



National survey of lorry parking 2022 – Part two

Department for Transport

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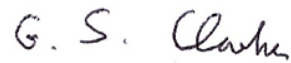
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Glossary

Terminology	Description
Critical on-site utilisation level	<ul style="list-style-type: none"> ■ Refers to one of the three on-site lorry parking utilisation categorisation levels used in the March 2022 national survey Part one. ■ Critical means that on-site utilisation is greater than or equal to 85 per cent, with serious being 70 to 84 per cent full, and acceptable being less than or equal to 69 per cent full. ■ Utilisation is calculated using the number of vehicles observed at on-site parking facilities against capacity at these sites. There is no capacity for industrial estates or laybys that can be recorded therefore utilisation can only be provided for on-site parking facilities. ■ Where on-site utilisation is over 100 per cent, this is because vehicles were observed parked in areas not intended for this purpose (e.g. on slip-road, grass verges, etc) so over the intended capacity.
Longitudinal lorry parking audit	<ul style="list-style-type: none"> ■ Audit conducted over an extended period; for the purposes of this report between March 2022 and February 2023 inclusive.
On-site parking	<ul style="list-style-type: none"> ■ Includes <ul style="list-style-type: none"> – Independent truckstops – Motorway service areas (MSAs) – Trunk road service areas (TRSAs)
Off-site parking	<ul style="list-style-type: none"> ■ Includes <ul style="list-style-type: none"> – Industrial estates – Laybys
On-site parking facilities/locations	<ul style="list-style-type: none"> ■ Refers to provision of dedicated lorry parking at the above three types of on-site parking facilities.
Off-site parking locations	<ul style="list-style-type: none"> ■ Refers to lorries parking at the above two types of off-site parking locations.
Vehicles observed	<ul style="list-style-type: none"> ■ Refers to rigid and articulated lorries parked at on-site and off-site parking locations, including areas immediately adjacent to facilities, e.g. slip road to an MSA.

Executive summary

Longitudinal audit outline

The Department for Transport (DfT) commissioned AECOM to undertake longitudinal lorry parking audits from March 2022 to February 2023 inclusive. This work supplements the DfT national survey of lorry parking (Part one) undertaken in March 2022 to better understand how levels of lorry parking vary throughout the year and if there are regional differences in seasonal fluctuations. Findings from the March 2022 national survey (Part one) can be accessed at:

<https://www.gov.uk/government/publications/national-survey-of-lorry-parking-part-one-2022>.

The longitudinal audits were undertaken one day and one night each month for 12 months, on four different routes, within five kilometres of the strategic road network (SRN) in England. They were conducted at the same time of the month, and at the same on-site and off-site parking locations.

Using the same methodology process as for the March 2022 national survey of lorry parking, a total of 236 sites were visited each month across the four routes. This included 27 on-site parking facilities (motorway services areas, trunk road service areas, and independent truckstops) and 209 off-site parking locations (laybys and industrial estates). The on-site lorry parking capacity for all routes was 1,954 spaces, representing 12 per cent of the March 2022 national survey of lorry parking on-site capacity.

The four routes selected for this study were: Route 1 Midlands; Route 2 East of England; Route 3 North West; and Route 4 South East.

The methodology applied for the route selection means that these were a reasonable reflection of the whole country, by including key trade corridors, routes to centres of population, industrial areas, and areas of mixed economies. However, there are likely to be local seasonal or non-seasonal variations in lorry parking activity that are not on the selected routes and therefore not captured in the audits, for example agricultural harvesting specific to an area of the country, or localised manufacturing or construction activity.

Table E1 provides a breakdown of the number of lorry parking locations. It also provides the lorry parking capacity for on-site parking facilities. There is no capacity for industrial estates or laybys that can be recorded.

Table E1: Number of on-site and off-site facilities across the four routes, and on-site parking capacity

		Routing				
		All routes	Route 1 Midlands	Route 2 East of England	Route 3 North West	Route 4 South East
Sites audited	On-site	27	9	7	7	4
	Off-site - laybys	177	40	72	33	32
	Off-site - industrial estates	32	4	8	14	6
	Total	236	53	87	54	42
On-site capacity	On-site ONLY capacity	1,954	249	349	664	692

