

Multi-site delivery issues for heavy goods vehicles

Prepared by the Health and Safety Executive

RR1088

Research Report

© Crown copyright 2017

Prepared 2016

First published 2017

You may reuse this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view the licence visit www.nationalarchives.gov.uk/doc/open-government-licence/, write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email psi@nationalarchives.gsi.gov.uk.

Some images and illustrations may not be owned by the Crown so cannot be reproduced without permission of the copyright owner. Enquiries should be sent to copyright@hse.gsi.gov.uk.

The purpose of this scoping study was to establish whether there were specific safety issues relating to multi-site deliveries, and how widespread these were within the UK road haulage industry. This study builds on previous work carried out on load securing of goods transported by road.

Multi-site deliveries in themselves do not appear to introduce additional hazards, over and above those encountered in the haulage industry overall. However, they do appear to increase the exposure to hazards because drivers are required to access the load area more frequently and the profile of multi-site deliveries may mean that vehicles are delivering to sites where risks are not adequately controlled. Awareness of the risks of work activities appeared to be generally quite low amongst both consignors and hauliers, particularly with regard to the load retention properties of curtain-sided vehicles. While load planning would generally be considered desirable, it appeared that planning based purely on predicated drop order could result in poorly-loaded, unstable loads. This could be exacerbated once the first delivery had taken place, even if the load was re-loaded.

The wider utilisation of risk assessment, appropriate load planning, cooperation and clear communication between dutyholders could significantly reduce the risk of harm during multi-site deliveries.

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.

Multi-site delivery issues for heavy goods vehicles

N Day
Health and Safety Executive
Harpur Hill
Buxton
Derbyshire SK17 9JN

KEY MESSAGES

- Road haulage and warehousing is a relatively high-risk industry sector, with a high injury incidence rate. Multi-site deliveries do not necessarily introduce unique risks in the workplace; however they do increase the frequency of exposure to hazards in typically high injury incidence activities such as working at height and manual handling.
- A multi-site load that is initially secured may quickly become unstable and/or likely to shift once the first delivery has been made. It appeared that this is not always taken into consideration by operators and consignors as part of managing health and safety risks when goods are transported.
- Securing of multi-site delivery loads was found to be generally poor; however this is not in itself unusual within the haulage industry. There was a significant variation in the standard of securing between box-sided, flatbed and curtain-sided vehicles: goods transported in box-sided vehicles appeared to be secured relatively well by the structure of the vehicle, whereas goods transported on flatbeds or curtain-sided vehicles were typically either inadequately secured or completely unsecured.
- There appears to be considerable confusion and lack of awareness amongst both consignors and operators regarding responsibility for the load when the vehicle is re-loaded and/or where the load is re-arranged at delivery sites. The three key dutyholders are: consignor, operator, and driver. This confusion appears to result in some parties abrogating their responsibilities on the incorrect assumption that the driver of the vehicle is invariably solely responsible for the safety of the load.
- Dutyholders have a legal duty to assess the risks of their work activities, and take reasonably practicable steps to reduce the risk of harm both to their employees and others affected by their work activities. The delivery and collection of goods will often involve drivers visiting sites not controlled by their employer and therefore there can be an overlap in responsibility between the employer and the individual or company in charge of the site. This overlap in responsibilities means that communication and cooperation between parties is crucial in ensuring that loading and unloading is carried out safely.
- Many of the issues identified during site visits and roadside checks appeared to result from a combination of poor communication and cooperation between key dutyholders in the transport chain. While these issues are not exclusive to multi-site deliveries, the effects of poor risk assessment and load planning are exacerbated by the increased exposure to hazards. The wider utilisation of risk assessment, load planning, cooperation and clear communication between dutyholders could significantly reduce the risk of harm during multi-site deliveries.

EXECUTIVE SUMMARY

The purpose of this scoping study was to establish whether there were specific safety issues relating to multi-site deliveries, and how widespread those issues are within the UK road haulage industry. This study builds on previous work on the securing of goods transported by road carried out by HSL: HSE's Health & Safety Laboratory.

Insecure and poorly-loaded loads pose a risk of harm both on the road and in the workplace, with hazards including:

- Increased risk of vehicle rollover
- Items falling from the vehicle on the public highway, and:
 - Striking another road user, and/or;
 - Causing another road user to take evasive action, risking a further collision, and/or;
 - Causing significant congestion on the road network
- All or part of load moving forward under braking and penetrating the vehicle cab
- Items falling out of vehicles on arrival at delivery sites
- Unstable loads collapsing during unloading
- Increased risk of falls from height and manual handling injuries due to delivery site workers being required to manually unload shifted and/or unstable loads

In order to provide an indication of the frequency of multi-site deliveries and identify particular issues of concern relating to multi-site deliveries, data was collected and analysed from site visits and roadside checks carried out in conjunction with other enforcement authorities.

Multi-site deliveries in themselves do not appear to introduce risks over and above those encountered in the haulage industry overall, however they do appear to increase the exposure to hazards, and the profile of multi-site deliveries may mean that vehicles are delivering to sites where risks are not adequately controlled. Smaller sites and/or kerbside deliveries may not provide dedicated equipment that would control the risks of delivery to a reasonably practicable level, such as fall prevention and fall arrest equipment.

Awareness of the risks of work activities appeared to be generally quite low amongst both consignors and hauliers, particularly with regard to the load retention properties of curtain-sided vehicles. There was a strong preference for curtain-sided vehicles and flatbeds for multi-site deliveries, due to the ease of side access, but overall little thought appeared to have been given to the securing of the load on the vehicle. This appeared to be exacerbated where the vehicle was re-loaded at delivery sites, and there appeared to be considerable confusion over where responsibility for the load lay once the original configuration had been changed. It is suggested that this is an area of considerable confusion for both consignors and vehicle operators in which additional clarity may be required.

Data from the roadside checks indicated that, overall, the standard of load securing was much better in box-sided vehicles than in either flatbed or curtain-sided vehicles. Loads transported on flatbeds were more likely to be inadequately secured (either with not enough lashings or by the use of lashings in poor condition), whereas loads transported in curtain-sided vehicles were more likely to be completely unsecured.

