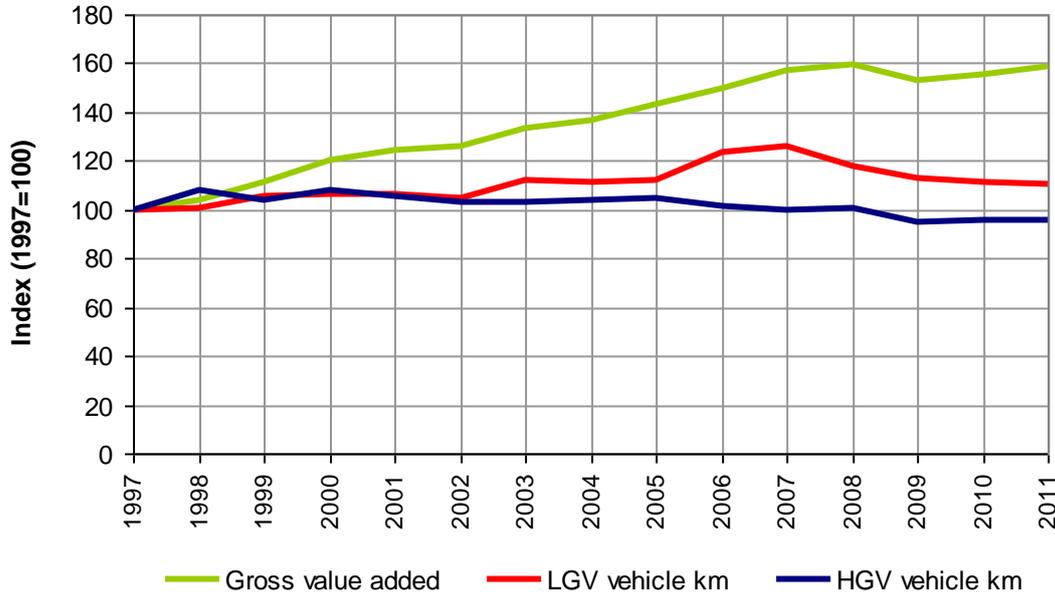
4.1 Road freight transport activity

- Growth in London's Gross Value Added (GVA) has outstripped growth in LGV and HGV traffic over the last fifteen years (with GVA increasing by 58 per cent between 1997 and 2011, LGV traffic increasing by 11 per cent and HGV traffic falling by 4 per cent). This suggests that London's economy has become less road freight intensive over this period.
- LGV and HGV traffic in London fell by 0.3 per cent between 2010 and 2011, while GVA rose by 1.7 per cent.
- LGV traffic on London's road rose sharply between the 1990s and 2007, but has fallen back somewhat since. LGV traffic was 28 per cent higher in 2007 compared with the 1994-1998 average, while HGV traffic was unchanged. However, LGV traffic on London's roads was 12 per cent lower in 2011 than it had been in 2007, while HGV traffic was 4 per cent lower. By comparison car

² 2010 is the most recent year for which road freight data about tonnes carried in London is currently available.

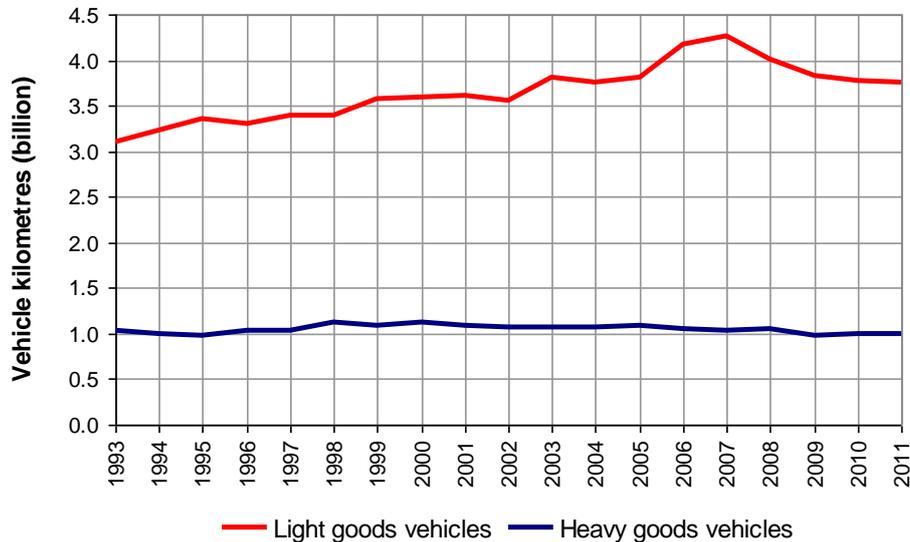
traffic was 1 per cent lower in 2007 compared with the 1994-1998 average, and was 7 per cent lower in 2011 than it had been in 2007.

Figure 1: Comparison of Gross Value Added and goods vehicles kilometres travelled in London, 1997-2011



Source: Calculated from data provided by GLA, 2012 and TfL, 2013a.

Figure 2: Vehicle kilometres performed by goods vehicles on all roads in London, 1993-2011



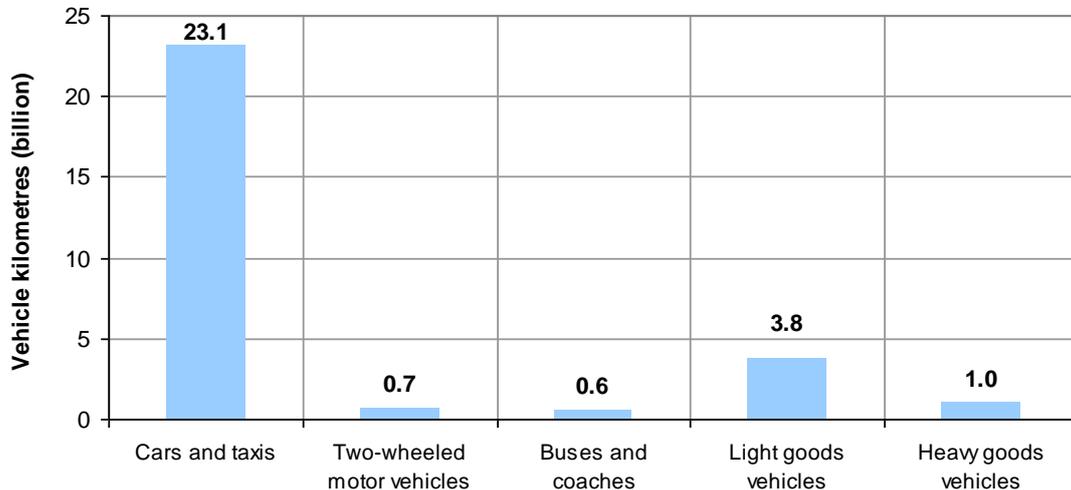
Source: TfL, 2013a.

- All goods vehicles (i.e. LGVs and HGVs) travelled a total of 4.8 billion vehicle kilometres on roads in London in 2011. Approximately 80 per cent of these kilometres were performed by LGVs (up to 3.5 tonnes gross weight), 15 per cent by rigid goods vehicles over 3.5 tonnes, and 5 per cent by articulated goods vehicles over 3.5 tonnes.
- LGVs and HGVs were responsible for 13 per cent and 3 per cent respectively of the vehicle kilometres travelled by all motorised road vehicles in London in 2011. This data is based on vehicle movements; if it were based on

equivalent Passenger Car Units (PCUs) then HGVs would approximately double in importance.³

- LGVs are estimated to have performed 61 per cent of their total distance travelled in London in 2011 on major roads and 39 per cent on minor roads, compared with 88 per cent and 11 per cent respectively for HGVs.

Figure 3: Total vehicle kilometres travelled in London by vehicle type, 2011

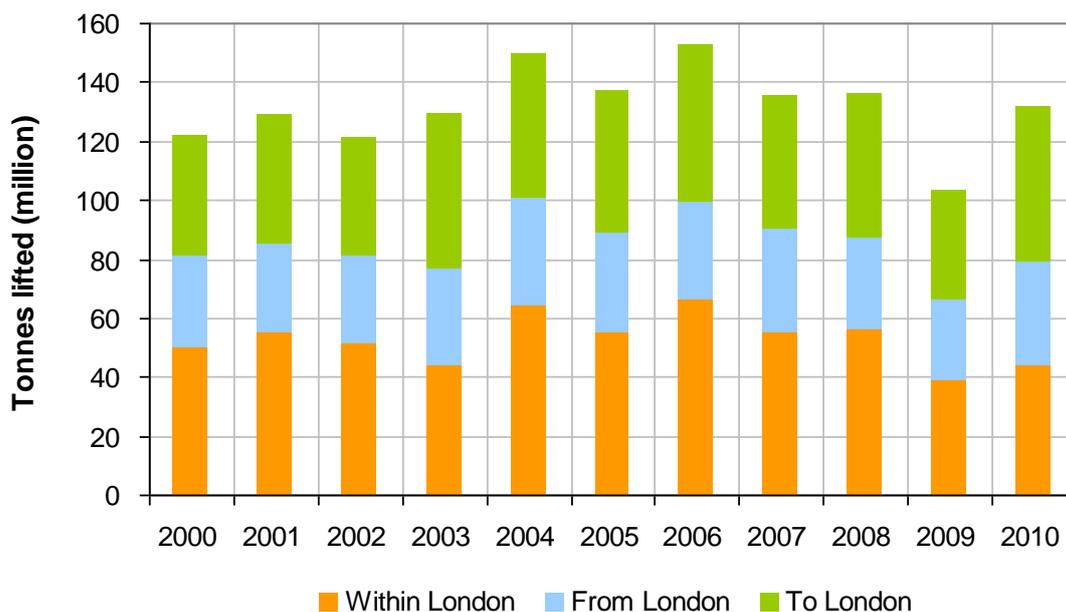


Source: TfL, 2013a.

