Case Study 4 How Californian wine gets to the store in Manchester

A FOOD AND DRINK END-TO-END FREIGHT JOURNEY

A Food and Drink End-to-End Freight Journey considers the movement of freight in the food and drink sector, focusing on efficiencies, causes of unplanned time, empty running, delivery challenges, rail connected warehousing, modal shift and issues that the sector faces.

The case study is one example of the movement of a commodity in a diverse and complex sector. follows the movement of imported wine and draws out practices in moving bulk liquids and the movement of goods by rail, while illustrating the importance of the Midlands and “the golden triangle” in logistics and warehousing. It is based on a British retailer’s transport of imported wine and the recent commencement of the Tilbury-to-Daventry “wine train”. Wine is Britain’s largest food and drink import by value and, while the majority continues to be bottled at the country of origin, the choice of case study underlines mode and transportation alternatives in the freight industry. This case study is based on discussions with food retailers, intermodal rail freight and road hauliers, manufacturers and logistics operators and is complemented by Case Study 3 (“A Ro-Ro End-to-End Freight Journey: How Scottish Lamb is exported to France) which provides insight into exporting meat through the Channel Tunnel.

Courtesy of Chris Wilson

The food and drink sector is critical to our economy and much of the freight moved in the UK is related to a sector that is feeding 61 million people each day.

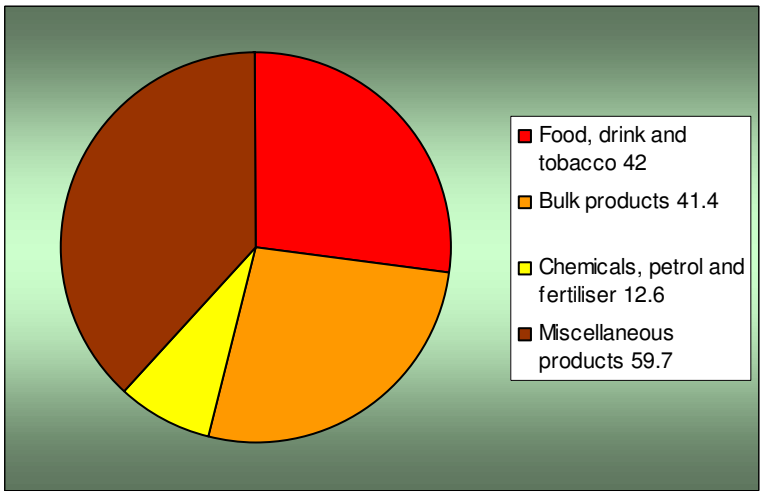
Goods vehicles over 3.5 tonnes lifted 358 million tonnes of food, drink and tobacco in 2006. Of this, 105 million tonnes were agricultural products, 56 million tonnes were beverages and 197 million tonnes were other foodstuffs. Other foodstuffs have increased significantly in the last decade: in 1996, 160 million tonnes were lifted, compared to 114 million tonnes of agricultural products and 52 million tonnes of beverages.

In terms of distance travelled, food, drink and tobacco moved 42 billion tonne kilometres in 2006 (calculated by multiplying tonnage by haulage distance). Of this, 11.6 billion tonne kms were agricultural products, 6.6 billion tonne kms were beverages and 23.8 billion tonne kms were other foodstuffs. Foodstuffs have increased from 20.8 billion tonne kms in 1996 and agricultural products and beverages have remained steady.

Figure 1 graphs commodities moved and shows that food, drink and tobacco is a significant component to freight traffic on the road.

Key Facts about transporting food and drink in the UK

Figure 1: Road Freight Statistics: Goods moved by commodity: 2006 (billion tonne kms)

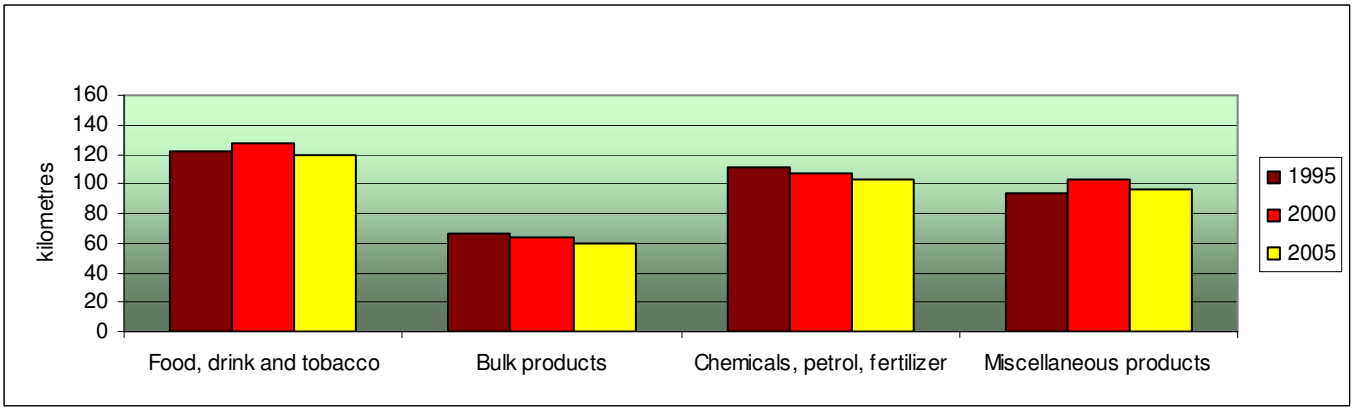


Source: Continuing Survey of Road Goods Transport, DfT (2006)

Road-transported food in the UK has a longer average length of haul at 117 kms (in 2006 - not including goods moved by rail) compared to chemicals that travel an average distance of 102 kms or bulk products that travel an average of just 60 kms. The trend in length of haul over the last decade is shown at Figure 2.

Food and drink is moved by rail but is not a defined category in rail freight statistics and the amount of food and drink moved by rail is undetermined.

Figure 2: Average length of haul by commodity: 1995 - 2005



Source: CSRGT, DfT (2006)

Food and drink trends

In 2006, the UK imported 34 million tonnes of food, animal feed and drinks, valued at £24 billion, and exported 12.4 million tonnes, valued at £10.5 billion; Figure 3 details the top five food and drink imports and exports by volume and value (excluding animal feeds). The level of food imports and exports into the UK is important because growths or declines will impact upon our international gateways and have consequent impacts on land connections to the port, congestion levels and access to the strategic freight corridors.

However, the majority of the food we consume is sourced in the UK. In 2007, the UK was 60.6% self-sufficient: this is down from 70% in 1996 and there is a downward trend in self-sufficiency levels, nonetheless, the significant majority of food consumed in the UK is transported within the national network and is not reliant on our international gateways.

The GB Freight Model forecasts modest import and export growth in the food, beverage and tobacco sectors to 2030 (Figure 4).

The majority of imported fresh food produce is imported by ro-ro vessels, while ambient products are a mix of ro-ro, and container traffic. Less than 1% of foods imports travel by air.

Figure 3: UK Top food and drink imports and exports: 2007

	Imports		Exports	
Tonnage	Mineral water	1,458,648	Wheat, unmilled	2,116,509
	Vegetable oils	1,395,922	Other beet or cane sugar	812,064
	Vegtables, fresh or chilled	1,371,316	Whisky	670,768
	Wine	1,293,777	Milk and cream	621,301
	Raw beet or cane sugar	1,271,566	Beer	575,908
Value £000	Wine	£2,335,538	Whisky	£2,524,782
	Vegtables, fresh or chilled	£965,022	Other food products	£547,108
	Cheese	£885,940	Beer	£408,088
	Poultrymeat	£705,291	Cereal, rolled or flaked	£396,108
	Pork	£682,429	Other spirits	£387,583

Source: Agriculture in the UK, Defra (2007)

The origin of food and drink imports impact on how the goods will get to the final destination. For example, the growing trend in the wine sector to import wine from the New World by deep sea reduces entry points into the UK to deep-sea ports only. By contrast, cheese imports from France, the Netherlands and Poland are more likely to have a diverse range of entry points via short-sea crossings or the Channel Tunnel.