The level of inadequate or no load securing of multi-site delivery loads in both the UK and the Republic of Ireland was found to be, overall, consistent with that of single-site deliveries identified during previous studies. However, the roadside checks indicated that there were issues specific to multi-site deliveries, namely:

- Loads being loaded in drop order, compromising other aspects of safe loading;
- Partially-unloaded loads becoming unstable/liable to movement.

Where loads were loaded in drop order, there was potential for:

- Axle overloading as the load diminished;
- Uneven load distribution (such as the bulk of the load weight placed on the top deck of a double-deck trailer due to loading in drop order);
- Loss of positive fit restraint as the load diminished.

While load planning would generally be considered desirable, it appeared that planning based purely on predicated drop order could result in poorly-loaded, unstable loads. This could be exacerbated once the first delivery had taken place, even if the load was re-loaded. This appeared to be particularly noticeable with palletised or stacked (pipe or sheet) loads and movement under braking and acceleration: once a number of pallets or stacks had been unloaded to leave gaps in the load, the remaining load could easily slide into the gap under normal driving conditions.

CONTENTS PAGE

1.	INTRODUCTION	1
1.1	Background information on the UK Freight Industry	1
1.2	Vehicles used for multi-site deliveries	3
1.2.1	Flatbeds	3
1.2.2	Curtain-siders	3
1.2.3	Box-siders	3
1.3	UK guidance and legislation relating to vehicle loading	4
1.3.1	Legislation	4
1.3.2	Guidance	6
2.	IMPLICATIONS	7
3.	METHODOLOGY	8
4.	RESULTS	9
4.1	Data on transport-related incidents reported under RIDDOR	9
4.2	Data from roadside checks	10
4.2.1	Checks in the UK	10
4.2.2	Checks in the Republic of Ireland	12
4.3	Information obtained from site visits	14
4.3.1	Background	14
4.3.2	Specific issues	14
4.3.3	Summary	16
5.	DISCUSSION	18

1. INTRODUCTION

1.1 BACKGROUND INFORMATION ON THE UK FREIGHT INDUSTRY

Road haulage accounts for a significant percentage of all goods moved in the UK. According to the Department for Transport's Road Freight statistics, between 2009 and 2010, the amount of goods lifted by goods vehicles rose by 10%, from 1,356 million tonnes to 1,489 million tonnes. The bulk of this increase was seen in rigid vehicles of over 25 tonnes and articulated vehicles over 33 tonnes.

Across all modes, two-thirds of journeys were less than 100 kilometres (approximately 63 miles). Nearly half (45%) were less than 50 kilometres (approximately 30 miles). The distribution by length of haul is shown below in Figure 1:

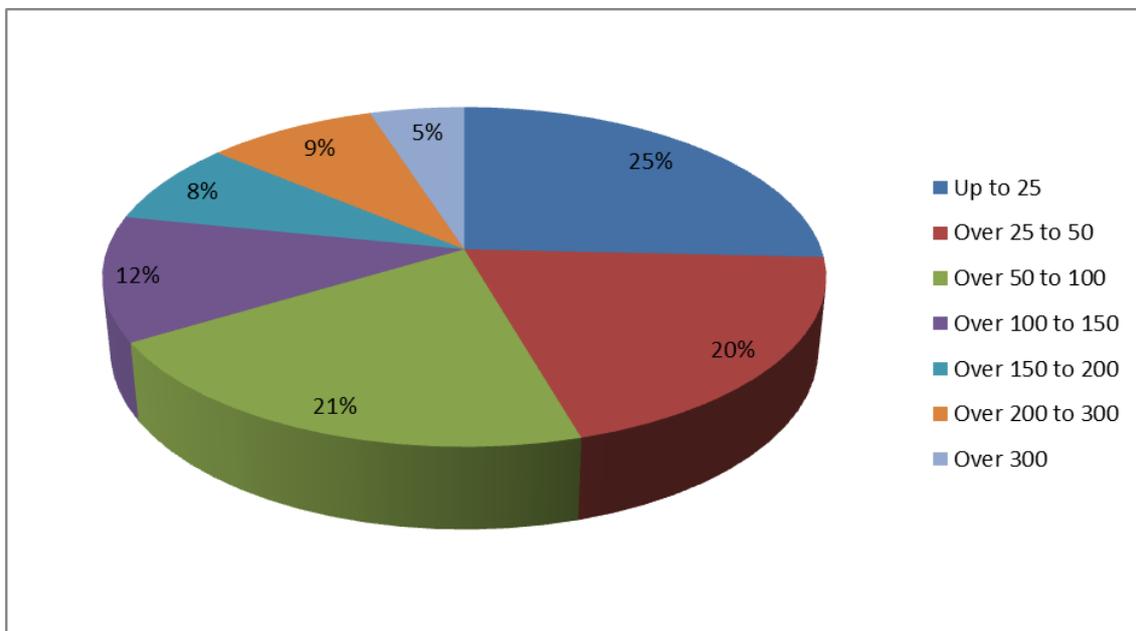


Figure 1: Percentage of goods lifted by length of haul in kilometres, 2010

The longest hauls comprised: wood, timber and cork; iron and steel; beverages; coal and coke; chemicals; miscellaneous manufacturing. These six commodity types each had an average haul of more than 120 kilometres (approximately 75 miles). Short hauls averaging less than 100 kilometres also comprised six commodity types: crude minerals; ores; building materials, fertiliser, petrol and petrol products; other metal products. The distribution by commodity type is shown in Figure 2 on the following page.