- Approximately 132 million tonnes of road freight carried on journeys by UK-registered HGVs had its origin and/or destination in London in 2010. The road freight carried on journeys to, from and within London represented approximately 9 per cent by weight of the total freight lifted on all road freight journeys in Britain in 2010.
- It is estimated that in 2010, 44 million tonnes lifted in London on journeys by UK-registered HGVs had both an origin and destination in London. Fifty three million tonnes were lifted elsewhere in the country and had a destination in London, while 35 million tonnes were lifted in London and had a destination elsewhere in the country.
- London has a higher net inflow of goods by road than all other British regions in 2010, with 18 million more tonnes of goods arriving on vehicle journeys than leaving.
- Of the freight lifted in London and delivered elsewhere in the UK in 2010, 79 per cent by weight was unloaded in the two regions closest to London, namely the South East and the East of England. Of the freight delivered in London from elsewhere in the UK, 76 per cent by weight was loaded in these same two regions.

³ The Department for Transport uses Passenger Car Unit (PCU) factors of 1.9 for rigid HGVs and 2.9 for articulated HGVs (DfT, 2012b). Given that rigid and articulated HGVs accounted for 77 and 23 per cent respectively of total HGV vehicle kilometres in London in 2010, all HGVs can be calculated to have a PCU factor of 2.1. DfT uses a PCU factor of 1.0 for LGVs.

Figure 4: Freight lifted by HGVs on journeys to, from and within London, 2000-2010



Source: DfT, 2012a.

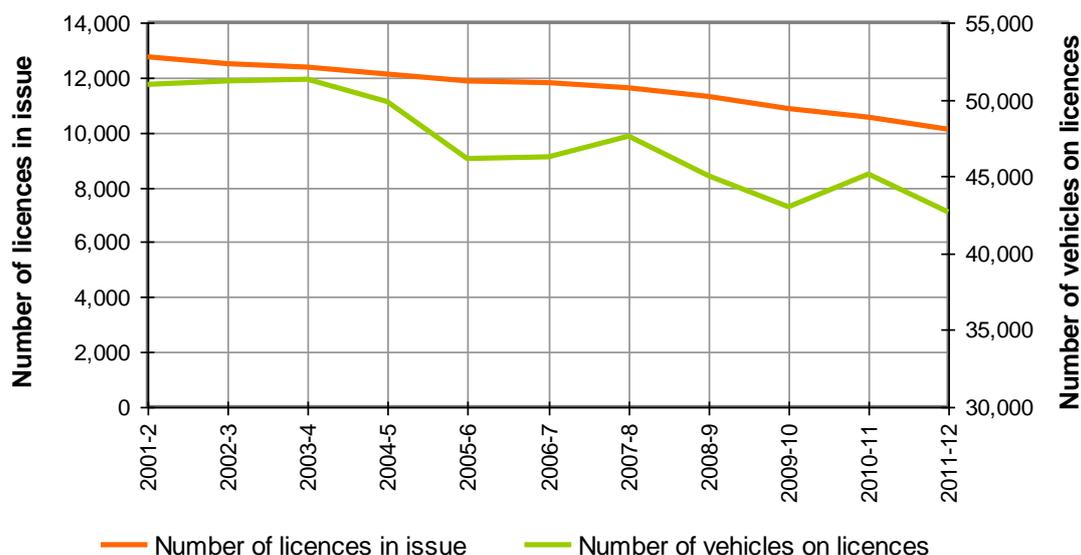
- Rigid goods vehicles (over 3.5 tonnes gross weight) were responsible for 49 per cent by weight of the freight lifted on all journeys within, to and from London, compared with 51 per cent by articulated goods vehicles in 2010.
- For all journeys within, to and from London in 2010, 31 per cent of vehicle kilometres were run empty. This compares with an empty running percentage of 29 per cent for all HGV kilometres performed in Britain in 2010.
- The lading factor of 0.59 for all HGV journeys to, from and within London in 2010 is the same as the lading factor for all HGV activity performed in Britain.

4.2 Goods vehicles licensed

- There were approximately 225,000 goods vehicles licensed with keeper's addresses in London at the end of September 2012. The vast majority of these were LGVs (i.e. up to 3.5 tonnes gross vehicle weight). This is approximately 4 per cent fewer goods vehicles than were registered at keeper's addresses in London a year earlier, and 7 per cent fewer than 2 years earlier.
- In the whole of the South East and Metropolitan Traffic Area (SEMTA - which includes London), 10,118 operator licences were in issue in 2011/12 for a total of 42,688 HGVs. This is equivalent to approximately 12 per cent of all HGVs specified on operator licences in Britain (and 12 per cent of all licences).⁴
- The number of operator licences in SEMTA has fallen by 21 per cent between 2001/02 and 2011/12, while the number of HGVs on these licences has fallen by 16 per cent. This compares with a 19 per cent reduction in operator licences and 14 per cent reduction in the number of HGVs on these licences in Britain as a whole over the same period.

⁴ SEMTA includes all of London, the counties of Kent, Surrey, East Sussex and West Sussex; the Districts of Brighton and Hove, and the Medway Towns.

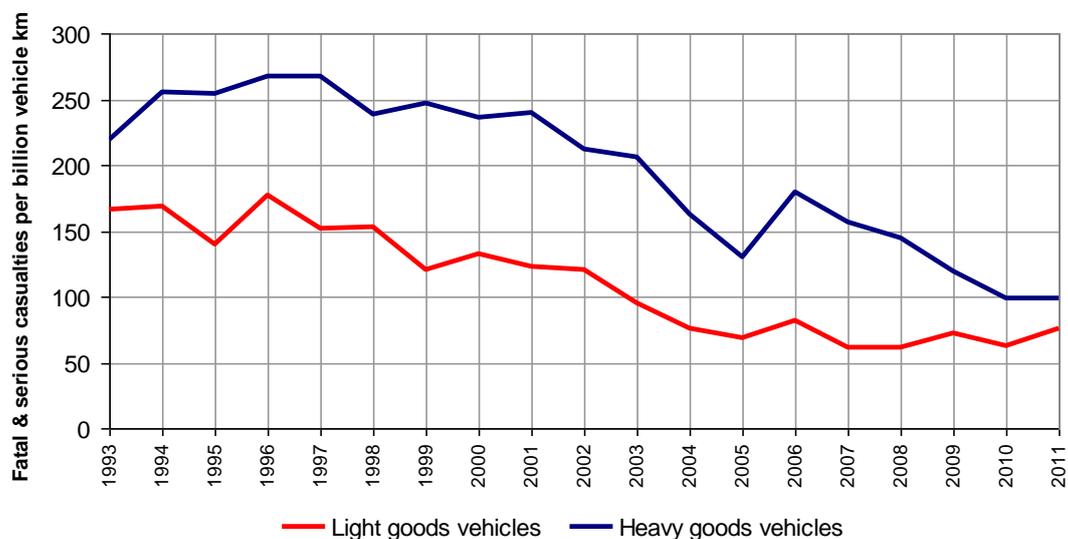
Figure 5: Operator licences in issue and HGVs specified on these licences in SEMTA, 2001/02-2011/12



Source: Traffic Commissioners, 2012.

4.3 Road freight transport and society

Figure 6: Fatal and serious casualties per billion vehicle kilometres in London, 1993-2011

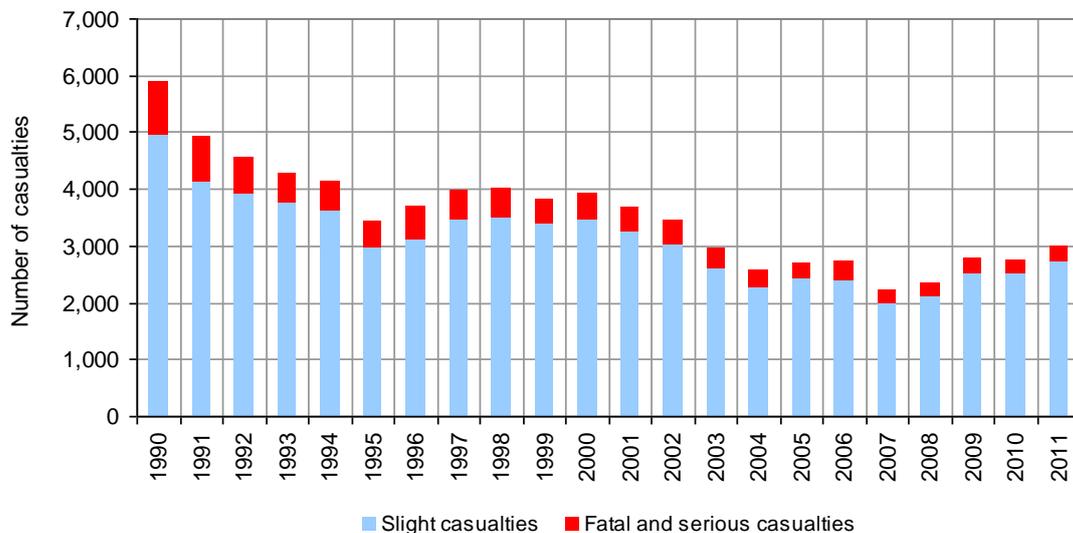


Source: calculated from data provided by TfL, 2013b.