Figure 4: Forecast UK Unitised Tonnes ('000s), 2004-2030

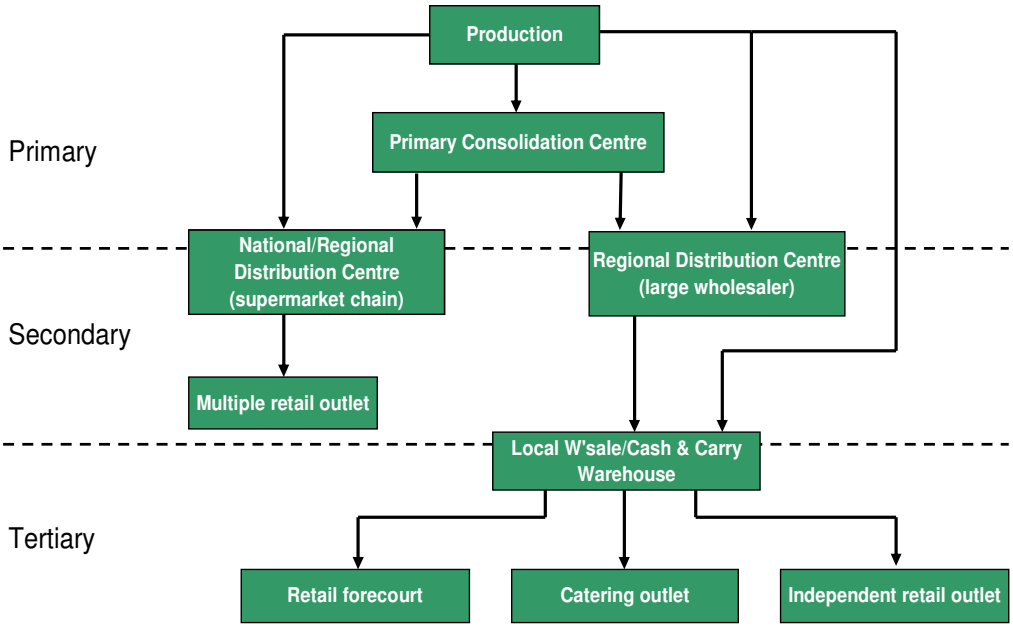
	2004	2010	2015	2020	2025	2030	Growth
Exports							
Food	6,323	8,119	9,289	11,076	13,480	15,351	3.47%
Beverages/Tobacco	1,792	2,914	3,208	3,506	3,811	4,116	3.25%
Imports							
Food	16,177	20,350	23,256	27,181	31,408	34,103	2.91%
Beverages/Tobacco	3,473	4,185	5,014	6,116	6,589	7,067	2.77%

Source: UK Port Demand Forecasts to 2030, MDST (2006)

Food supply: vehicle type and requirements

Figure 5 broadly describes segments of the food and drink supply chain. These segments are used to help us understand, analyse and talk about logistics in the food and drinks market.

Figure 5: food and drink distribution channels



Source: KPIs for Food and Drink Supply Chains, SCALA / DfT (2007)

Each segment of the food and drink distribution chain has its own vehicle requirements. Figure 6 identifies the common vehicles utilised for each distribution level. It identifies which vehicles are most commonly used for each level of the supply chain.

Primary journeys commonly require the bulk movement of goods over long distances, often of a single commodity. Secondary journeys are more likely to be mixed commodities, although there is more likely to be a sharing of vehicle types with primary distribution. Tertiary distribution is commonly more time sensitive and responsive to customer-critical delivery time requirements.

Figure 6: Transport vehicle requirements for each distribution level

Distribution chain level	Usage	Service requirements	Main vehicles used
Primary - Producer or port to Primary or National Distribution Centre / Regional Distribution Centre or major consumer buying in bulk	Regular bulk movements or regular trunk movements of substantial volumes, often over longer distances	Minimise the cost per kilometre hauled Pallets	Large HGVs, rail Rigids over 25 tonnes Artics over 33 tonnes
Secondary – Regional Distribution Centre to factory, supermarket or local wholesale	Large mixed consignments	Reliable, cost effective, adhere to schedule Roll-cages	Medium to large HGVs: Rigids 17-25 tonnes, artics 3.5-33 and over 33 tonnes
Tertiary – distribution to offices, catering and convenience retail	Consignments of varying size, contents or frequency	Flexible local delivery, multi-drops Packages, roll-cages	Vans to 3.5 tonnes, urban artics, rigids 3.5 to 7.5 tonnes.
Time sensitive	High value finished goods or critical parts used in JIT manufacturing or in maintenance of goods or services, couriers	Deliver them with a low lead time, in perfect condition with guaranteed reliability of delivery packages	Vans, small or medium HGVs, air

Source: Implementing Logistics for the food sector, WSP (2004)

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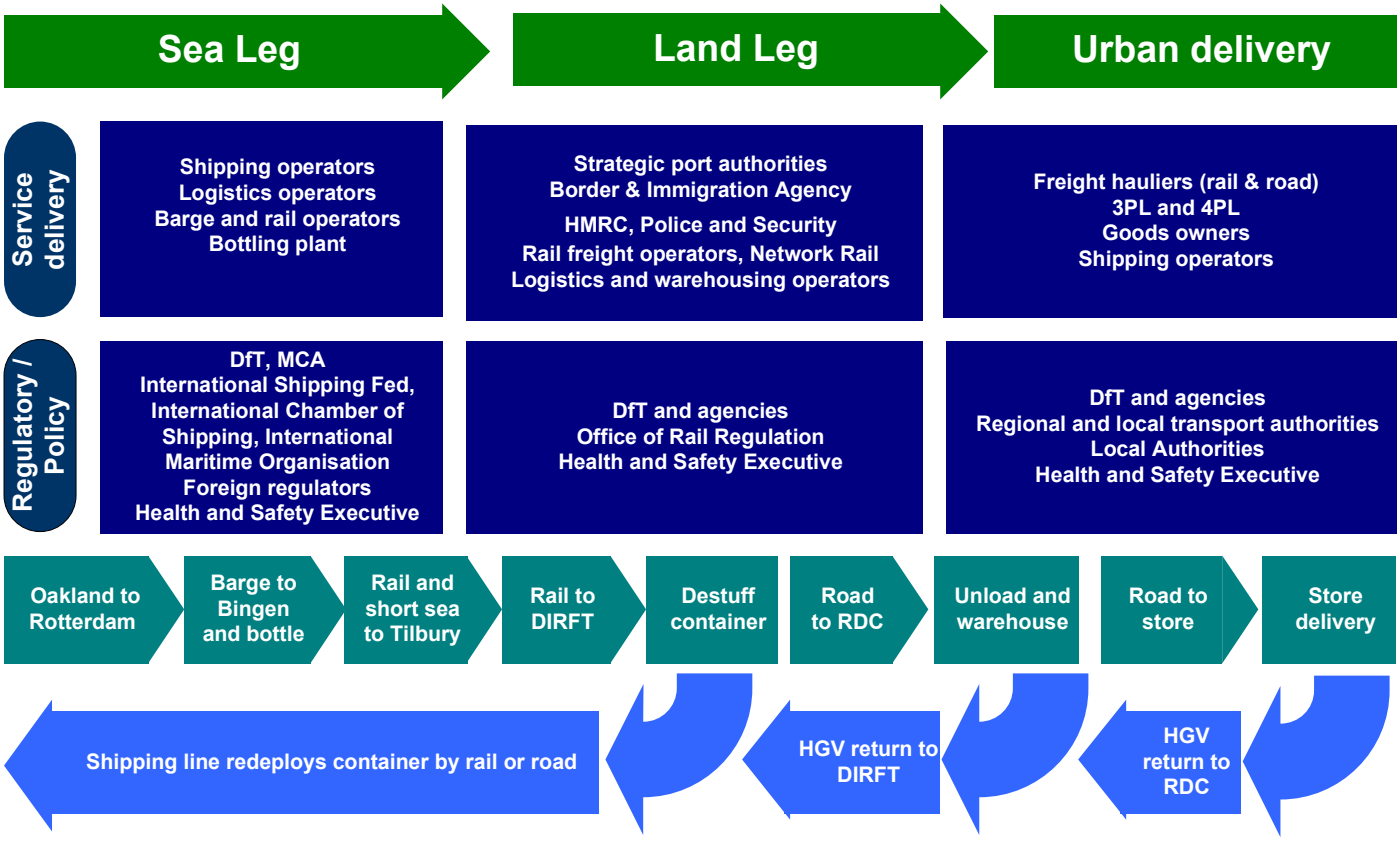
The scenario