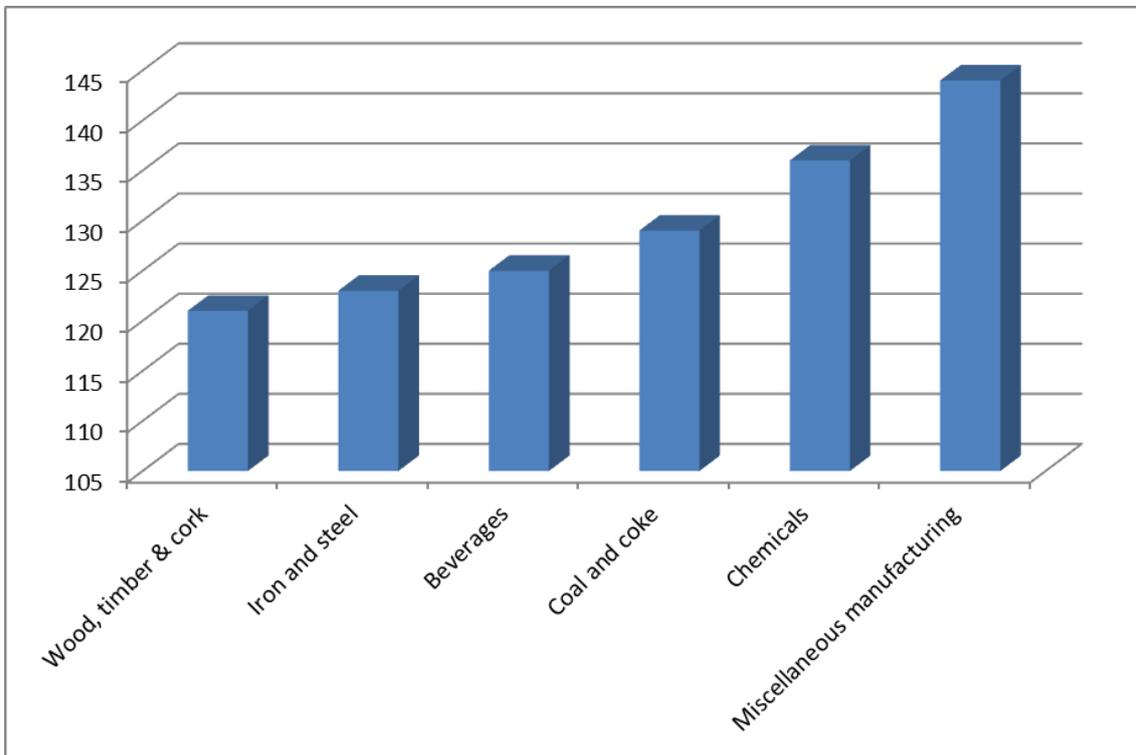


Figure 2: Length of haul by commodity in kilometres, 2010

It should be noted that there is evidence of a degree of regional variation in commodity types; A 2009 Department for Transport report (*Network Analysis of Freight Traffic*, MDS Transmodal Ltd for DfT, 2009¹) states:

A significant proportion of RoRo import traffic is initially destined for RDCs located around the M25, in the Midlands, around the M6/M60 in the North West and around Leeds/Wakefield.

And

Generally, around 35-50% of all HGV trips on corridors passing through the Midlands and South East are conveying crude materials or manufactured goods. Corridors in the north of England show a slightly lower percentage of HGV trips conveying crude materials or manufactured goods (20-30%).

Market variations and other economic considerations may be responsible for significant variations in length of haul over time across load types. For example, the average length of haul for coal and coke increased to 129 kilometres in 2010, up from an average of 78 kilometres over the period 2006-2009. Conversely, the average length of haul for fertiliser fell from 101 kilometres in 2007 to 67 kilometres in 2010.

Raw statistics for road freight do not indicate how many journeys are single or multi-site delivery. Multi-site deliveries are defined as journeys where a goods vehicle is loaded with goods intended for two or more destination sites. The vehicle may be part-unloaded at each drop (resulting in a diminishing load within the vehicle), or backhaul (re-loaded with replacement items as goods are unloaded). Multi-site deliveries may be made to other sites owned by the same company, or to customer or third-party sites.

¹ <http://assets.dft.gov.uk/publications/pgr-freight-freight-modal-pdf/freight-traffic.pdf>

1.2 VEHICLES USED FOR MULTI-SITE DELIVERIES

Although many multi-site deliveries are made in light goods vehicles, for the purposes of this study only heavy goods vehicles (HGVs) have been considered.

HGVs can be broadly divided into two categories: rigid (where the cab unit and load area form a single indivisible vehicle), and articulated (where the cab unit – tractor – and trailer are separate entities joined by a connector known as the fifth wheel). A trailer may therefore be drawn by a number of different tractor units during a single delivery run.

Trailer body types come in myriad forms: in the UK the most common types in general haulage are flatbeds, curtain-siders, and box-siders.

1.2.1 Flatbeds

Flatbeds offer the most versatility in terms of loading and unloading, as the absence of superstructure means they can be loaded from either side or by overhead crane. Flatbeds are typically used for the delivery of building products, fuel, aggregate and powder products and similar.

While the lack of superstructure offers benefits in terms of access for loading and securing the load, unless sideposts, fold-up sides or similar are used there will be no containment of the load to the side and additional securing is likely to be required.

1.2.2 Curtain-siders

Curtain-sided vehicles are often used in situations where weather protection and/or obscuration of the cargo being transported are beneficial in addition to the ability to side load. Curtain-siders are used to transport myriad load types in the UK.

Although the curtain sides offer weather protection, they are generally not rated for load containment and therefore load securing is still required within the vehicle unless the vehicle superstructure is constructed to the EN 12642² 'XL' standard or equivalent.

1.2.3 Box-siders

Box-sided vehicles can be used to transport any kind of load that can be loaded via the rear doors, as there is generally no access to the load bed from the side of the vehicle. Box-sided vehicles are typically loaded either from a loading dock or through use of a tail lift fitted to the vehicle.

The rigid sides of the box-sided vehicle can be suitable for load containment through the use of positive fit. Positive fit is a means of securing whereby the load completely fills the load bed and is prevented from moving in any direction by the superstructure.

² BS EN 12642:2006; *Securing of cargo on road vehicles. Body structure of commercial vehicles. Minimum requirements*

1.3 UK GUIDANCE AND LEGISLATION RELATING TO VEHICLE LOADING

1.3.1 Legislation

The loading and securing of goods on vehicles, their transport, and their unloading, falls under two distinct areas of law in the UK: road traffic legislation and workplace safety legislation.

Regulation 40A of the Road Traffic Act 1988 introduced by the Road Traffic Act 1991³ states:

A Person is guilty of an offence if he uses, or causes or permits another to use, a motor vehicle or trailer on a road when:

- a) the condition of the motor vehicle or trailer, or of its accessories or equipment, or*
- b) the purpose for which it is used, or*
- c) the number of passengers carried by it, or the manner in which they are carried, or*
- d) the weight, position or distribution of its load, or the manner in which it is secured,*

is such that the use of the motor vehicle or trailer involves a danger of injury to any person.