Headline findings

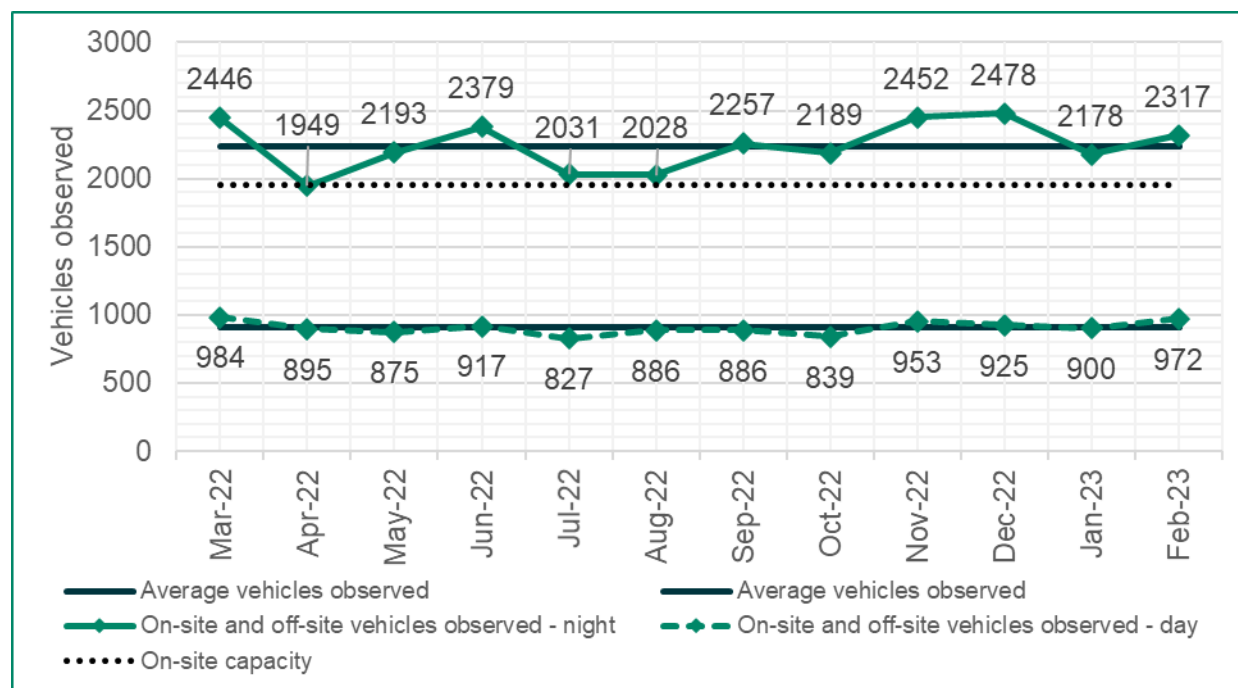
The results in this report are either presented as a total for the four specific routes, or individually by route. The data recorded is a snapshot in time of the vehicles observed during a day audit and night audit in a given month.

All observations in this report relate to the one-year study only and any patterns identified may not necessarily apply to other years, for example due to the current economic climate and wider global influences.

Vehicles observed at on-site and off-site parking locations on all routes – Figure E1

- There were more vehicles observed at night than during the day, with an average of 2,241 vehicles at night and 905 vehicles during the day across all routes over the 12 months
- The busiest months in terms of vehicles observed were December 2022 at night and March 2022 during the day. The quietest months at night for vehicles observed were April, August, and July 2022 respectively
- The number of vehicles at night at on-site and off-site locations exceeded the on-site capacity of 1,954 spaces for 11 out of 12 months