- LGVs were responsible for 13 per cent of total motorised vehicle kilometres on roads in London in 2011, and were involved in collisions that resulted in 10 per cent of total road traffic casualties. These collisions resulted in 11 per cent of total road traffic fatalities in London in 2011.
- In 2011, 283 people were killed and seriously injured in collisions involving LGVs in London (compared with 236 people in 2010).
- The number of fatalities in collisions involving LGVs rose sharply in 2011 compared with the previous year (from 7 to 18 people).
- Of the 18 fatalities resulting from collisions involving LGVs in 2011, 6 were pedestrians, 3 were pedal cyclists, 3 were motorcyclists, 5 were car occupants, and 1 was an occupant of another vehicle type.

- The number of slight casualties in collisions involving LGVs also increased between 2010 and 2011 (from 2,510 to 2,718 people).
- The number of people killed and seriously injured in collisions involving LGVs was 2 per cent higher in 2011 than the 2005-2009 annual average. The number of slight casualties in collisions involving LGVs was 19 per cent higher over the same period.
- The number of fatal and serious injuries in collisions involving LGVs in London per vehicle kilometre travelled was 9 per cent higher in 2011 than the 2005-2009 annual average. The number of slight casualties in collisions involving LGVs per vehicle kilometre travelled was 27 per cent higher over the same period.

Figure 7: Casualties resulting from collisions involving LGVs in London by severity, 1990-2011



Source: calculated from data provided by TfL, 2013b.

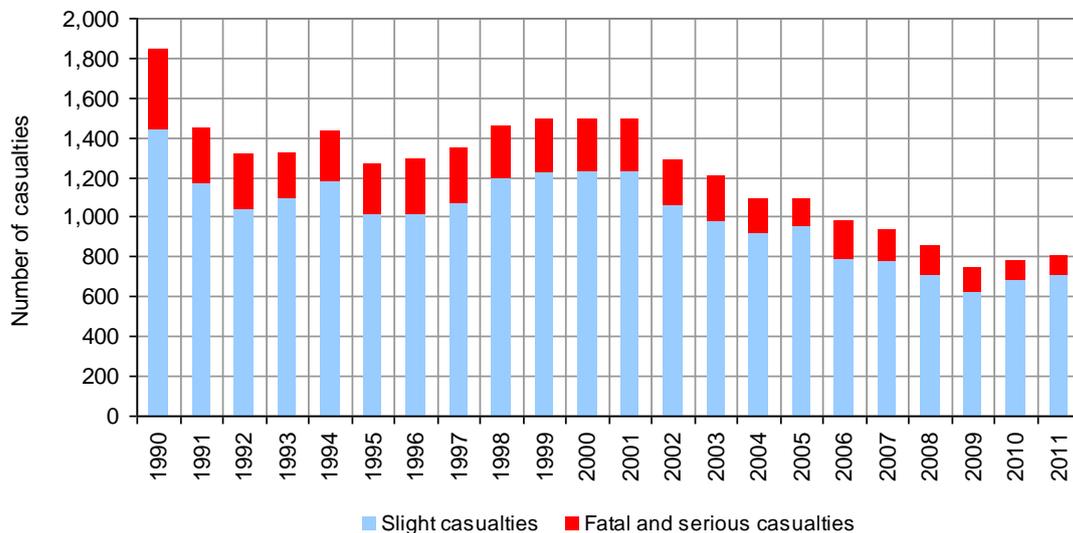
Table 2: Fatal and serious casualties resulting from collisions involving LGVs were in London, 2011 compared with 2005-2009 average and 2010

Casualty mode of Travel	Casualty numbers			Percentage change in 2011 over	
	2005-2009 average	2010	2011	2010	2005-2009 average
Pedestrians	70	69	82	19%	18%
Pedal cyclists	40	44	58	32%	46%
Powered two-wheeler	63	54	67	24%	7%
Car occupants	55	40	46	15%	-17%
Taxi occupants	3	2	1	-50%	-71%
Bus or coach occupants	6	3	2	-33%	-64%
Goods vehicle occupants	40	24	25	4%	-38%
Other vehicle occupants	1	0	2	N/A	67%
TOTAL	277	236	283	20%	2%

Source: Calculated from data provided by TfL, 2013b.

- HGVs were responsible for 3 per cent of total motorised vehicle kilometres on roads in London in 2011, and were involved in collisions that resulted in 3 per cent of total road traffic casualties. These collisions resulted in 11 per cent of total road traffic fatalities in London in 2011.
- In 2011, 98 people were killed and seriously injured in collisions involving HGVs in London (compared with 99 people in 2010). Of these, there were 17 fatalities in collisions involving HGVs in London in 2011 (compared with 20 fatalities in 2010).
- Of the 17 fatalities resulting from collisions involving HGVs in 2011, 7 were pedestrians, 6 were pedal cyclists, 2 were motorcyclists, 1 was a car occupant, and 1 was a goods vehicle occupant.
- Goods vehicles over 7.5 tonnes were involved in the majority of fatalities in collisions involving HGVs in 2011 (14 out of 17 fatalities).
- There were 10 fewer fatalities in collisions involving HGVs in 2011 than in 2006.
- Research by TfL using 2010-2011 data indicates that HGVs serving the construction industry may be overrepresented in cyclist fatalities in London.⁵
- The number of people killed and seriously injured in collisions involving HGVs was 36 per cent lower in 2011 than the 2005-2009 annual average. The number of slight casualties in collisions involving HGVs was 8 per cent lower over the same period.
- The number of fatal and serious injuries in collisions involving HGVs in London per vehicle kilometre travelled was 33 per cent lower in 2011 than the 2005-2009 annual average. The number of slight casualties in collisions involving HGVs per vehicle kilometre travelled was 3 per cent lower over the same period.

Figure 8: Casualties resulting from collisions involving HGVs in London by severity, 1990-2011



Source: calculated from data provided by TfL, 2013b.

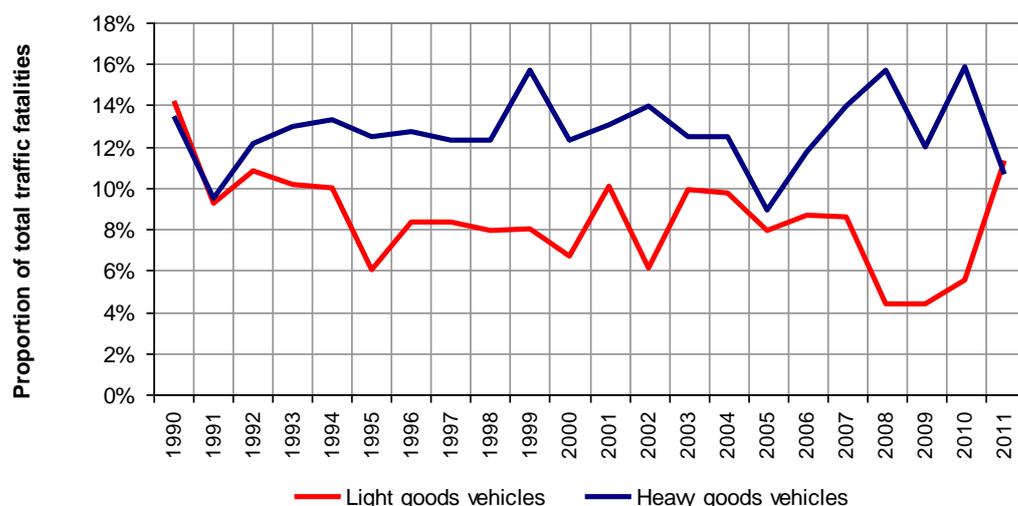
⁵ TfL research referred to in Delmonte et al. (2012).

Table 3: Fatal and serious casualties resulting from collisions involving HGVs in London, 2011 compared with 2005-2009 average and 2010

Casualty mode of Travel	Casualty numbers			Percentage change in 2011 over	
	2005-2009 average	2010	2011	2010	2005-2009 average
Pedestrians	44	27	22	-19%	-50%
Pedal cyclists	27	22	28	27%	4%
Powered two-wheeler	21	8	15	88%	-30%
Car occupants	40	35	22	-37%	-46%
Taxi occupants	2	0	3	0%	67%
Bus or coach occupants	2	1	2	100%	-17%
Goods vehicle occupants	15	6	5	-17%	-66%
Other vehicle occupants	1	0	1	N/A	0%
TOTAL	152	99	98	-1%	-36%

Source: Calculated from data provided by TfL, 2013b.