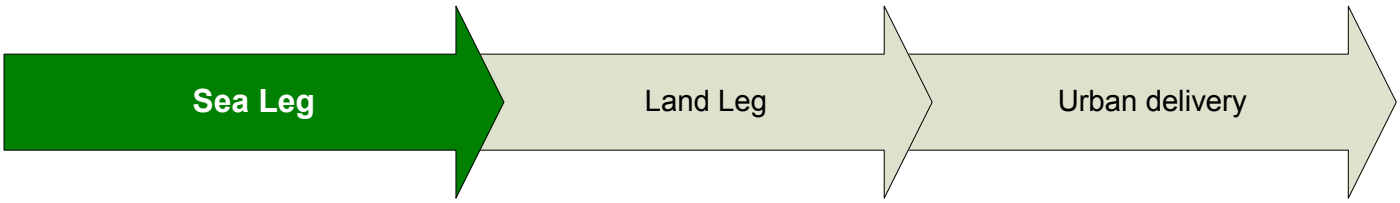
A British retailer purchases 24 tonnes of medium quality wine from a producer in the United States (this equates to 30,000 bottles of wine after bottling). The wine is transported in bulk from San Francisco to the retailer's import centre at Daventry International Rail Freight Terminal in the Midlands. It is distributed to Regional Distribution Centres (RDCs) throughout Britain and 400 bottles are to be delivered to the retailer's store in Manchester.

This case study takes each stage of the journey in turn. Figure 7 provides a simplified overview of the end-to-end journey, considering each segment: what happens, who has delivery and accountability responsibilities and who has regulatory and policy roles.

Figure 7: An end-to-end journey of wine from Oakland to Manchester



Source: Department for Transport (2008)



The Journey from California

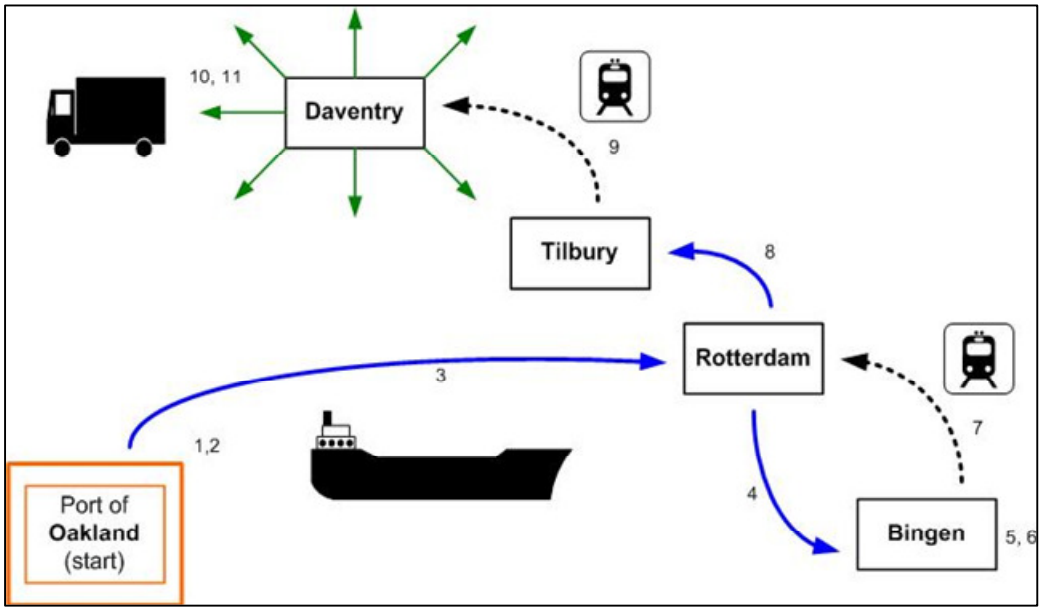
1. Day 1 A lorry with an empty 20" container arrives at a wine distribution centre in California. The container remains on the lorry's trailer and two people line the container floor with foil, assemble a steel frame and attach a polythene flexi-tank in 30 minutes.

The flexi-tank is pumped with 24,000 litres (24 tonnes) of wine. It takes 50 minutes to fill the flexi-tank and it must be 100% filled to ensure that the product is air tight and won't deteriorate. The lorry transports the container by road to the Port of Oakland. The lorry passes through security and customs and the container is lifted by crane off the trailer and placed in a stack awaiting its booked vessel.

A fitted flexi-tank, prior to filling. Courtesy: TransOcean Distribution.

2. Day 4 The container is loaded onto a container ship and departs Oakland for Rotterdam via the Panama Canal. Alternatively, it is common practise for freight forwarders and shipping lines to transport containers by rail across the American continent and ship from ports on the Gulf of Mexico, thereby avoiding passage through the Panama Canal, which can be a higher cost.

Figure 8: Summary of the journey from Oakland to Daventry



Source: Department for Transport (2008)

The majority of wine in the UK is imported from Australia, South Africa, New Zealand, the USA, France, Germany and Spain. While most New World wines are bottled at the country of origin and transported by container, a recent approach is to ship wine by bulk and bottle closer to the country of consumption. The wine is pumped into flexitanks which are fitted into containers. Flexitanks are, simply, large plastic bags with a tap at the bottom. Certain wines from Australia, South Africa and USA are managed this way. The advantage of flexitanks is that more volume can be transported per container, reducing emissions and increasing productivity. Bottling closer to consumption also reduces breakages and and allows retailers more opportunities to develop their own labelling.

3. Day 32 After a sea voyage of 28 days the ship docks at the Port of Rotterdam container terminal and is unloaded after 10 hours of berthing. The container is shifted by straddle carrier to a stack appointed for inland waterways. The container will remain in the stack until customs are cleared. Bottling is undertaken in Germany due to insufficient bottling capacity for wine in Britain.

4. Day 34 The container is loaded onto a barge for transportation down the Rhine into Germany. The Rhine is a successful inland waterway because of its size and its inland reach from the coast. It links major cities such as Cologne, Bonn and Strasbourg, and the maritime ports of Rotterdam and Utrecht. It is also linked to other major European rivers by canal.

5. Day 44 The barge arrives at Bingen and the container is lifted off the barge and taken to the bottling plant where the wine is discharged from the flexi-tank in 50 minutes (residue after a month's journey is usually less that 20 litres) and bottled and labelled. Meanwhile the container remains on-site and will be used later to transport the bottled wine from the plant.

The flexi-tank is not reused but will be recycled. The advantage of this system is that there is no empty tank to return to source, and no health and safety requirements related to refilling the tank with another drink product (notably cleaning before re-use).

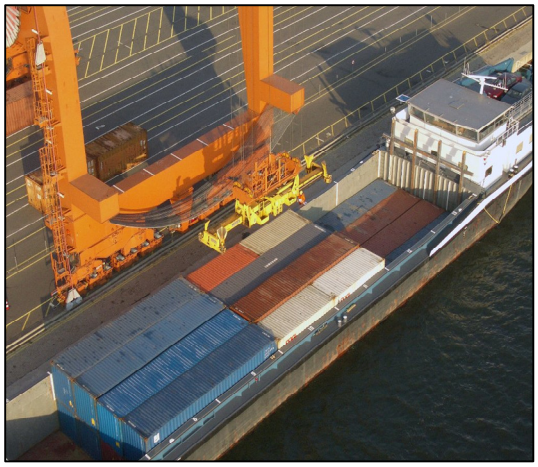
The full process of bottling and labelling takes a week with a further five days required by the bottling plant for quality control testing.

6. Day 56 The bottles are packed into cases (12 per case) and then into pallets. Each pallet carries 56 cases, or 672 bottles. Pallets are loaded into a 20" container (from this point, the journey of the wine is managed by the British logistics operators on behalf of the retailer). The remaining bottles will be transported in five container journeys.