Regulation 100 of the Road Vehicles (Construction and Use) Regulations 1986⁴ – SI 1986 No 1078 states:

1. A motor vehicle, every trailer drawn thereby and all parts and accessories of such vehicle and trailer shall at all times be in such condition ... and the weight, distribution, packing and adjustment of the load of such vehicle and trailer shall at all times be such that no danger is caused or is likely to be caused to any person in or on the vehicle or trailer or on a road.

2. The load carried by a motor vehicle or trailer shall at all times be so secured, if necessary by physical restraint other than its own weight, and be in such a position, that neither danger nor nuisance is likely to be caused to any person or property by reason of the load or any part thereof falling or being blown from the vehicle or by reason of any other movement of the load or any part thereof in relation to the vehicle.

The Health & Safety at Work Act 1974⁵ states:

General duties of employers to their employees.

2. (1) It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.

(2) Without prejudice to the generality of an employer's duty under the preceding subsection, the matters to which that duty extends include in particular

³ <http://www.legislation.gov.uk/ukpga/1988/52>

⁴ <http://www.legislation.gov.uk/uksi/1986/1078>

⁵ <http://www.legislation.gov.uk/ukpga/1974/37>

- *the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health;*
- *arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances;*
- *the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees;*
- *so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks;*
- *the provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work.*

Operators also have duties to people not employed by them:

General duties of employers and self-employed to persons other than their employees.

(1) It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.

(2) It shall be the duty of every self-employed person to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that he and other persons (not being his employees) who may be affected thereby are not thereby exposed to risks to their health or safety.

(3) In such cases as may be prescribed, it shall be the duty of every employer and every self-employed person, in the prescribed circumstances and in the prescribed manner, to give to persons (not being his employees) who may be affected by the way in which he conducts his undertaking the prescribed information about such aspects of the way in which he conducts his undertaking as might affect their health or safety.

The Management of Health and Safety at Work Regulations 1999⁶ place specific duties on employers and the self-employed to assess the risk of their work activities, stating:

3.—

(1) Every employer shall make a suitable and sufficient assessment of—

(a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and

(b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking

⁶ <http://www.legislation.gov.uk/uksi/1999/3242>

...

(2) *Every self-employed person shall make a suitable and sufficient assessment of—*

(a) the risks to his own health and safety to which he is exposed whilst he is at work; and

(b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking,

The Work at Height Regulations 2005⁷ place specific duties on employers to control the risks of working at height. They state:

4.—

(1) Every employer shall ensure that work at height is—

(a) properly planned;

(b) appropriately supervised; and

(c) carried out in a manner which is so far as is reasonably practicable safe,

...

6.—

(1) In identifying the measures required by this regulation, every employer shall take account of a risk assessment under regulation 3 of the Management Regulations.

(2) Every employer shall ensure that work is not carried out at height where it is reasonably practicable to carry out the work safely otherwise than at height.

(3) Where work is carried out at height, every employer shall take suitable and sufficient measures to prevent, so far as is reasonably practicable, any person falling a distance liable to cause personal injury.

1.3.2 Guidance

The recognised means of demonstrating compliance with road traffic law in the UK is by following the advice given in the Department of Transport publication, *Safety of Loads on Vehicles*. This does not specifically deal with the issue of multi-site deliveries; however it does provide general guidance on how best to secure loads for road transport.

With regard to workplace risk, HSE produces extensive guidance on site issues such as falls from height⁸ and slips and trips⁹, as well as risk assessment and management¹⁰.

⁷ <http://www.legislation.gov.uk/ukxi/2005/735>

⁸ <http://www.hse.gov.uk/falls/index.htm>

⁹ <http://www.hse.gov.uk/slips/index.htm>

¹⁰ <http://www.hse.gov.uk/simple-health-safety/manage.htm>

2. IMPLICATIONS

Delivering to more than one site may introduce additional hazards into the delivery process, specifically in terms of working at height, slips and trips, and manual handling, during the loading and securing of a diminishing load.

Working at height, slips and trips, and manual handling are generally considered to be work activities with a high potential for injury. The cost to individuals, employers, and society as a whole from even relatively minor incidents can be significant. For individuals, incidents can mean personal injury that may result in long-time health issues. For employers, there may be a significant cost in terms of lost employee time, damaged equipment and product, and the potential negative effect of an incident on overall employee morale.

The purpose of this scoping study was therefore to provide an indication of the frequency of multi-site deliveries across industry sectors, and identify issues of particular concern relating to multi-site deliveries.

3. METHODOLOGY

In order to provide an indication of the frequency of multi-site deliveries and identify particular issues of concern relating to multi-site deliveries, three approaches to data collection were used:

- Analysis of RIDDOR data to assess common causes of injury relating to loading and unloading.
- Anecdotal evidence from both hauliers and site operators, obtained during site visits and at the roadside in conjunction with other enforcement authorities.
- Analysis of the frequency of multi-site deliveries using roadside check data obtained in the course of previous studies.

RIDDOR data comprises reports made to HSE in respect of reportable injuries and ill-health at work. It should be noted that there is an acknowledged degree of under-reporting under RIDDOR, particularly amongst the self-employed.

It was assumed that certain injury types might be more common with multi-site deliveries. These injury types are common within the road transport, handling and storage sectors, and include:

- Being struck by vehicles;
- Being struck by falling objects;
- Slips and trips;
- Falling from height.

Roadside check data from the Republic of Ireland was collected for comparison purposes with data collected in the UK. Ireland was considered to be a good comparator due to the volume of freight traffic between the UK and Ireland and the broad similarity in the legal approach in both countries to load securing for road transport.

4. RESULTS

4.1 DATA ON TRANSPORT-RELATED INCIDENTS REPORTED UNDER RIDDOR

In 2010/11, more than 50% of all employee fatal injuries across all industry sectors occurred as a result of three incident types:

- being struck by vehicles;
- being struck by falling objects;
- falling from height.

Slips, trips, and falls from height resulted in 41 fatalities of employees and the self-employed in 2010/11 (including 3 falls from a vehicle). Slips, trips and falls were responsible for 56% of all major injuries and 29% of over 3 day injuries to employees. The rate and severity of slip, trip and fall injuries tends to increase with employee age.