Figure 9: Proportion of total traffic fatalities resulting from collisions involving goods vehicles in London, 1990-2011



Source: Calculated from data provided by TfL, 2013b.

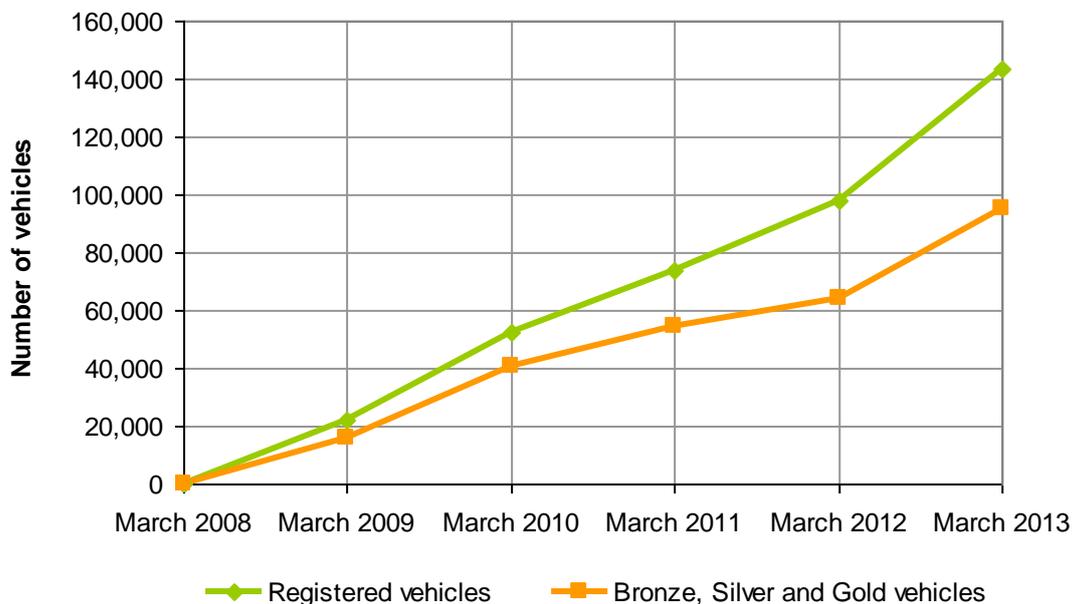
4.4 Road freight transport and the environment

- TfL has estimated that CO₂ emissions from road transport fell by 6 per cent between 2008 and 2010.
- These latest estimates indicate that road freight transport was responsible for 23 per cent of road transport CO₂ emissions in London in 2010 - 13 per cent by HGVs and 10 per cent by LGVs (while cars and motorcycles accounted for 65 per cent).
- TfL has estimated that NO_x emissions from road transport fell by 19 per cent between 2008 and 2010.
- These latest estimates indicate that road freight transport was responsible for 36 per cent of road transport NO_x emissions in London in 2010 - 24 per cent

by HGVs and 12 per cent by LGVs (while cars and motorcycles accounted for 38 per cent).

- TfL has estimated that PM₁₀ exhaust emissions from road transport reduced by 15 per cent between 2008 and 2010.
- These latest estimates indicate that road freight transport was responsible for 39 per cent of road transport PM₁₀ exhaust emissions in London in 2010 - 17 per cent by HGVs and 22 per cent by LGVs (while cars and motorcycles accounted for 47 per cent).
- In January 2012 Phases 3 and 4 of the London Low Emission Zone (LEZ) were introduced. Phase 3 requires Euro III standards for PM emissions for larger LGVs with an unladen weight of 1.205 tonnes or greater and minibuses, while Phase 4 requires Euro IV standards for PM emissions for HGVs, buses and coaches. Compliance rates are 99 per cent for Phase 3 vehicles and 95 per cent for Phase 4 vehicles. The LEZ scheme has therefore helped to achieve a shift in the 'Euro Class' of the HGV and larger LGV fleet operating London with the vast majority of older, dirtier goods vehicles eliminated, and thereby reduced NOx and PM₁₀ emissions.
- The Fleet Operator Recognition (FORS) Scheme is an accreditation scheme available free of charge to any company operating vans or lorries in London that provides operators with practical advice and guidance to help reduce fuel consumption, CO₂ emissions, vehicle collisions, and penalty charges through improving driver behaviour, vehicle and fleet management, and safety and efficiency in transport operations. By March 2013 approximately 145,000 goods vehicles operating in London had been registered in FORS (a 47 per cent increase on the previous year), of which approximately 95,000 had achieved bronze, silver or gold accreditation (a 49 per cent increase on the previous year).

Figure 10: Number of goods vehicles in FORS, 2008-2013

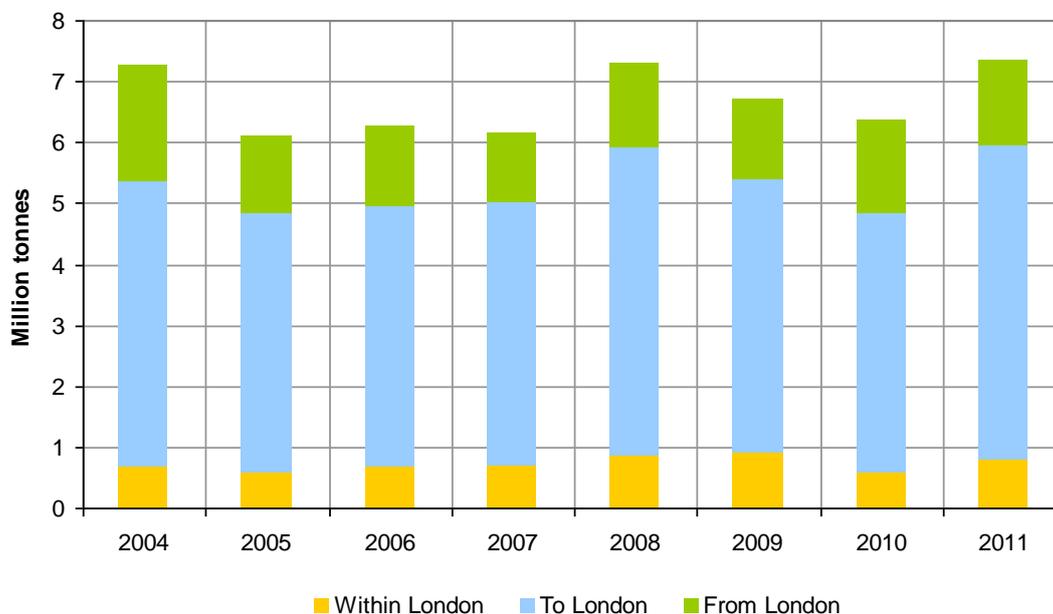


Source: TfL, 2013c.

5. Rail freight transport

- In 2011, 7.3 million tonnes of rail freight was lifted on journeys to, from and within London (compared with 6.4 million tonnes in 2010).

Figure 11: Goods lifted by rail on journeys to, from and within London, 2004-2011



Source: Calculated from Network Rail data processed by MDS Transmodal, 2013.

- London is a net importer of freight by rail from other parts of the country, with almost four times as much by weight arriving as leaving in 2011.
- The rail freight lifted on journeys to, from and within London in 2011 represented 7 per cent by weight of the total rail freight lifted in Britain.
- The major rail freight flows to London in 2011 by weight were aggregates for the construction industry, while domestic waste was the biggest outward flow.
- The greatest inward flows to London in 2011 by weight came from the South West and East Midlands (together accounting for 67 per cent of goods transported by rail and unloaded at terminals in London).
- For goods loaded on to rail in London, almost half by weight (47 per cent) was moved to the South East and a further 36 per cent was intra-London traffic in 2011.
- In addition, considerable volumes of rail freight pass through London en route to and from other regions.