7. Day 57 The container is placed on a freight train at Bingen and railed to Rotterdam via the Frankfurt Rail Terminal. This takes one day. Alternatively, the container could be barged from Bingen or routed by rail from Bingen to DIRFT via France and the Channel Tunnel.

Journey times

The journey by barge from Rotterdam to Bingen takes ten days while the return journey by rail takes one day. The operators have made a modal-choice decision based on when the goods are required at the next point in the supply chain.



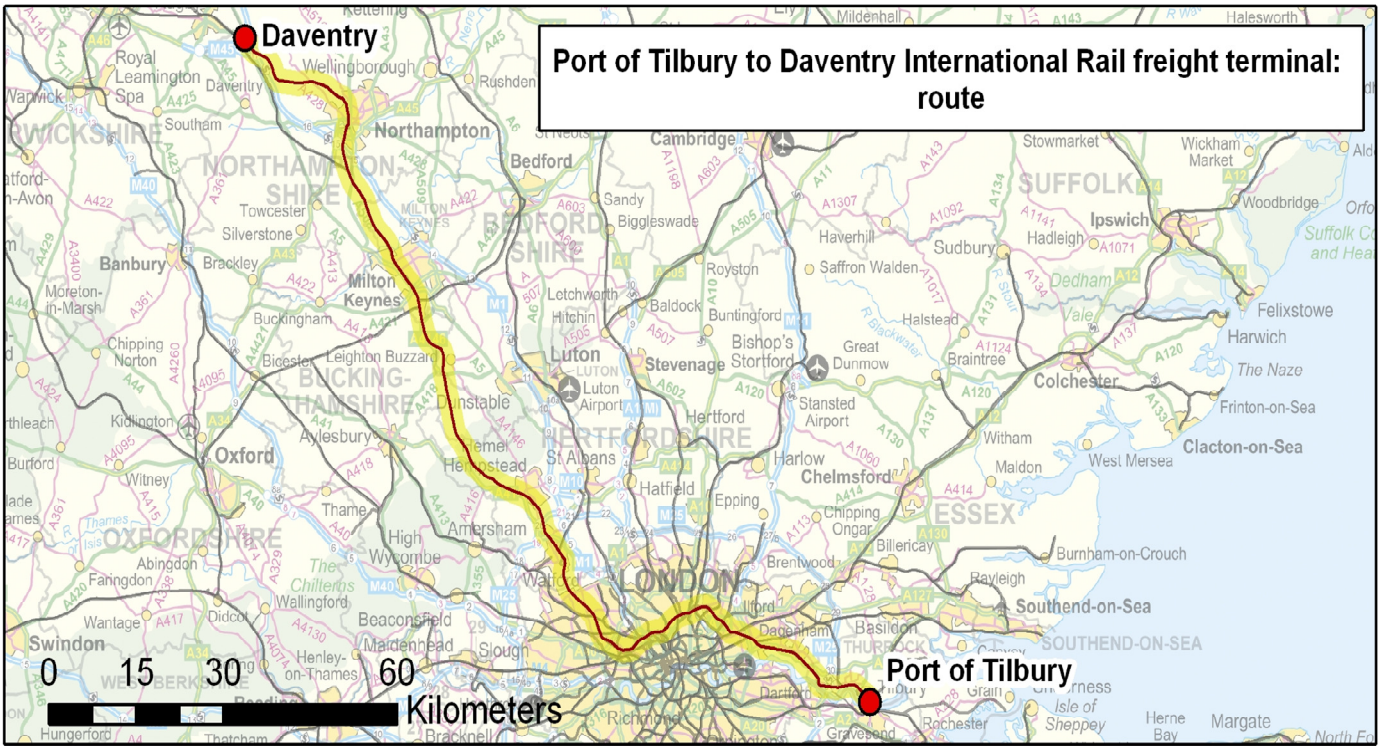
A Rhine barge being loaded.
Courtesy of Ceres Paragon Terminals.

Marketing wine

Retailers discount wine as a promotional mechanism for attracting custom. This has increased the volume of stand-by wine and the traditional warehousing of 4-5 weeks of stock at RDCs for wine has increased to 6-7 weeks for some major retailers.

8. Day 58 The container is lifted off the train at Rotterdam and short-sea shipped from Rotterdam to the Port of Tilbury. Tilbury has rail connections within it and is close to the M25. The journey by sea takes half a day and the container is unloaded from the vessel at 1am on Day 59.

The journey from Tilbury



9. Day 59 At Tilbury, the container is lifted by crane off the ship at Berth 39 and placed onto a rail-appointed stack. The container can remain at the port for up to seven days before additional charges are incurred. Therefore, the port is frequently used as a means of “warehousing” by goods owners. UK duties must also be paid on the wine and it will remain in the port under “bonded warehousing” until it is paid. This is paid on Day 57 and the wine is available to be released.

Day 60 The container is taken to the rail terminal and loaded onto a 20 platform train. At 9pm loading is completed and the containers remain on the train overnight.

At 8am the next morning the “wine train” departs the rail terminal at Tilbury.

The Wine Train operates daily, and has moved over 350,000 bottles of wine from Tilbury to Daventry International Rail Freight Terminal (DIRFT) since commencement in early 2008. The journey is via the North London Line through Barking, Stratford and Willesden and north west on the West Coast Main Line (the Northampton Loop). The logistics operators of the service estimate that this saves 326 kms per road trip equivalent (based on a round trip from Tilbury to Daventry), equating to at approximately 1.7 thousand tonnes of CO_2 savings per year and the removal of an estimated 6,000 vehicles off the M25 and M1 per year.

Department for Transport mode shift grants

The train is partly funded by a Department for Transport REPS grant. The Government recognises that taking freight off the congested roads and moving it by rail or water can have environmental and wider social benefits. We are also aware that rail and water can sometimes be more expensive than road transportation. Therefore, the Department has designed three schemes to facilitate the purchase of the environmental and social benefits that result from using rail or water transport instead of road, when rail or water is more expensive. These schemes are:

a) Freight Facilities Grants (FFG) scheme which helps to offset the capital cost of providing rail and water freight handling facilities.
b) Rail Environmental Benefit Procurement Scheme (REPS) which assists companies with the operating costs associated with running rail freight transport instead of road, where rail is more expensive than road. REPS operates in two parts:
   a. REPS-intermodal for the purchase of intermodal container movements by rail;
   b. REPS-bulk for the purchase of other freight traffic movements by rail.
c) Waterborne Freight Grant (WFG) scheme for assisting companies with the operating costs, for up to three years, associated with running water freight transport instead of road, where water transport is more expensive than road.

In 2007/08, the Department provided over £18m of grants resulting in over 120,000 tonnes of CO_2 emissions being saved.

In 2007, the Department funded 364,379 containers to be moved by rail from Felixstowe and 252,880 containers from Southampton (over three quarters of all containers moved by rail).

Daventry International Rail Freight Terminal (DIRFT)

Day 61 The train arrives at DIRFT at midday and the container is stacked at retailer's rail-side Import Distribution Centre. It may also be stored here for several days, depending on demand and space at the Import Distribution Centre. The Import Distribution Centre normally operates until 10pm but is 24 hours during peak periods.

The container is destuffed either at the Import Distribution Centre or later at the Regional Distribution Centre if the Regional Distribution Centre requires the contents of an entire container. On this day, the Regional Distribution Centre in Crewe is allotted an entire container by the retailer and it will be destuffed at there. The container remains at the Import Distribution Centre overnight.