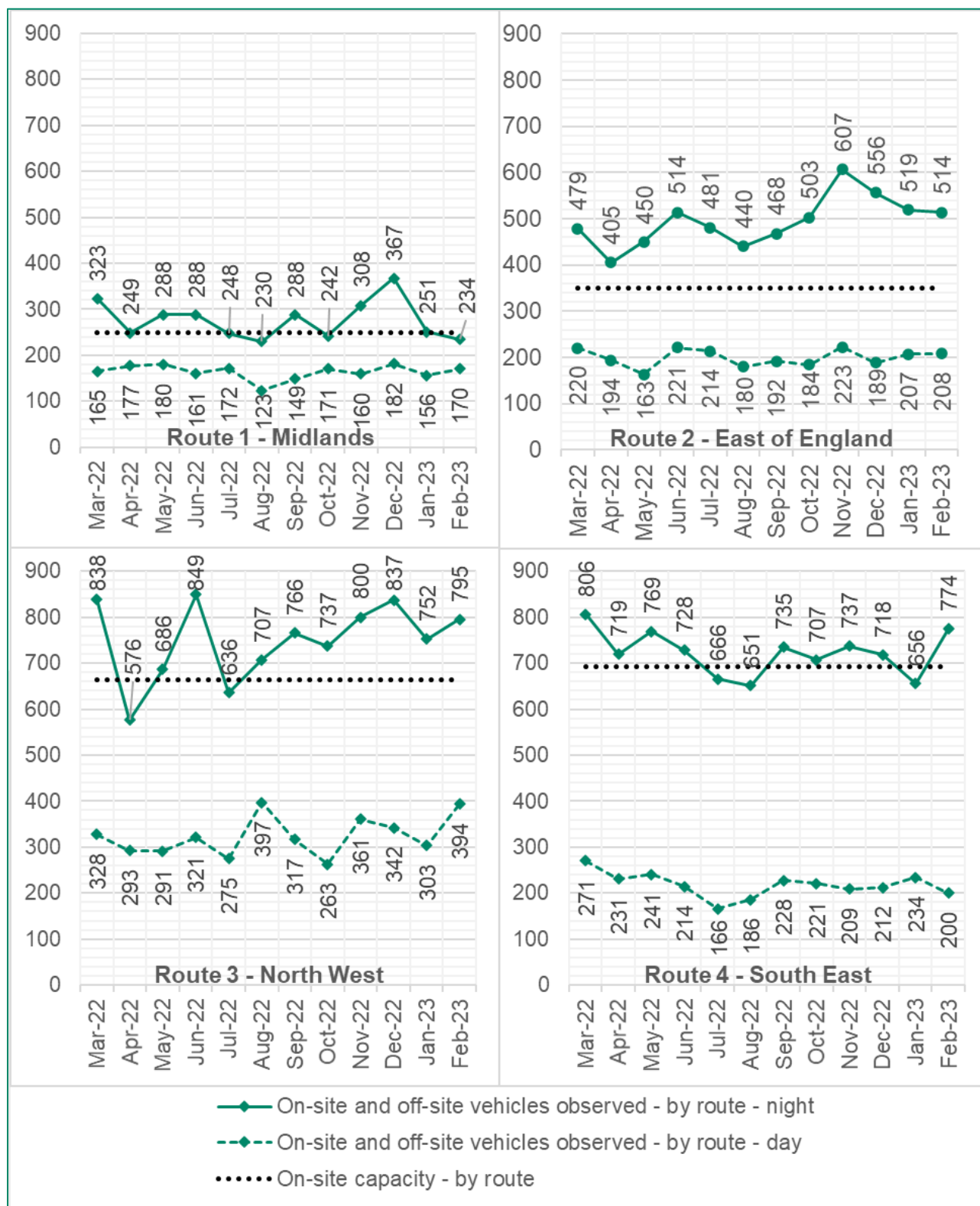
Figure E1: Vehicles observed by day and night, at all on-site and off-site parking locations, on all routes



Vehicles observed at on-site and off-site parking locations by route – Figure E2

- The quietest routes in terms of vehicles observed at night at on-site and off-site parking locations were Route 1 Midlands (with the maximum number of vehicles recorded as 367 in December 2022 against a capacity of 249 spaces) and Route 2 East of England (with the maximum number of vehicles recorded as 607 in November 2022 against a capacity of 349 spaces)
- The busiest routes in terms of vehicles observed at night at on-site and off-site parking locations were Route 3 North West (with the maximum number of vehicles recorded as 849 vehicles in June 2022 against a capacity of 664 spaces) and Route 4 South East (with the maximum number of vehicles recorded as 806 vehicles in March 2022 against a capacity of 692 spaces)
- Nights were busier than days on all routes in terms of vehicles observed

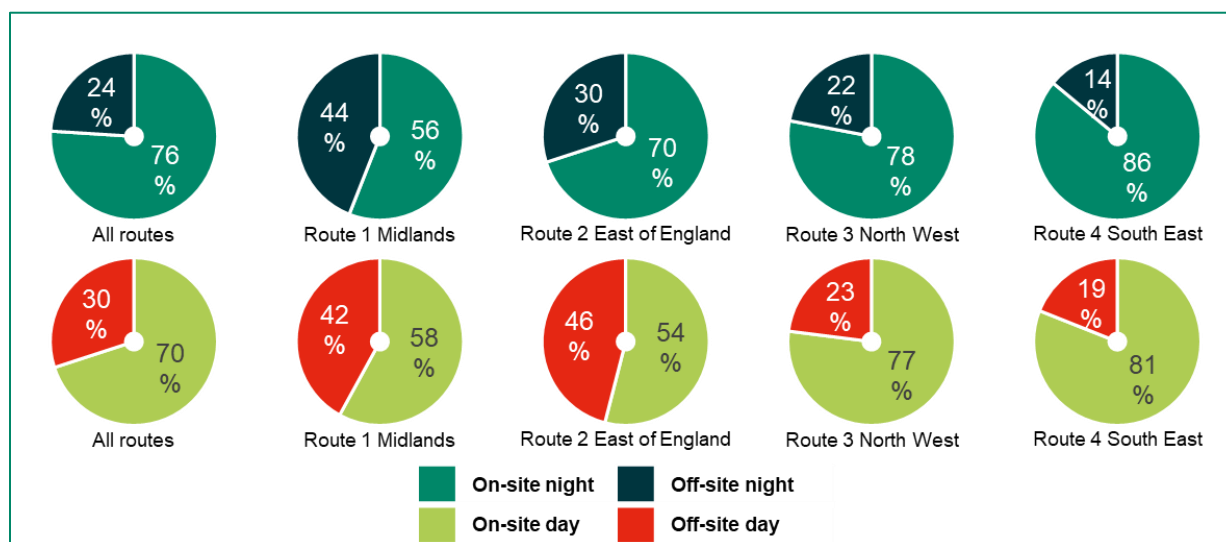
Figure E2: Vehicles observed by day and night, at all on-site and off-site locations, by route