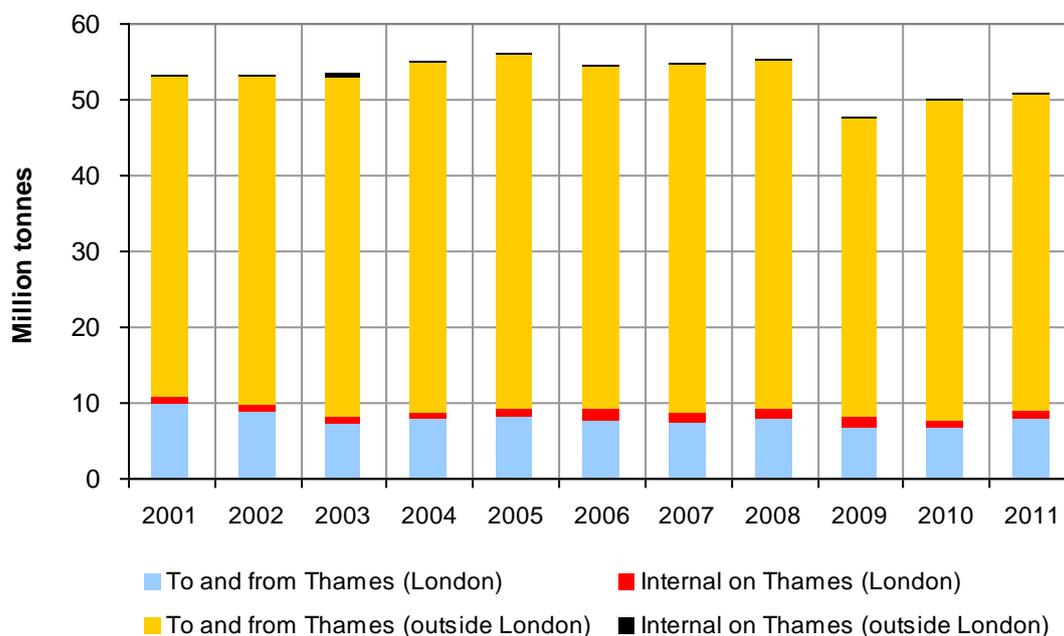
6. Freight on the river Thames

- There are approximately 80 operational wharves in the PLA (in and outside London).
- There are currently 50 safeguarded wharves on the Thames and its tributaries in London (some of which are actively used for freight transport and some of which are not currently in use).
- The Mayor of London published a further consultation document in July 2012 which provides results of a review of the safeguarding of wharves on London's waterways and recommendations for the future safeguarding or

release of individual wharves. The Mayor has recommended that nine wharves that are currently safeguarded are released and that one additional wharf is safeguarded.

- The Port of London Authority (PLA) was the UK's second most important port in terms of the weight of freight handled in 2011, handling 49 million tonnes, which represented 9 per cent of all foreign and domestic tonnage handled at UK ports. The PLA is a net importer of freight by ship, with 84 per cent by weight of the total freight handled arriving at, and 16 per cent of the total freight handled departing from, PLA wharves in 2011.
- Approximately 49 million tonnes of foreign and coastwise goods were handled at wharves in the PLA in 2011. Approximately 8 million tonnes of these goods were loaded or unloaded at a PLA wharf within London.
- In addition, 1.4 million tonnes of goods were transported between wharves within the PLA in 2011. Of this, 0.2 million tonnes was moved between PLA wharves outside London, while 1.2 million tonnes was moved internally on the Thames in London (of which 0.9 million tonnes had either an origin or destination in London - with the loading or unloading taking place at a PLA wharf outside London, and 0.3 million tonnes was transported between two London wharves).
- Therefore the total weight of freight handled at PLA wharves in London in 2010 was 9 million tonnes (which represented 18 per cent of the total freight handled by weight at all PLA wharves). Approximately 90 per cent of this cargo handled in London was foreign and coastwise traffic (i.e. was transported between a wharf outside the PLA and a PLA wharf), while approximately 10 per cent was moved between PLA wharves in London.

Figure 12: Goods handled at PLA wharves by type of movement, 2001-2011



Source: Calculated from data provided by PLA, 2013.

- The proportion of total PLA cargo handled by wharves in London by weight has fallen from 25 per cent in 1995 to 18 per cent in 2011 (however, this was an increase on the 16 per cent handled in 2010). The relatively small proportion of freight (by weight) being handled within London is due to the fact

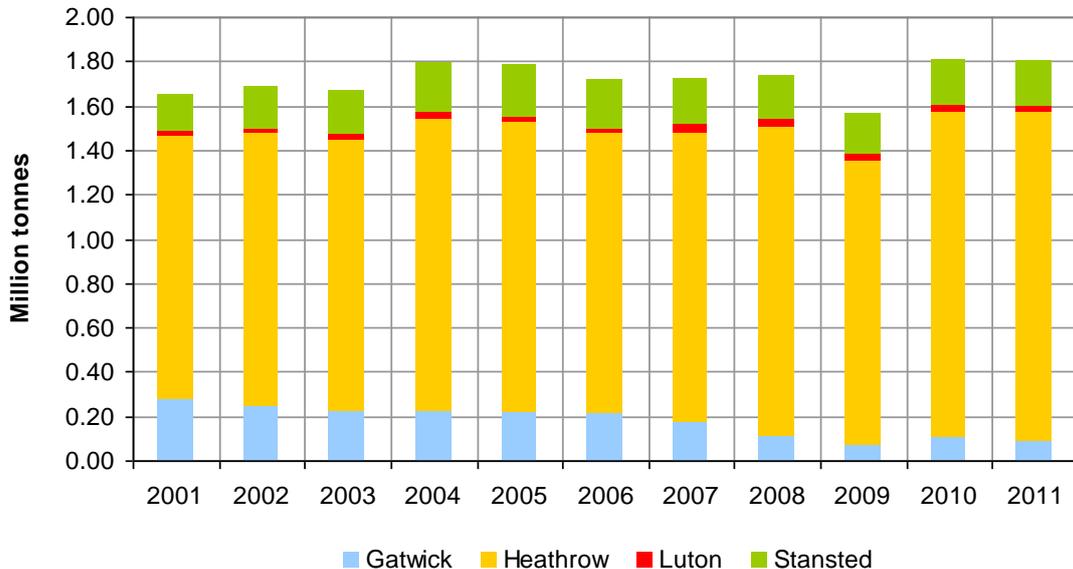
that much of the bulk and unitised traffic is handled at the larger wharves in Kent and Essex.

- The most important commodities handled on foreign and coastwise movements to and from PLA wharves on the Thames (inside and outside London) in 2011 in terms of weight were unitised traffic, oil and aggregates. Together these commodities accounted for approximately 85 per cent of total foreign and coastwise goods handled.
- Five types of commodities were handled on internal movements between PLA wharves on the Thames (inside and outside London) in 2011. These were spoil (from the Lee Tunnel sewage project and Crossrail project), waste and dredged materials, aggregates, vegetable oils and oil seed, and other oil products. Spoil, aggregates and waste/dredged materials accounted for approximately 85 per cent of the total by weight.

7. Air freight transport

- Seventy eight per cent of the UK's air freight passed through the London area airports of Heathrow, Gatwick, Stansted and Luton in 2011. Annual air freight tonnages at London area airports have been relatively stable since 2000, following a period of continuous growth prior to this.
- Heathrow is by far the most important airport in terms of the weight of freight lifted among the London area airports. It accounted for 82 per cent of all air freight handled by weight at London area airports in 2011.

Figure 13: Freight handled at London area airports by airport, 2001-2011



Source: CAA, 2013.

- In addition, London area airports handled 53 per cent of all the UK's mail handled by air in 2011 (by weight). Heathrow accounted for 73 per cent of all air mail handled at London area airports in 2011.
- There was a net import of air freight into the London area airports in 2011, with 0.94 million tonnes being set down and 0.86 million tonnes being picked up.

8. The London 2012 Games and freight transport

8.1 Transport planning prior to the Games

- In 2012 London hosted the Olympic and Paralympic Games, which has been described as the largest peace-time logistical exercise a city can undertake.
- The London Olympic Games ran for 16 days from 28 July to 12 August 2012 and featured approximately 11,000 athletes from more than 200 nations competing in 26 sports consisting of 300 events. The London Paralympic Games commenced 18 days after the Olympic Games Closing Ceremony and ran for 11 days from 30 August to 9 September 2012. It comprised 4,200 athletes with a disability from 162 countries competing in 20 sports.
- Those responsible for planning transport during the Games were tasked with achieving the fast and reliable movement of competitors and spectators to the Games sporting and cultural events, while at the same time ensuring that businesses and other organisations in London could continue to function smoothly.
- In order to achieve the rapid transport of 80,000 athletes, officials, sponsors and the media to the Olympic and Paralympic sites in London (as well as goods and other equipment) Olympic and Paralympics Route Networks (ORN and PRN) were put in place across London's road network. The ORN (and PRN) was the series of roads around London and the UK that linked competition venues and key non-competition venues.
- The ORN totalled 175 km in London and 275 km outside London. It was in force on approximately one per cent of London's roads. Forty-eight kilometres of the ORN in London consisted of dedicated lanes (referred to as 'Games Lanes') to transport athletes, officials, sponsors and the media to venues (and emergency vehicles under 'blue light' conditions).
- Other measures used by TfL on the ORN and PRN included the prevention of right turns, side road closures, changes to traffic lights and pedestrian crossings, adjustments to bus and coach stops and the temporary suspension of bus stops.
- Road works were banned on the ORN, PRN and key A and B roads. Alterations were made to approximately 1,300 traffic signals (about 25 per cent of London's total) to assist the ORN and PRN networks and competition venues by optimising network control to favour them and to manage non-Games traffic.
- Additional parking restrictions and road closures were also implemented around the sites and during on-street events (including the marathons, road cycling, triathlon, and race walks as well as cultural events). Stopping on the ORN and PRN was only permitted between midnight and 06:00.
- A wide range of new public transport infrastructure was also put in place for the Games especially in east London around the Olympic Park and venues either side of the River Thames. This included substantial investment in the Docklands Light Railway (DLR), Underground, London Overground and National Rail services. Facility enhancements were also carried out at Tower and Greenwich Piers to encourage the use of passenger river services. Walking and cycling improvements including greenways, expansion of Barclays Cycle Hire eastwards and better streets projects were also carried out.
- TfL used Travel Demand Management (TDM) to encourage passengers to reduce or adapt their travel during Games time (through actions such as using non-road modes, and re-timing or re-routing road journeys). To achieve this TfL engaged with business, spectators and regular travellers to advise