The industry classification 'Transportation & Storage' had the second highest injury rate for slips, trips and falls (a rate of 534.9 per 100,000 employees in 2010/11). The variation in injury rate between industry sectors is shown below in Figure 3:

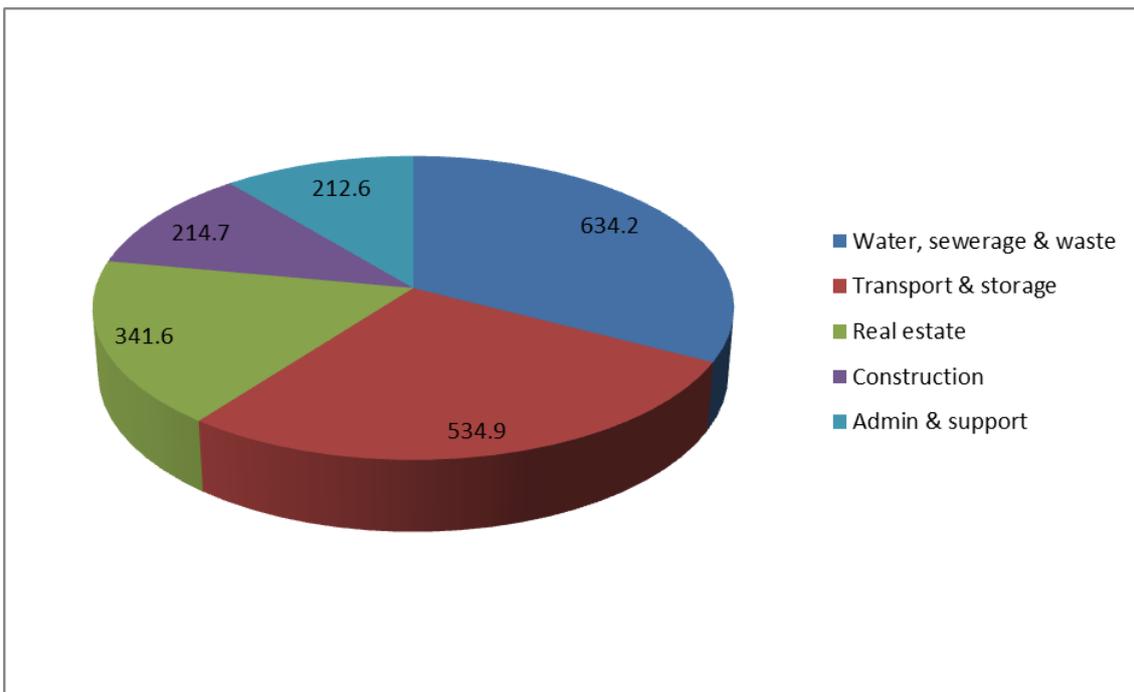


Figure 3: Slip, trip or fall injuries to employees by industry sector 2010/11

Transportation & Storage was also the riskiest industry sector for workplace transport overall, with both the highest number of accidents and the highest rates of injury (151.8 per 100,000 employees over the period 2006/07 to 2010/11).

A workplace transport injury is a reportable injury where someone is injured by:

- A moving vehicle (including runaways and overturns);
- A fall from, or something falling from, a vehicle;
- Striking against part of a vehicle whilst travelling in it.

Workplace transport accidents are likely to be fatal (30% of all fatal accidents to employees are as a result of workplace transport). Most fatal and major workplace transport accidents involved either a heavy goods vehicle or a forklift truck.

Analysis of incident details for the industry classification 'Freight Transport by Road' indicated that the majority of all injuries occurred as a result of;

- Hit by a moving, flying or falling object;
- Injured while handling, lifting or carrying;
- Slip, trip or fall on same level.

These three incident categories accounted for 4,996 fatal, major injury or over 3-day incidents in 2010/11, or 72% of all injury incidents.

Obtaining data specific to multi-site deliveries from incident reports was not possible, as this was not an aspect of the operation routinely reported under either RIDDOR or road accident reports.

4.2 DATA FROM ROADSIDE CHECKS

In the course of roadside checks carried out by the Vehicle & Operator Services Agency (VOSA), the Metropolitan Police, and Suffolk Police in the UK, and An Garda Síochana in the Republic of Ireland, data was collected to establish the distribution of multi-drop deliveries. 57 vehicles were assessed in total over six check days.

4.2.1 Checks in the UK

It should be noted that checks within the UK were carried out at three distinct types of check sites: major route checks (near ports), major route checks (away from ports), and local route checks (city routes). The distribution of traffic would therefore be expected to vary and this is reflected in the data collected: in the London area the percentage of multi-site deliveries was typically over 50%, while at major route checks near the ports of Felixstowe and Hull, there was a greater percentage of single-site delivery vehicles arriving from or travelling to mainland Europe. The distribution by check type is shown in Figure 4 on the following page.

In the London area, the majority of the multi-site delivery vehicles were found to be delivering either food and drink products, or construction material (such as bricks or aggregate). These products were, in 93% of cases, either not secured at all or inadequately secured (the 7% that might be considered adequately secured were palletised food and drink products secured by positive fit in box-sided vehicles).