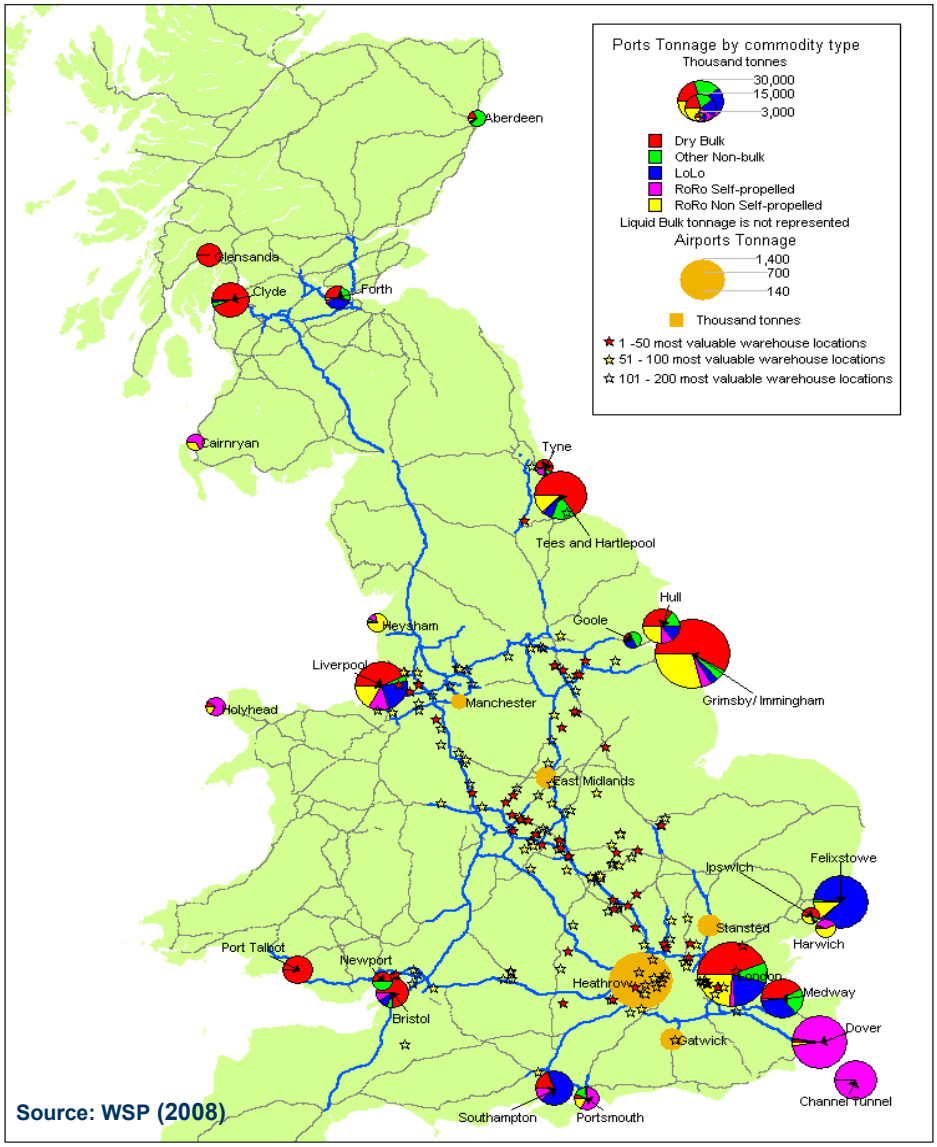
DIRFT is a strategic rail freight interchange. It currently covers 148 hectares with 350,892 sqm of warehousing. On average it receives 130 freight trains per week, primarily handing Anglo-Scottish freight and traffic from Felixstowe and Tilbury. The success of DIRFT is due to its location within the warehousing and logistics centre of Britain and, effectively positioned on the West Coast Mainline, its rail links to maritime ports and the rest of the country. From DIRFT, railed goods (predominately food, drink, and paper) will either be warehoused on site or sent by road to RDCs. DIRFT 2 which will increase rail connected warehousing by a further 180,790 sqm on a site of 53 hectares has received planning approval.

DIRFT, showing the location of DIRFT 2. Courtesy of ProLogis

Warehousing in the Golden Triangle

Warehousing is generally in areas that have cheap land, is well connected to the national network (especially road) and is close to major cities – where the people, and therefore the stores, are located. Labour availability is another factor considered.

Figure 9: Port tonnage by commodity type warehouse locations (by value)



Source: WSP (2008)

Commodities through the Daventry district

30% (7 million tonnes) of all goods that left the Daventry district between 2004 and 2006 were "other foodstuffs": 22% (5.2 million tonnes) of all goods entering the district were "other foodstuffs". 8.4% (1.9 million tonnes) of all goods leaving were beverages, and 22% (5.2 million tonnes) of all goods entering. The highest destination of goods was the East Midlands (34%) and West Midlands (14%) and the highest origin of goods was the East Midlands (38%) and the East (14%). These amounts are for GB registered road vehicles only (CSRGT 2006).

Daventry, Leicester and Kettering form the cornerstones of the "Golden Triangle," regarded as the prime location in Britain for regional and national warehousing and distribution.

- Over 98% of the British population can be accessed within four hours' driving time.
- The success of the region is primarily due to its central location, strategic road communications to the M1, M6, M69 and A14, and traditionally low-cost land.
- The region is centrally located between major maritime ports (Figure 9).
- Nearby is the East Midlands Airport; Britain's largest dedicated air freight hub, with three major air couriers based there.

The area remains central to many logistics operations, despite potential land restrictions increasing occupancy costs.

Daventry road traffic

Figure 10: Annual Average Daily Flows: Daventry: 2006

Direction	All motor vehicles	Cars and taxis	Light Goods Vehicles	Heavy Goods Vehciles	HGV %
Inbound	22,762	17,650	2,800	2,040	9%
Outbound	23,748	18,614	2,778	2,089	8.80%

Source: Statistics Roads, DfT (2006)

Annual average daily flows in and out of the Daventry area (Figure 10) provide a breakdown of traffic on the main roads. They indicate that, coming into and out of a prime warehousing district, the main roads are still dominated by car and taxi traffic. Only 8% of all vehicles going into or out of Daventry are lorries (and 12% are vans). By contrast, out of the Port of Felixstowe the average daily flow was 18,590 vehicles with a lorry percentage of 23% (see Case Study 1).

At the Regional Distribution Centre

10. Day 62 The container is loaded onto a lorry and departs for Crewe at 7.20am. It travels north on the M1, M6, M42, M6 tollway, A500 and A5020 and arrives at the the Regional Distribution Centre at 9.40am after a journey of 2.5 hours. The driver experiences congestion around Coventry and Birmingham, notably as the journey extends into the peak period, but the logistics operators have planned this time into the journey and the lorry is on schedule when it arrives at the Crewe.

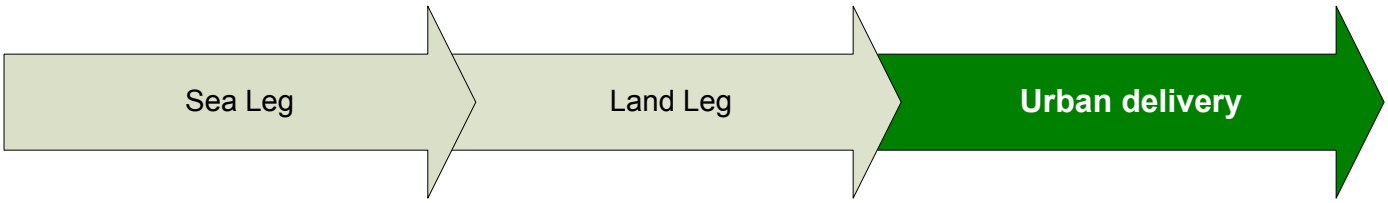
At the Regional Distribution Centre the container is destuffed while remaining on the lorry's trailer. This is done by forklift and takes just 40 minutes. The container is then partially loaded with goods that the retailer has sourced from the north west, and the lorry returns to DIRFT.

The nine pallets are divided into loads (varying in size depending on each store's requirements) that will be delivered to stores in the region. On arrival, the Regional Distribution Centre informs the store of the wine's arrival and confirms delivery. The store in Manchester requests delivery of the 34 cases the following day and the RDC includes the wine in a scheduled, daily 8am delivery for that store.

11. Day 63 The cases are loaded into an 18 tonne rigid with a mixed ambient (non-chilled) load. The distance between Crewe and central Manchester is 55 kms and, due to the peak period, it departs at 6.30am for on-time arrival at 8am. There is heavy congestion on the roads, notably in central Manchester, but the delivery time is requested by the store because the labour costs of an earlier delivery are too high and a later delivery would interfere with busy customer periods. The rigid will make generally one, sometimes two, deliveries to this store each day (not Sundays) and the second visit at around 5-6pm is also during peak periods on the road.