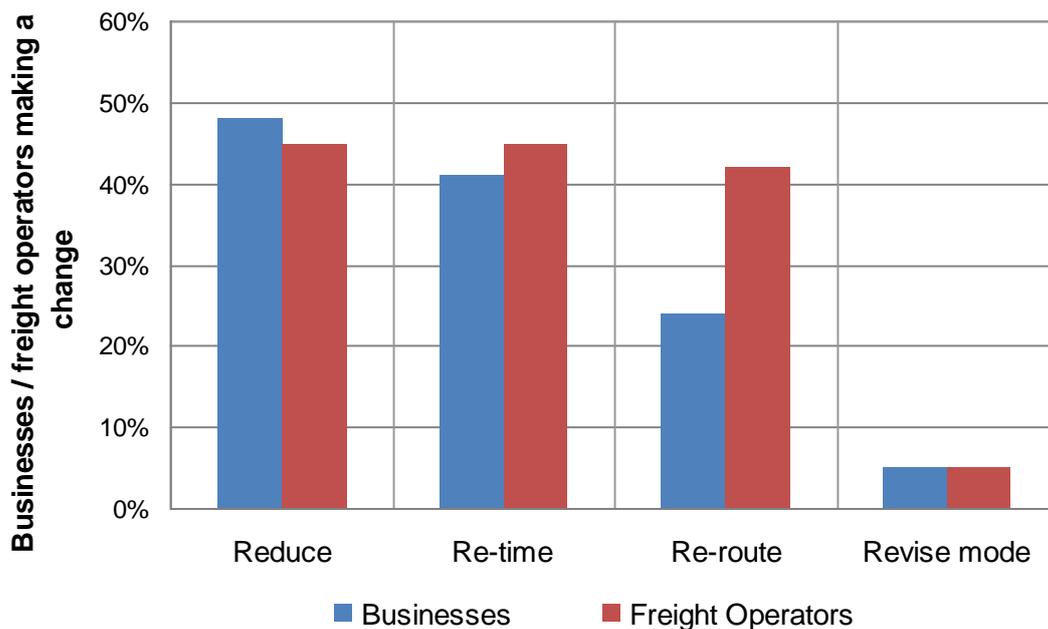
them of the busiest times and places on the roads and the options available for changing travel behaviour.

- TfL also developed a Road Freight Management Programme to freely provide information and advice to businesses and freight operators to help them develop suitable plans and preparations for the Games so that London would remain well stocked and serviced. This Programme included:
 - the development and promotion of the '4Rs' for freight and servicing operators and receivers (namely to consider options to 'reduce', 're-time' and 're-route' activity, as well as to 'revise' the transport mode) that organisations were encouraged to consider implementing.
 - the establishment of a Freight Forum for organisations from the public and private sectors to discuss and share information about the Games and their likely impact on freight operations.
 - a dedicated website containing information about making deliveries during the Games including case studies of organisations that had trialled suggested changes, the Code of Practice for making deliveries out-of-hours, and information about day-to-day road changes including an interactive map.
 - regular Road Freight Bulletins in the run-up to the Games and daily Bulletins during the Games that were emailed to organisations to help them plan and prepare their operations.
 - the Freight Journey Planner an online tool which was made freely available by TfL to help companies and drivers with vehicle routing and to find a legal loading space.
 - one-to-one advice sessions for large organisations and a range of advice workshops for all organisations.

8.2 Freight transport operations during the Games

- Large scale telephone surveys with businesses and freight operators were carried out by TfL before and during the Games to establish its impact on business activity, the effectiveness of their plans to minimise disruption, and any long term impacts. The results showed that 91 per cent of businesses and 85 per cent of freight operators said that they were ready for the Games.
- Fifty eight per cent of freight operators and 57 per cent of businesses made some sort of change to their operations as a result of the Games. Larger businesses were more likely to have changed with 72 per cent of businesses with a turnover over £10m having made a change compared with 54 per cent of those with under £10m turnover.
- Of the '4Rs' that organisations were encouraged to consider implementing to cope with the Games, the TfL survey work shows that 'reduce' and 're-time' options proved the most popular (with 45-50 per cent of respondents taking initiatives in these areas), followed by 're-route' (with about 40 per cent of freight operators and 25 per cent of businesses adopting initiatives in this area), while the least popular were options around revising the mode of transport (with only 5 per cent of businesses and freight operators changing the mode used).

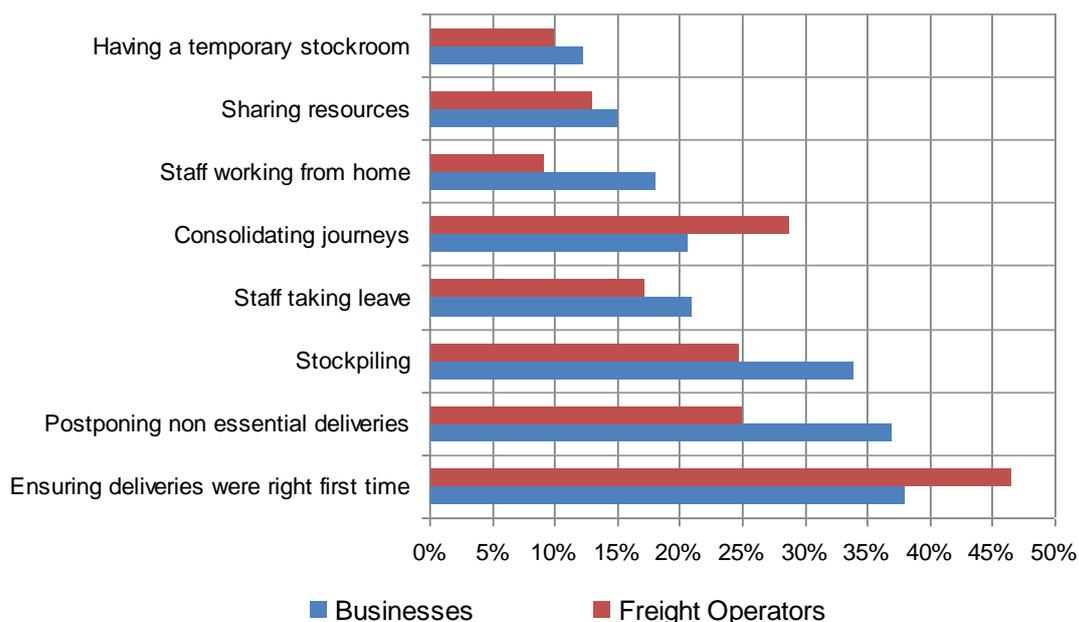
Figure 14: Proportion of businesses and freight operators who said that they made a change against each of the 4Rs



Note: sample size 1000 (All Freight operators), 1002 (All Businesses)
 Source: TfL, 2012.

- The most popular 'reduce' measures adopted by businesses and freight operators (in order of importance with the most adopted first) included: ensuring that deliveries were right first time, postponing non-essential deliveries, stockpiling, consolidating journeys, staff taking leave, staff working from home, sharing resources, and operating a temporary stockroom.

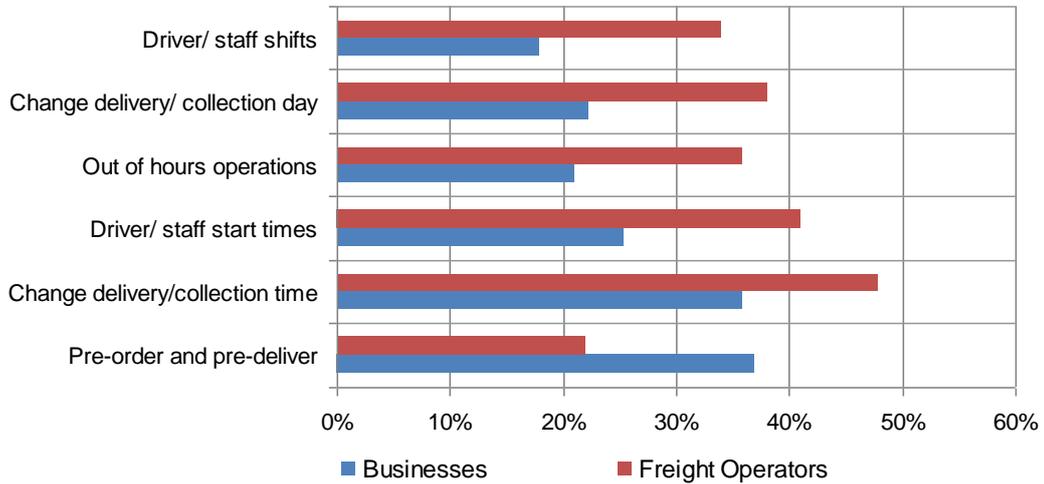
Figure 15: Proportion of businesses and freight operators who adopted 'Reduce' measures



Note: sample size 674 (All Freight operators), 674 (All Businesses)
 Source: TfL, 2012.