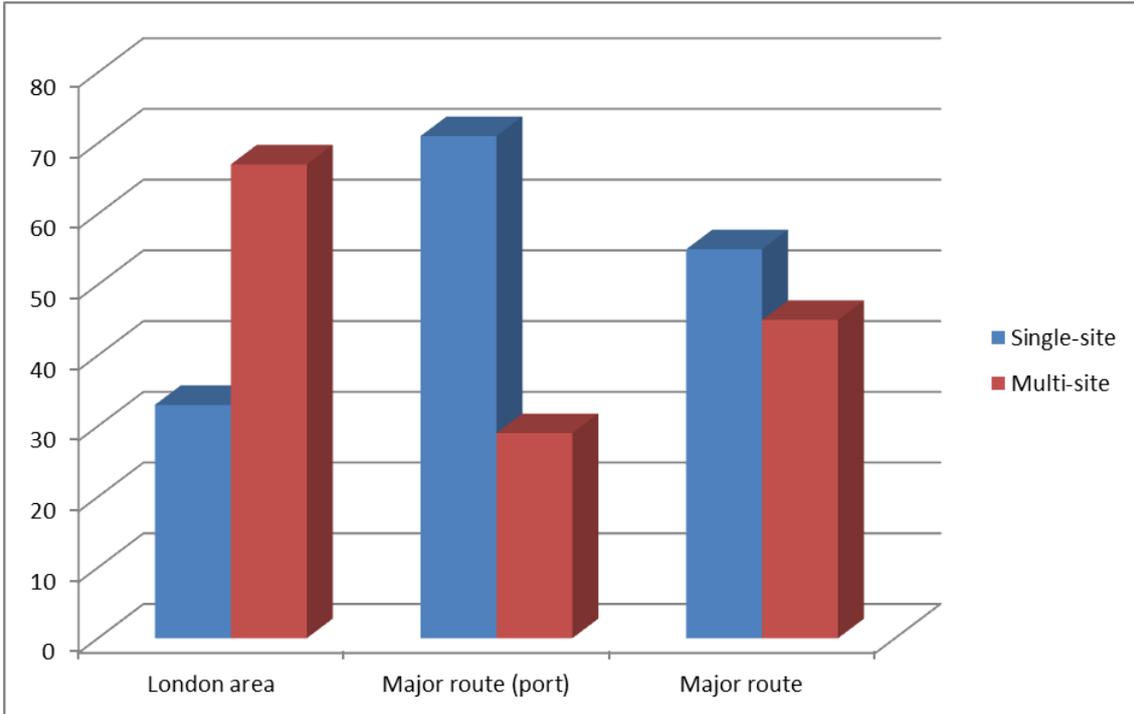


Figure 4: Distribution of multi-site deliveries by check site type

On major routes, the multi-site delivery vehicles were typically carrying either construction/infrastructure material (as shown in the example at Figure 5) or palletised retail goods.



Figure 5: Example load on a flatbed trailer

On major routes, goods transported on flatbeds were generally secured to a higher standard than those transported in curtain-sided vehicles. The variation in the standard of load securing between body types is shown in Figure 6 on the following page:

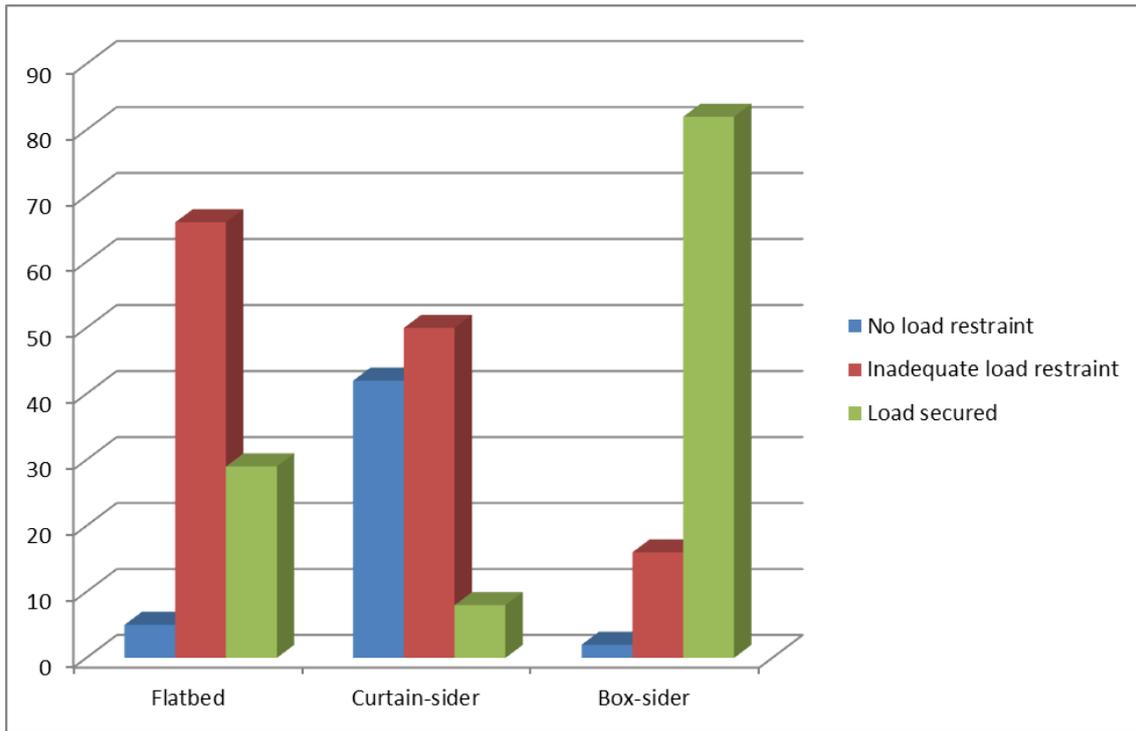


Figure 6: Variation in load securing between trailer body types (%)

Goods transported in box-sided vehicles were almost always (82%) secured, usually by positive fit with or without additional securing bars.

The majority (92%) of goods transported in curtain-sided vehicles were either unsecured or inadequately secured. The curtain itself was not considered as part of the load securing system when assigning categories.

A significant number (66%) of goods transported on flatbeds were inadequately secured, either because an insufficient number of lashings had been used, or the lashings used were in such poor condition that their integrity was likely to be compromised.

4.2.2 Checks in the Republic of Ireland

All of the vehicles assessed were registered in Ireland, although one vehicle was returning from North Wales and had recently undertaken a ferry journey across the Irish Sea. 38% of the vehicles assessed were carrying out multi-site deliveries, with the remaining 62% carrying out single-site deliveries.

The multi-site delivery vehicles fell into two categories: delivery of food and drink products and delivery of manufactured product. The food and drink deliveries were all relatively local deliveries (within a radius of 30 miles of the check site). The average number of deliveries was four. Examples of vehicles encountered are shown in Figures 7 and 8.

It was noted that there was very little awareness of load securing, and the standard of load securing was generally very low.



Figure 7: Mixed load of glass and metal



Figure 8: Mixed load of glass and ceramic products

All of the vehicles assessed had issues with the securing and stability of their loads, and the vehicles carrying out multi-site deliveries had not made their first delivery, hence it was not possible to assess the effect of partial unloading.