The rigid delivers the wine to the store in Manchester on time at 8am on Day 63 of the wine's journey from California.

The rigid returns to the Regional Distribution Centre with used packaging that is consolidated and recycled. The rigid visits several stores on its journey between Crewe and Manchester. Alternatively, if the store is on the path between import centre and Regional Distribution Centre and the store requires an entire pallet or unit of goods, the lorry may deliver en route. However, return journey patterns and practices vary widely across operators.



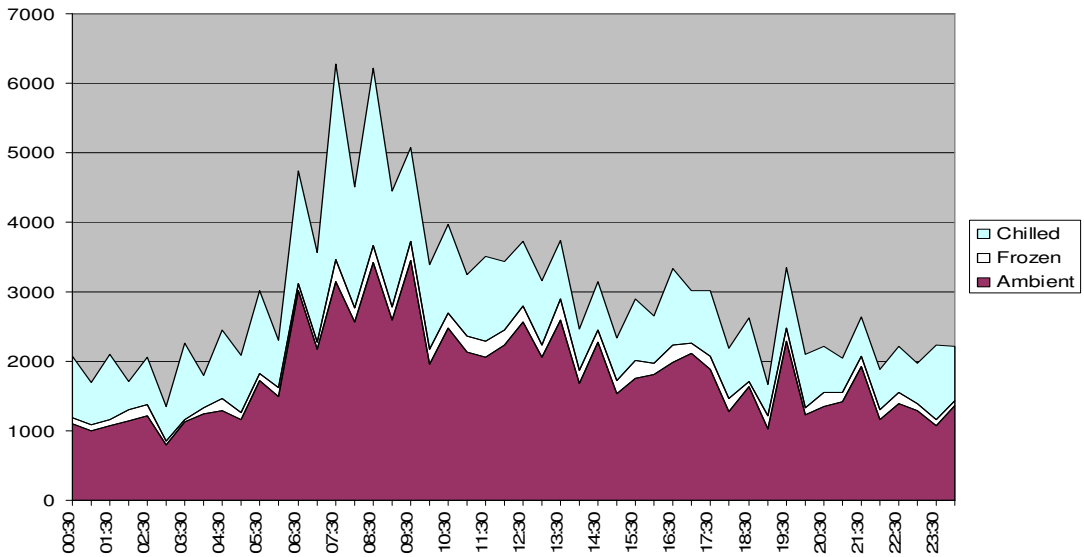
Delivery

Following similar surveys in 1998 and 2002, in July 2007 the Department released a research report of Key Performance Indicators (KPIs) for food and drink supply chains The survey was taken over one 24 hour period on a Thursday and consisted of 100 fleets and 9,000 vehicles (including tractor units, trailers and rigids). High level data was taken each day of the same week.

Results from the survey (Figures 11 to 13) indicate that the majority of store deliveries continue to be made between 7.30am and 5.30pm. Across most major retailers the individual stores determine daily stock requirements and make orders to the Regional Distribution Centre, and it is not uncommon for the store to set a delivery time that mirrors the staffing and operational landscape.

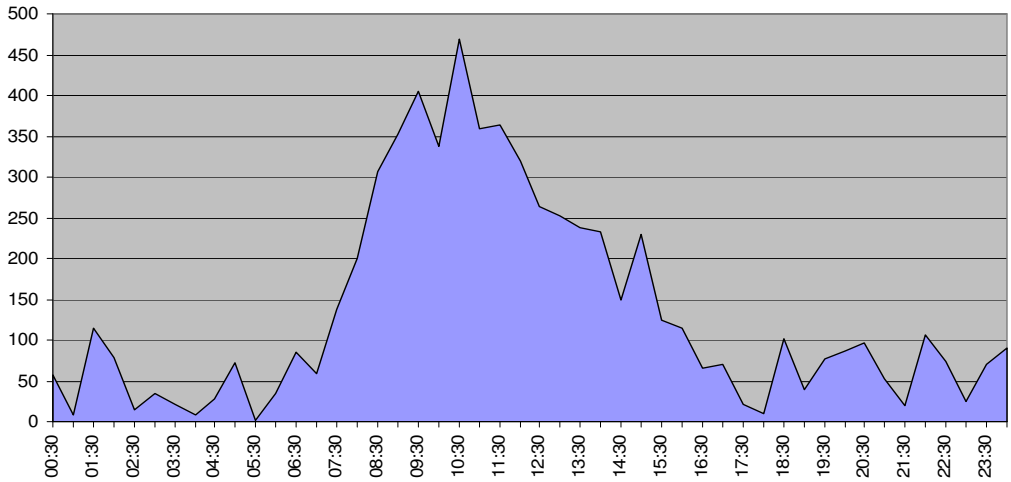
Delivery patterns are determined by customer requirements. But there is also a strong message from stakeholders that more night-time deliveries would be undertaken if they were permitted by Local Authorities. This means that there may be scope for retail deliveries to be made at less busy times on the roads – thereby competing less with private cars and creating more efficient use of resources.

Figure 11: Standard pallets delivered in each half hour (food)

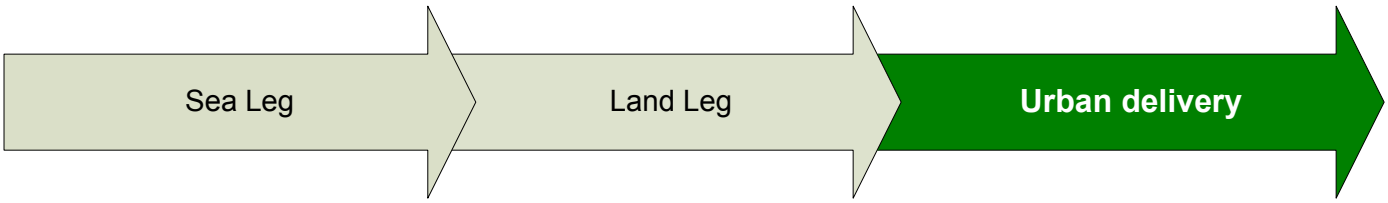


Source: SCALA / DfT KPIs for Food and Drink Supply Chains (2007)

Figure 12: Tonnes delivered in each half hour (drinks)



Source: SCALA / DfT KPIs for Food and Drink Supply Chains (2007)