- The most popular 're-time' measures adopted (in order of importance with the most adopted first) included: and changing delivery and collection times, pre-ordering and pre-delivery of goods, changing staff starting times or shifts, and running out of hours operations.

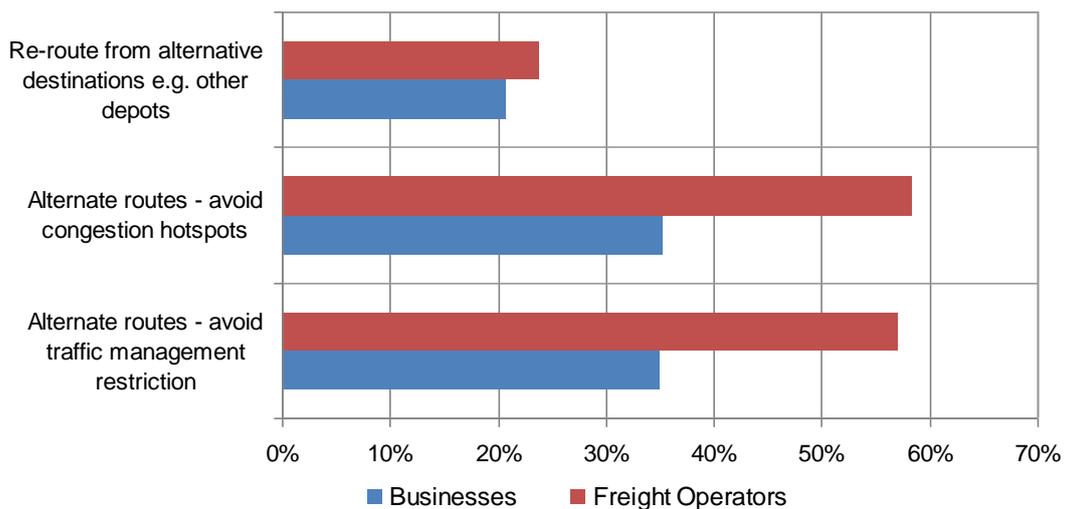
Figure 16: Proportion of businesses and freight operators who adopted 'Re-time' measures



Note: sample size 674 (All Freight operators), 674 (All Businesses)
 Source: TfL, 2012.

- 'Re-route' measures adopted (in order of importance with the most adopted first) included: avoiding congestion hotspots, avoiding traffic management restrictions, and the use of alternative locations.

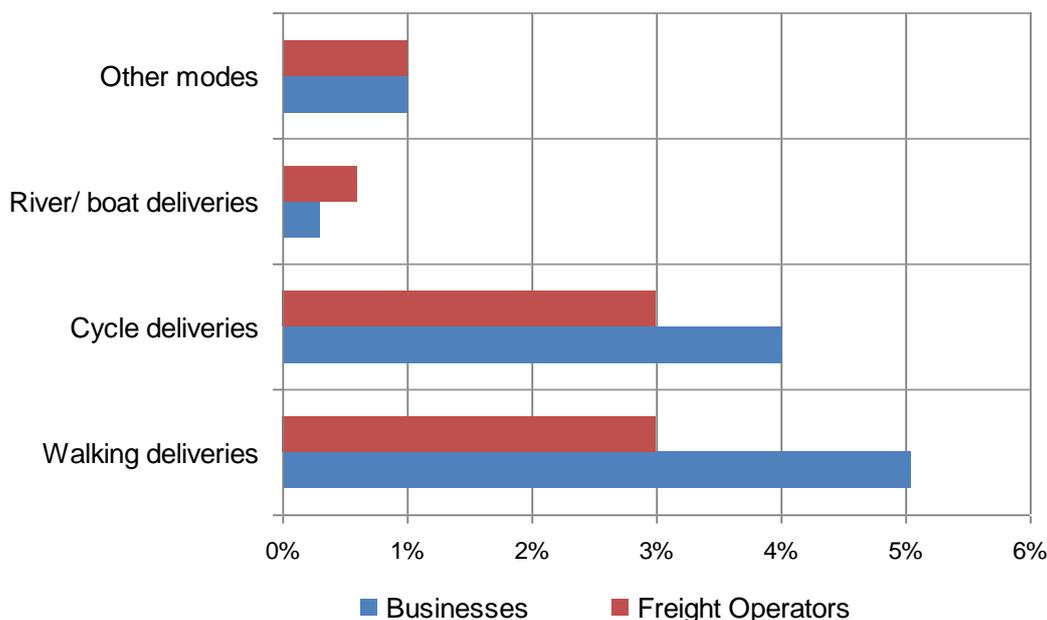
Figure 17: Proportion of businesses and freight operators who adopted 'Re-route' measures



Note: sample size 674 (All Freight operators), 674 (All Businesses)
 Source: TfL, 2012.

- 'Revise mode' measures adopted (in order of importance with the most adopted first) included: walking, cycling, and river-based deliveries.

Figure 18: Proportion of businesses and freight operators who adopted 'Revise mode' measures

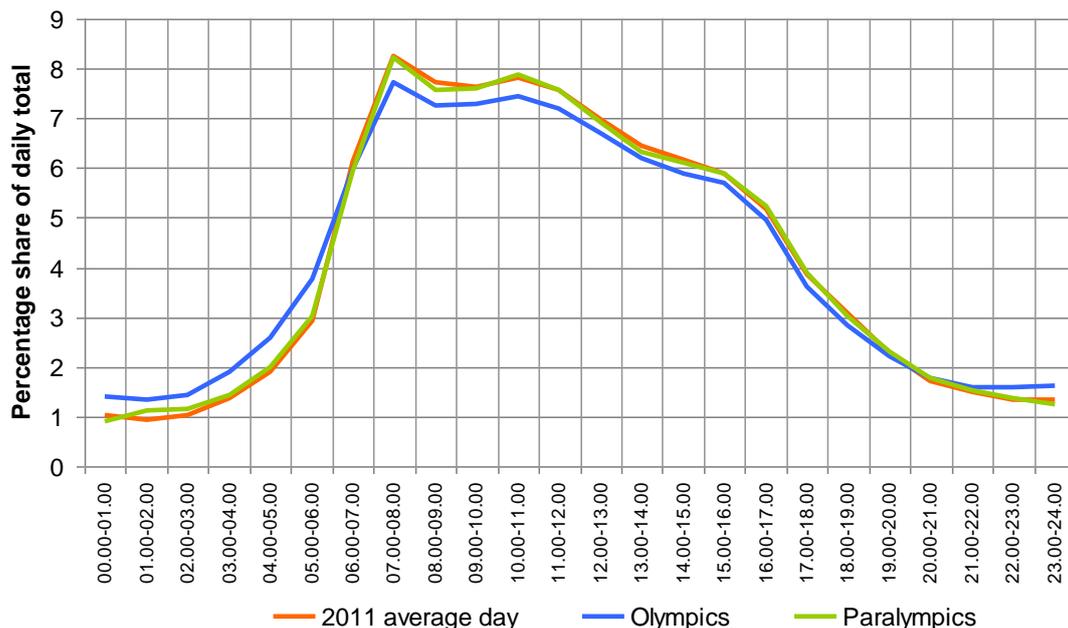


Note: sample size 674 (All Freight operators), 674 (All Businesses)

Source: TfL, 2012.