4.3 INFORMATION OBTAINED FROM SITE VISITS

4.3.1 Background

Six worksites were visited as part of the assessment process. All six sites were concerned with the loading of vehicles for multi-site deliveries. The six sites comprised:

- Two distribution centres handling food and drink products
- One steel stockholder
- Two distribution centres handling general household goods
- One logistics hub handling parcels

With the exception of the steel stockholder, where flatbed vehicles were used, all of the sites used curtain-sided HGVs to transport outgoing goods.

The steel stockholder was the only delivery site where loads were routinely secured before vehicles left the site. Reasons given for not using securing were that load restraints would damage the loads, or that load restraints would cause difficulties during unloading.

The average number of deliveries carried out by each vehicle was four. Apart from the steel stockholder, all loads were shrink wrapped, palletised loads. Delivery sites were typically small and medium-sized enterprises (SMEs). Unloading was carried out by personnel at the delivery sites using forklift trucks.

Back loading (carrying a different load on the return journey) was carried out by three of the six companies. The nature of the back loading typically comprised empty pallets but in one case involved palletised goods.

4.3.2 Specific issues

4.3.2.1 *Increased use of multi-site deliveries and time pressures*

The current economic climate was mentioned by all the companies visited as a reason for an increasing number of multi-site deliveries. It was noted that customers were ordering smaller quantities of goods and that this had had a significant effect on the working practices of the companies as the number of deliveries per vehicle increased. There was also increasing pressure to back load to reduce the amount of time that the vehicle was running empty, with the cost of fuel being cited as a particular factor. This is discussed further in 4.3.2.3.

4.3.2.2 *Use of securing equipment*

The use of securing equipment, specifically webbing lashings, was noted to be an issue of concern in relation to site deliveries. A number of delivery sites were reportedly negative towards the use of lashings, due to the time required to remove them prior to unloading, and operators did not necessarily feel able to challenge this due to the risk of losing business.

For companies using curtain-sided vehicles, loads appeared to be routinely dispatched without any form of load securing, as shown in the example in Figure 9.



Figure 9: Unsecured palletised load in a curtain-sided vehicle

Reasons given for the lack of securing varied, including:

- Loading carried out via the rear doors, so opening the curtains to secure the load could introduce additional hazards;
- Antipathy at delivery sites to the use of load securing as it potentially slowed down unloading;
- Reluctance to provide lashings as this was considered to be a significant cost;
- A stated belief that the curtains were capable of providing load securing.

4.3.2.3 Back loading and vehicle choice

Back loading, or the process whereby the vehicle is loaded with a second, possibly different, load for its return journey was mentioned consistently by companies as an issue in terms of load securing. The incidence of back loading was considered to have increased due to the current economic climate and commercial pressures. However, this could lead to vehicles being used to transport loads they were not specifically designed to carry and/or for which the load securing system available was not optimal.

Alongside the issues mentioned in 4.3.2.1 in respect of the increasing number of multi-site deliveries due to customers ordering smaller quantities of goods, this appeared to be having an effect on vehicle choice. There appeared to be less leeway available for companies in choosing specialised vehicles, since flexibility to transport a variety of loads was economically desirable.

4.3.2.4 Issues listed by drivers and loaders

Issues mentioned specifically by drivers included: access to sites, communication, working at height, particularly on multi-deck trailers where all or part of the load required manual intervention following load shift in transit, and time pressures.

Concerns were noted that hazards such as working at height and manual handling are encountered more frequently because drivers are making deliveries to multiple sites and are required to access the load area and manually unload or rearrange the load either by hand or using a pallet truck during each delivery. It was also noted that multi-site deliveries often involved delivering to smaller sites or at the kerbside, where risks could not necessarily be well-controlled.

Responsibility for the safety and stability of the load was also repeatedly mentioned as a significant issue for multi-site deliveries, particularly where back loading occurs or the load is rearranged at a delivery site. There was confusion over who was then responsible for the variation in the load. Previous research in this area has shown that HGV drivers tend to take strong individual responsibility for the load carried on their vehicle, even if they themselves have had minimal or no involvement in loading. However, in all six companies drivers reported concerns about responsibility for the load once it had been partially unloaded and/or reloaded.

The companies did not provide detailed information to the drivers regarding their loads, and there was no evidence of how health and safety risks were managed once the vehicle had made its first delivery.

4.3.3 Summary

The distribution of issues noted during site visits is shown in Figure 10. This represents the relative perceived importance of each issue to the companies involved, and not necessarily an objective importance – for example, load securing was generally not considered to be a serious issue at the majority of sites, although objectively there were significant deficiencies in the level of load securing.