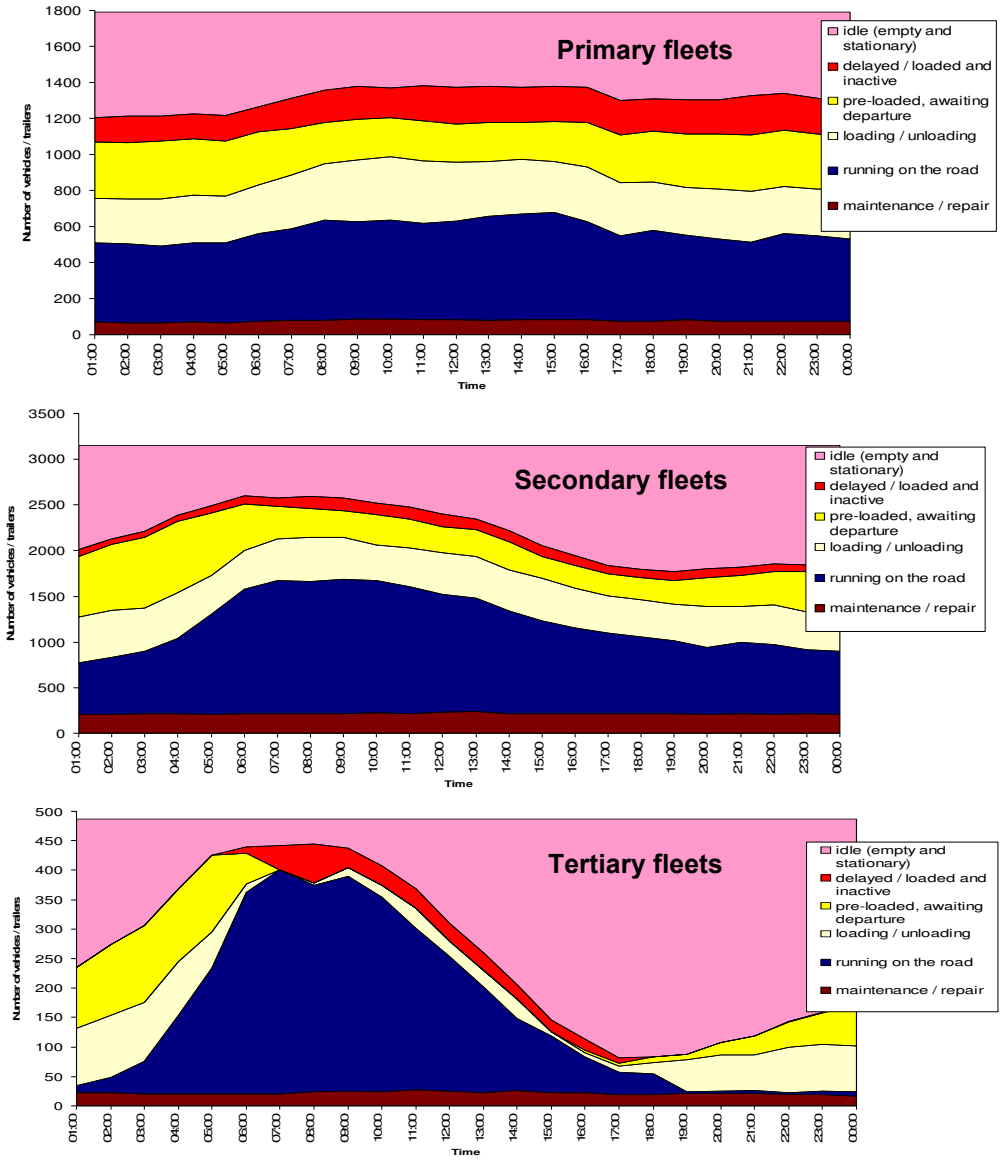


When deliveries are made

Figure 13 graphs time utilisation across different types of fleets. Primary deliveries have the broadest spread of activities across the day, while secondary fleets are less efficient and more dependent on RDC delivery windows. Tertiary deliveries are running on the road and (un)loading in an intense period from 6am to 1 pm. (Note, however, the tertiary sample is significantly less than the primary and secondary fleet samples.)

Weekends represent 1.5 working days in the food transport sector and the report shows that the the industry is rapidly becoming a seven day a week operation; by comparison, market requirements dictate that drink deliveries are generally weekday operations only.

Figure 13: Time utilisation: primary, secondary and tertiary fleets



Source: SCALA / DfT KPIs for Food and Drink Supply Chains (2007)

The Sainsbury's Night-Time Delivery Trial

In 2007, Sainsbury's, the Noise Abatement Society, and Wandsworth Borough Council performed a trial to determine whether night-time deliveries could reduce noise, improve journey times, improve stock availability and sales, and improve fuel economy, emissions and air quality.

Night-time deliveries were made at 1.30am and 3am. Engines were switched off when stationary, no empty roll cages were loaded, doors were not slammed and radios were switched off, and rubber matting and dock curtains were installed to reduce noise.

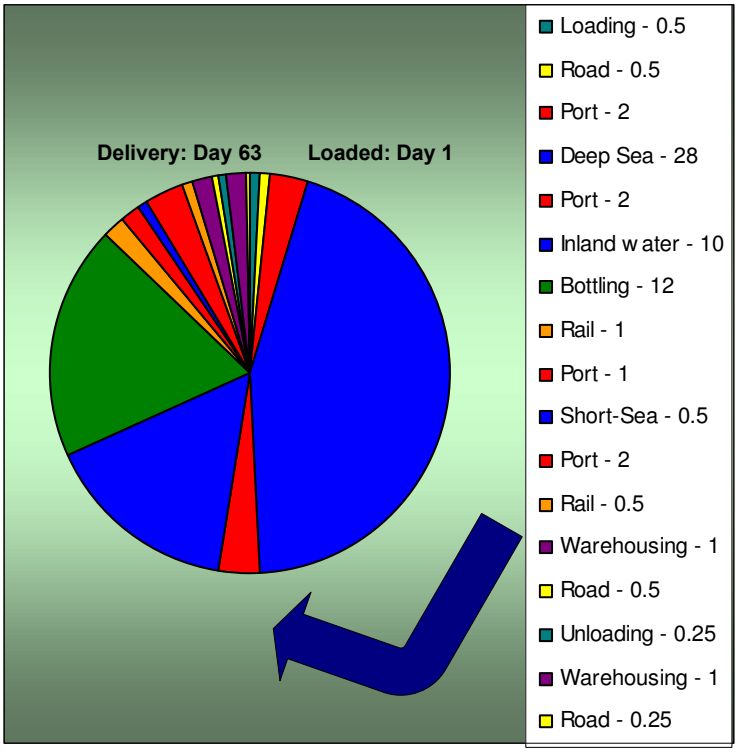
A reduction of 8-10 decibels was observed, journey times were reduced by 60 minutes per trip saving £16,000 per year, 25,000 litres of fuel or 68 tonnes of CO_2 were saved, and no noise complaints were received from local residents.

The Wandsworth trial has successfully demonstrated that night-time deliveries that adhere to a silent approach can be undertaken to reduce congestion and pollution without adversely affecting neighbouring residents.

Summary of the journey

The wine has been ordered and loaded in California, transported by deep-sea vessel, barge, bottled, railed, short-sea shipped, railed and trucked to the store in Manchester in 61 days. Of the time spent on the journey, around 46% was deep-sea, 17% short-sea and inland water, 2.5% rail and 2% on the road; 8% at the port, 3.5% warehousing, 1.5% (un)loading and 20% bottling. Figure 10 graphs the proportion of time spent on the end-to-end journey (remembering that some of the transport time was used as warehousing).

Figure 14: The end-to-end journey from California to Manchester: Days



Source: Department for Transport (2008)

Food kms and greenhouse gases

The following data from *Food Transport Indicators to 2006 (revised) Experimental Statistics, Defra* (2007) remains subject to further testing. It measures the environmental and social impact of food transport by urban, lorry and air food kilometres and CO_2 emissions from food transport.

- Air food kilometres rose by 11% in 2006 (an additional 24,000 tonnes of food, despite only a 0.1% increase in total imports of food) and has experienced the most rapid growth of any mode: rising by about 9% every year since 1992
- Lorry food kilometres declined by 3% in 2006 (and has been declining since 2004)
- CO_2 emissions from overseas and UK transport for UK consumption increased by 3% in 2006, primarily attributed to an increase in car food shopping kilometres: they now total almost 18.5 million tonnes of CO_2 emissions
- Lorry transport contributes about 45% of CO_2 emissions for food transport (26% due to journeys within the UK), followed by car food shopping at 21%.

The key message from the evidence is that lorries are the dominant mover of food and therefore produce the highest CO_2 emissions; but lorry emission levels are reducing while car shopping emissions are increasing. The mode with the strongest growth – air freight – is also the heaviest producer of CO_2 emissions.

Further Key Performance Indicator findings

The main KPIs from the Departments 2007 food and drink road vehicle study were: vehicle fill, empty running, time utilisation, deviation from schedule and fuel consumption. “Drinks” refers to alcoholic beverages only; non-alcoholic beverages are included in food results because they are generally part of the same supply chains.

The following graphs show key results from the study. The full report can be accessed on the internet at: www.freightbestpractice.org.uk.