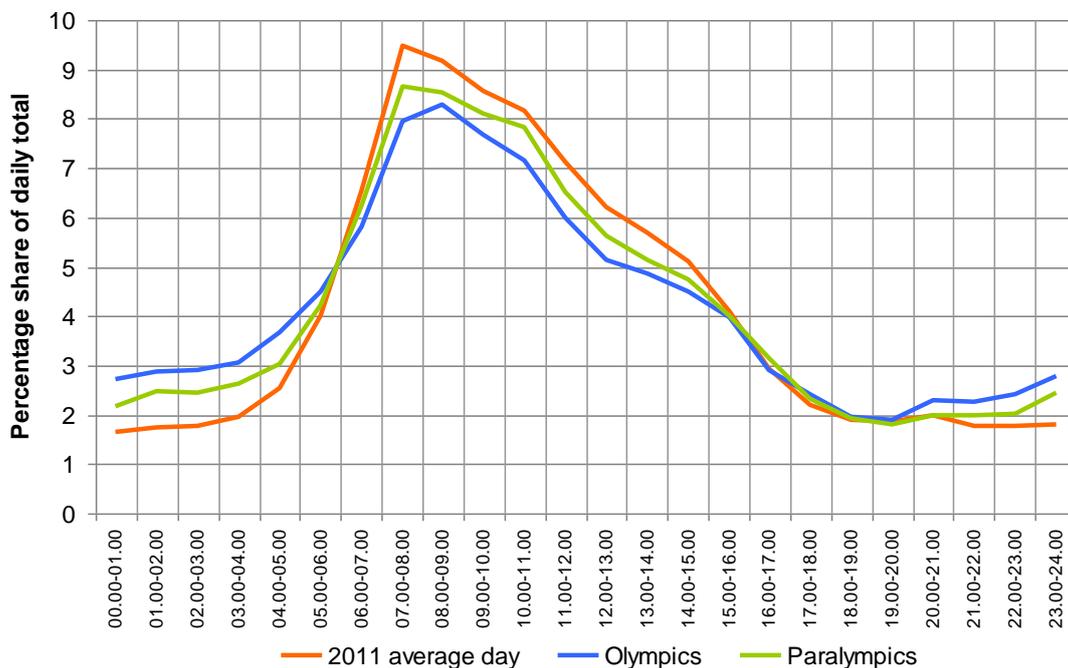
- Research carried out by TfL into goods vehicle traffic volumes indicates reductions of about 10 per cent in volumes of longer vehicles (those greater than 5.2 metres in length) during the Olympic period against levels that would otherwise be expected.
- In terms of changes in the time of goods vehicle operations in London as a whole, the data suggests a relative shift towards a greater proportion of LGV journeys being made during the evening, night and early morning. However, there appears to have been no relative reduction in LGV traffic in the morning peak period.
- For HGVs the data indicates substantial relative proportionate increases in journeys made in the evening, night and early morning, together with reductions in the proportion of HGV traffic across the working day.
- In central London, these changes in the time of goods vehicle operations during the Olympics were even more marked than in London as a whole for both LGVs and HGVs, with greater relative use during the evening, night and early morning, and less relative use during the day than in 2011.

Figure 19: LGVs entering and leaving the Central London Congestion Charging Zone by time period



Note: Each line sums to 100 per cent. ANPR camera data (normalised).
Source: TfL, 2012.

Figure 20: HGVs entering and leaving the Central London Congestion Charging Zone by time period



Note: Each line sums to 100 per cent. ANPR camera data (normalised).
Source: TfL, 2012.

- The London Chamber of Commerce survey reported that 54 per cent of respondents experienced no delivery disruptions during the Games. Only fourteen per cent of respondents reported supply disruptions during the Games.

8.3 The freight transport legacy of the Games

- The London Games provided an opportunity for organisations to implement a wide range of freight transport initiatives that they may not have otherwise ever attempted. It is hoped that having adopted these initiatives during the Games, organisations will continue to use them.
- If so, this would constitute an important legacy for freight transport in London and would thereby potentially have a long-term downward impact on freight intensity and the negative impacts of freight transport. In addition organisations located outside London may also choose to adopt such practices based on the experiences of those operating in London and the publicity surrounding the Games.
- Organisations participating in the Games research carried out by the Central London Freight Quality Partnership (CLFQP) have reported that the lessons learned included: that road information was essential for pre-planning and day-to-day operations; the importance of correct and timely information in coping with such an event and ensuring that operations could be successfully maintained in a worst case scenario; the important role of communication and planning within companies, between supply chain partners and with public sector bodies; and that obtaining and transmitting information and knowledge throughout the organisation was key to success.
- TfL and the freight industry are viewing the potential for increased levels of out-of-hours delivery work as a potentially desirable operational change that could result from the Games. Studies and trials had already been exploring this topic in recent years but the Games has given this initiative much publicity and has also given organisations the opportunity to see that it is practical.
- The Mayor has indicated the potential to further encourage the uptake of Delivery and Servicing Plans including greater use of load consolidation in freight transport operations serving both new and existing developments in London.
- Other aspects of the Games legacy for freight transport include the electronic provision of traffic information by TfL (and which the industry is keen to see continue), and the development and dissemination of tools such as the Freight Journey Planner.
- TfL has also been running further Freight Forum workshops with industry representation since the close of the 2012 Games to reflect on lessons learned and scope for achieving legacy outcomes for freight transport in London.
- A close working relationship developed prior to and during the Games between public sector bodies (especially TfL and the London boroughs) and the freight transport industry including companies and trade associations. The public and private sectors have expressed a desire to continue this close working relationship in order to work together to build on the innovative and flexible freight practices employed during the Games.
- Other city authorities and public bodies in the rest of the UK and elsewhere may also decide to follow the example provided by fostering closer working relationships with industry to address freight transport issues, and to develop approaches and solutions promoted and used during the Games. Some companies also reported that they hoped to continue the closer working relationships that they had developed during the Games with other commercial partners in their supply chains.
- In general, the publicity provided by the media to freight transport in the run up to and during the Games has also helped to increase public awareness of the industry. That freight transport operations managed to continue to function reliably during the Games resulting in goods and services continuing to be available as and when required by businesses and individuals has meant that this media coverage and attention has been positive.

- The advice, case studies and tools that TfL developed for the London 2012 Games continue to have relevance for freight operators and organisations receiving goods and services. Further details of each of these are available at: <http://www.tfl.gov.uk/businessandpartners/freight/25669.aspx>
- Additional TfL 2012 Games freight case studies, information about other TfL freight transport initiatives, and TfL freight publications are available at: <http://www.tfl.gov.uk/microsites/freight/>

Glossary

Roads classifications

Major roads - include motorways and A roads. These roads usually have high traffic flows and are often the main arteries to major destinations.

Minor roads - B roads, C roads and unclassified roads and are all maintained by the local authorities.

Types of road goods vehicles

Light goods vehicles (LGVs) - commercial vehicles up to and including 3.5 tonnes gross plated weight. LGVs are commonly referred to as 'vans'.

Heavy goods vehicles (HGVs) - commercial vehicles of more than 3.5 tonnes gross plated weight.

Articulated goods vehicles - articulated vehicles have two parts: a motorised drawing unit known as a tractive unit (or motor vehicle) and a mounted trailer. These vehicles are over 3.5 tonnes gross plated weight and are therefore referred to as heavy goods vehicles (HGVs).

Rigid goods vehicles - a goods vehicle which has only one part (i.e. unlike an articulated vehicle it does not have a separate tractive unit and trailer). Rigid vehicles vary from two to four axles and are over 3.5 tonnes gross plated weight and are therefore referred to as heavy goods vehicles (HGVs).

Freight transport operations

Empty running - proportion of total vehicle kilometres that the goods vehicle is run empty.

Gross vehicle weight - the maximum permissible weight of the goods vehicle and its load.

Lading factor - The ratio of the actual tonne-kilometres to the maximum tonne-kilometres achievable if the vehicles, whenever loaded, were loaded to their maximum carrying capacity.

Operator licence (O-licence) - Operator (O) licensing is the regulatory control system used to ensure the safe and legal operation of heavy goods vehicles in the UK. An operator's licence is required to operate a motor vehicle with a gross plated weight of more than 3.5 tonnes (i.e. an HGV) on a road. An O-licence is required for HGVs used for both own account and public haulage operations.

Own account - goods vehicle operators who only carry goods in the course of their own trade or business.

Public haulage - goods vehicle operators who carry goods for other people (often also referred to as 'hire or reward').

Rail freight terminal - A facility designed to transfer goods from one train to another or between transport modes.

Foreign and coastwise traffic – goods transported between a wharf outside the PLA and a PLA wharf. These are referred to as movements ‘to and from the Thames’ in Figure 12.

Internal on Thames (London) – these water-based movements in Figure 12 include those that are loaded and/or unloaded in London.

Safeguarded wharves - those wharves in London which have been given special status to ensure that they continue to be available for river freight transport use and are protected from redevelopment

Wharf - A landing place or pier where ships may berth and load or unload.

Acronyms for organisations

CAA - Civil Aviation Authority

CLFQP - Central London Freight Quality Partnership

DfT - Department for Transport

FTA – Freight Transport Association

GLA - Greater London Authority

ONS - Office for National Statistics

PLA - Port of London Authority

TfL - Transport for London

VOSA - Vehicle and Operator Services Agency

Other abbreviations and definitions used

CLPs - Construction Logistics Plans

CO₂ - carbon dioxide.

DSPs - Distribution and Servicing Plans

FORS - Fleet Operator Recognition Scheme

GVA - Gross Value Added (the difference between output and intermediate consumption for any given sector/industry. That is the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used up in production).

Ground based transport – includes emissions from aircraft whilst taxiing and during the take-off and landing cycle (i.e., below one mile in altitude).

LEZ - Low Emission Zone

NO_x - the collective term for oxides of nitrogen

PM₁₀ - particulate matter: fine particles with an aerodynamic diameter of less than 10 microns which has several significant adverse health effects including heart disease, poor lung function and lung cancer.

SEMTA - South Eastern and Metropolitan Traffic Area (which includes all of London, the counties of Kent, Surrey, East Sussex and West Sussex; the Districts of Brighton and Hove, and the Medway Towns).

Severity ratio - the severity ratio is the proportion of fatal and serious injuries to total injuries.

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Greater London Authority
London Councils
MDS Transmodal
Network Rail
Port of London Authority (PLA)
Skills for Logistics
TfL Better Routes and Places
TfL Planning
TfL Traffic Analysis Centre
The Traffic Commissioners
Vehicle and Operator Services Agency (VOSA)

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