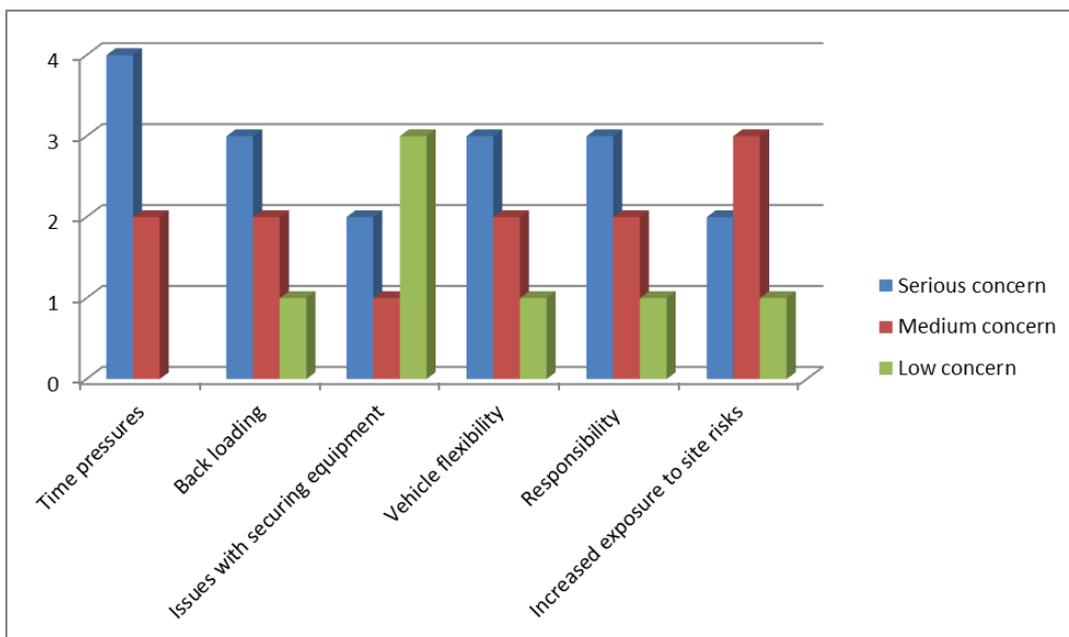


Figure 10: Distribution of site issues

Time pressures, the importance of back loading to minimise empty running, and vehicle flexibility in being able to transport a wide variety of loads were perceived to be inter-related and serious issues for the majority of companies. Division of responsibility, particularly where vehicles were re-loaded at delivery sites, was also perceived to be a serious issue. Operators repeatedly identified a lack of awareness of the risks faced by drivers amongst consignors/delivery sites as a serious issue, as it was considered potentially difficult for an individual driver to challenge what they perceived to be poor practice.

Responsibility for the loading and securing of a load on a vehicle has historically often been assumed to be purely the responsibility of the driver of the vehicle. However, the wording of Regulation 40A of the Road Traffic Act 1988, namely *A Person is guilty of an offence if he uses, or causes or permits another to use* indicates that there may be degrees of responsibility depending on the level of involvement the driver has had in loading the vehicle, and employers have duties under health and safety at work legislation to assess the risks of their work activities and take reasonably practicable steps to reduce the risk of harm.

Road haulage is an unusual industry sector in that roles and contractual relationships can vary widely. For example, an owner-driver may load a vehicle himself with goods from his own premises using a fork lift truck and take full responsibility for the loading and securing of that load. The same owner-driver may, the next day, collect a pre-loaded and sealed trailer from a distribution centre aggregating consignments from a number of manufacturers/suppliers, and hence have very little input into the loading and securing.

In terms of division of responsibility, there are three key dutyholders:

- Consignor (the individual or company responsible for placing the load onto or into the vehicle)
- Operator (the individual or company responsible for the movement of the load on the road)
- Driver (the individual responsible for driving the vehicle to its delivery point)

Depending on the exact composition of the transport chain, all three of these roles may be filled by one individual, or there may be multiple consignors as the vehicle is re-loaded at each delivery site.

5. DISCUSSION

The purpose of this scoping study was to establish whether there were specific issues relating to multi-site deliveries, the nature of these issues, and how widespread the issues are in the UK at present.

Road haulage is a significant part of the UK economy but in the current economic climate there appears to be considerable pressures on operators to ensure that vehicles are running fully-loaded as often as possible, and to make deliveries to multiple sites in one journey as customers order smaller quantities of goods.

Multi-site deliveries in themselves do not appear to introduce additional risks over and above those encountered in the haulage industry overall, however they do increase the exposure to hazards and the profile of multi-site deliveries may mean that vehicles are delivering to sites where risks are not adequately controlled. Smaller sites and/or kerbside deliveries may not provide dedicated equipment that would control the risks of delivery to a reasonably practicable level is, such as fall prevention and fall arrest equipment.

Awareness of the risks of work activities appeared to be generally quite low amongst both consignors and hauliers, particularly with regard to the load retention properties of curtain-sided vehicles. There was a strong preference for curtain-sided vehicles and flatbeds for multi-site deliveries, due to the ease of side access, but overall little thought appeared to have been given to the securing of the load on the vehicle. This appeared to be exacerbated where the vehicle was re-loaded at delivery sites, and there appeared to be considerable confusion over where responsibility for the load lay once the original configuration had been changed. It is suggested that this is an area of considerable confusion for both consignors and vehicle operators in which additional clarity may be required.

Data from the roadside checks indicated that, overall, the standard of load securing was much better in box-sided vehicles than in either flatbed or curtain-sided vehicles. Loads transported on flatbeds were more likely to be inadequately secured (either with not enough lashings or by the use of lashings in poor condition), whereas loads transported in curtain-sided vehicles were more likely to be completely unsecured.

The level of inadequate or no load securing of multi-site delivery loads in both the UK and the Republic of Ireland was found to be, overall, consistent with that of single-site deliveries identified during previous studies. However, the roadside checks indicated that there were issues specific to multi-site deliveries, namely:

- Loads being loaded in drop order, compromising other aspects of safe loading;
- Partially-unloaded loads becoming unstable/liable to movement.

Where loads were loaded in drop order, there was potential for:

- Axle overloading as the load diminished;
- Uneven load distribution (such as the bulk of the load weight placed on the top deck of a double-deck trailer due to loading in drop order);
- Loss of positive fit restraint as the load diminished.

While load planning would generally be considered desirable, it appeared that planning based purely on predicated drop order could result in poorly-loaded, unstable loads. This could be exacerbated once the first delivery had taken place, even if the load was re-loaded. This appeared to be particularly noticeable with palletised or stacked (pipe or sheet) loads and movement under braking and acceleration: once a number of pallets or stacks had been unloaded to leave gaps in the load, the remaining load could easily slide into the gap under normal driving conditions.

Multi-site delivery issues for heavy goods vehicles

The purpose of this scoping study was to establish whether there were specific safety issues relating to multi-site deliveries, and how widespread these were within the UK road haulage industry. This study builds on previous work carried out on load securing of goods transported by road.

Multi-site deliveries in themselves do not appear to introduce additional hazards, over and above those encountered in the haulage industry overall. However, they do appear to increase the exposure to hazards because drivers are required to access the load area more frequently and the profile of multi-site deliveries may mean that vehicles are delivering to sites where risks are not adequately controlled. Awareness of the risks of work activities appeared to be generally quite low amongst both consignors and hauliers, particularly with regard to the load retention properties of curtain-sided vehicles. While load planning would generally be considered desirable, it appeared that planning based purely on predicated drop order could result in poorly-loaded, unstable loads. This could be exacerbated once the first delivery had taken place, even if the load was re-loaded.

The wider utilisation of risk assessment, appropriate load planning, cooperation and clear communication between dutyholders could significantly reduce

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.