Key performance results

• Utilisation of deck space	Food 75%*	
• Utilisation of weight capacity	Food 55%	Drink 75%
• Empty running	Food 24%	Drink 20%
• Time utilisation (trailers/rigids)		
❑ Idle	Food 32%	Drink 44%
❑ On the road	Food 30%	Drink 22%
• Time utilisation (tractor units)		
❑ Idle	Food 25%	Drink 41%
❑ On the road	Food 49%	Drink 29%
• Deviation from schedule		
❑ Due to congestion	Food 19%	Drink 13%
❑ Waiting for (un)loading	Food 52%	Drink 51%

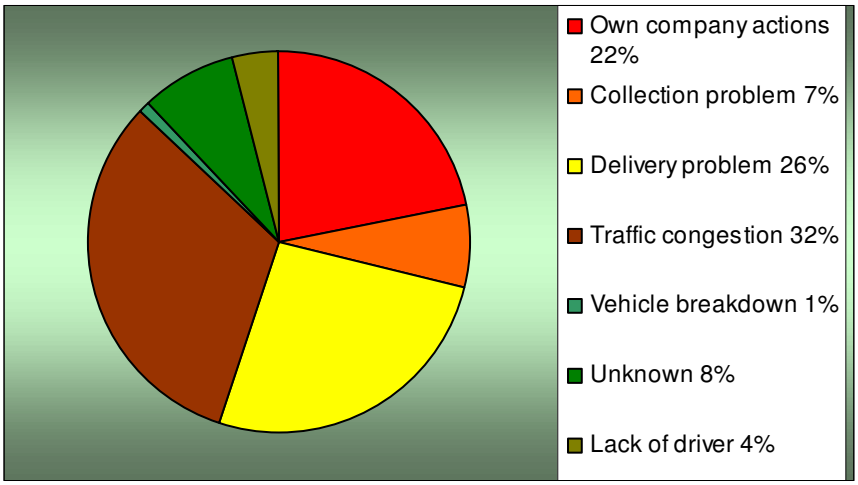
Source: KPIs for Food and Drink Supply Chains, SCALA / DfT (2007).
NB: deck space utilisation data was not gathered for the drinks sector as it is not a measure that is widely used.

Drinks are heavier goods and weigh out faster than food which is more likely to cube out. Waiting for (un)loading is a significantly higher cause of unplanned time than congestion. Drink transport is idle for a higher percentage of time due to more restrictive delivery times in the market (which includes deliveries to pubs, hotels and small businesses).

Separation of vehicles into primary, secondary or tertiary activities also shows marked differences. Primary operation vehicles spend 27% of their time idle and stationary, compared to 48% for tertiary operations vehicles (this is graphed at Figure 13).

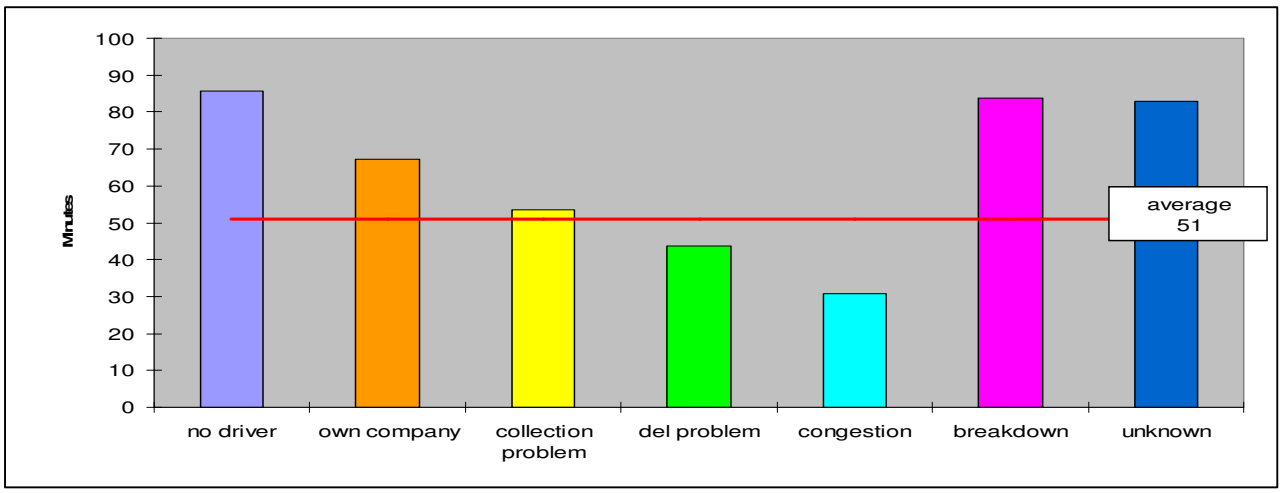
Unplanned time (delays) in operations are an integral part of transport planning and the reduction in unplanned time increases journey time reliability. Previous food surveys showed that in 1998, 25% of journey legs were subject to “unscheduled delay” (29% in 2002). This had decreased in the 2007 survey to 24%. In the drinks sector it was 31%. Figure 15 graphs the 2007 delays by number of occurrences, while Figure 16 graphs the average length of delay by cause. Although traffic congestion was the most cited cause for unplanned time, Figure 16 suggests it does not cause the longest periods of unplanned time.

Figure 15: Delay by number of occurrences: Food



Source: KPIs for Food and Drink Supply Chains, SCALA / DfT (2007)

Figure 16: Average length of delay by cause



Source: KPIs for Food and Drink Supply Chains, SCALA / DfT (2007)

The 2007 KPI study reported an average delay of 51 minutes compared to 43 minutes in 2002. The lengthiest delays were caused by "lack of driver" (in 2002 it was "equipment breakdown"). Note, however, that KPI surveys only measure unplanned time as a deviation from schedule; an unknown quantity of traffic congestion is embedded in planned times that is not represented here.

Stakeholder views

Listening to industry stakeholders in the context of the end-to-end journey we have heard the following challenges from logistics operators and retailers in the food and drink sector:

Ports Due to the increase in container traffic through a small number of UK container ports, stakeholders are experiencing congestion at vessel berthing, time on the port and surface access into the port. All container ports experience some congestion at peak periods and the delays cause time costs and reduce journey time reliability. In addition to congestion, there are high costs at the port: stakeholders are concerned that customers pay a fee per container for security and infrastructure levied by the port; and if rail is used there is an additional fee charged (but not for lorries) – this is seen as an inconsistent policy that favours road transport; and fees levied by customs should there be spot checks. It is the end customer and road haulier that has to carry any additional costs.

Warehousing There is seen to be a lack of rail-connected warehousing. For example, there are currently only three warehouses that are rail connected at DIRFT and where warehousing is connected there can be limited rail access. For example, at DIRFT, rail access is impacted by ongoing West Coast Main Line upgrades with periods where there is no access from the North, from the South or from either direction. This impacts on the attractiveness of a rail alternative to business and makes it more difficult to mount a business case for change.

Urban deliveries Fixed curfews at stores need to be minimised and consistent. If they were reduced stakeholders state that they would deliver more at night. Practices vary between different local authorities, but can be inconsistent even within local authorities. For example, a dairy that has been in an area a long time has historic access rights that others don't have if they set up in the same area.

The industry needs more flexibility around delivery times, but needs to show best practice to conciliate local concerns. For example, the Department is working with business and trade associations to trial technologies and practices such as silent floors and lifts, and radios that turn off as soon as the cabin door of the vehicle is opened, to reduce noise sufficiently to meet local authority concerns (discussed in Case Study 1). It is difficult for industry to invest in such equipment, however, without some certainty that local restrictions will change.

Greenhouse gases Stakeholders in the food and drink sector are sensitive to food kms and the desire of customers to reduce greenhouse gas emissions due to food transport. Many retailers are looking for ways to utilise rail, short-sea and bulk liquid movements more at a cost-effective rate, but the facts about carbon emissions remain unclear for many and there is no clear and agreed way to determine carbon outputs in many circumstances.

Flexi-tanks The movement of non-hazardous bulk liquids by flexi-tanks is a new and expanding transport sector with many small manufacturers providing products and services of mixed quality. The issue for stakeholders is that the industry needs to be regulated to raise standards (for example: the introduction of ISO manufacturing standards and guarantees to support the customer technically when accidents occur). There is a regulatory role for both Government and industry to raise standards in the flexi-tank market.

Summary

- **Food and drink transportation is critical to the UK population and economy**
- **The UK relies significantly on imported food stuffs and there are multiple entrance points and modes that engage in the transportation of food and drink**
- **Rail is a competitive alternative to road freight when rail terminals and paths are strategically placed to meet customer and user requirements**
- **The primary movement of bulk foods (and liquids) is the most efficient segment of the end-to-end journey**
- **Road congestion is the most cited reason for unplanned time, but is often not the longest cause on an end-to-end journey**
- **Delivery restrictions (noticeably customer and night delivery restrictions) is one of the primary reasons for tertiary deliveries continuing to be made during peak periods.**