Parking patterns – Figure E3

- Night – 76 per cent of vehicles across the four routes were observed at on-site parking facilities and 24 per cent at off-site parking locations. Route 1 Midlands had the lowest proportion of vehicles observed at night at on-site parking facilities (56 per cent). Conversely, Route 4 South East had the highest proportion of vehicles observed at night at on-site parking facilities (86 per cent)
- Day – 70 per cent of vehicles across the four routes were observed at on-site parking facilities and 30 per cent at off-site parking locations

Figure E3: Proportion of vehicles observed at on-site and off-site parking locations by route, by night and day



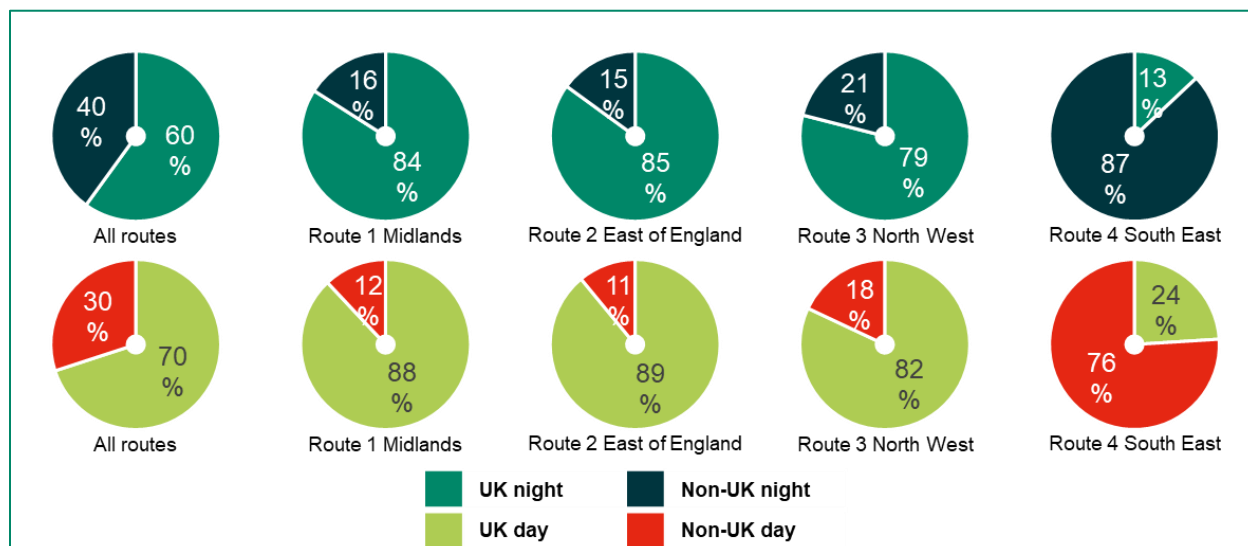
- Of all on-site parking facilities, independent truckstops were the busiest at night, followed by motorway service areas (MSAs) and trunk road service areas (TRSAs). MSAs were the busiest during the day, followed by independent truckstops and TRSAs

Proportion of UK/non-UK registered vehicles observed at on-site and off-site parking locations – Figure E4

- Night – 60 per cent of vehicles observed across all routes were UK registered and 40 per cent were non-UK registered
- Day – 70 per cent of vehicles observed across all routes were UK registered and 30 per cent were non-UK registered

- There was a higher proportion of UK registered vehicles on all the routes during both day and night audits, except for Route 4 South East where the proportion of non-UK registered vehicles was much higher, especially at night

Figure E4: Proportion of UK and non-UK registered vehicles observed by route, by night and day

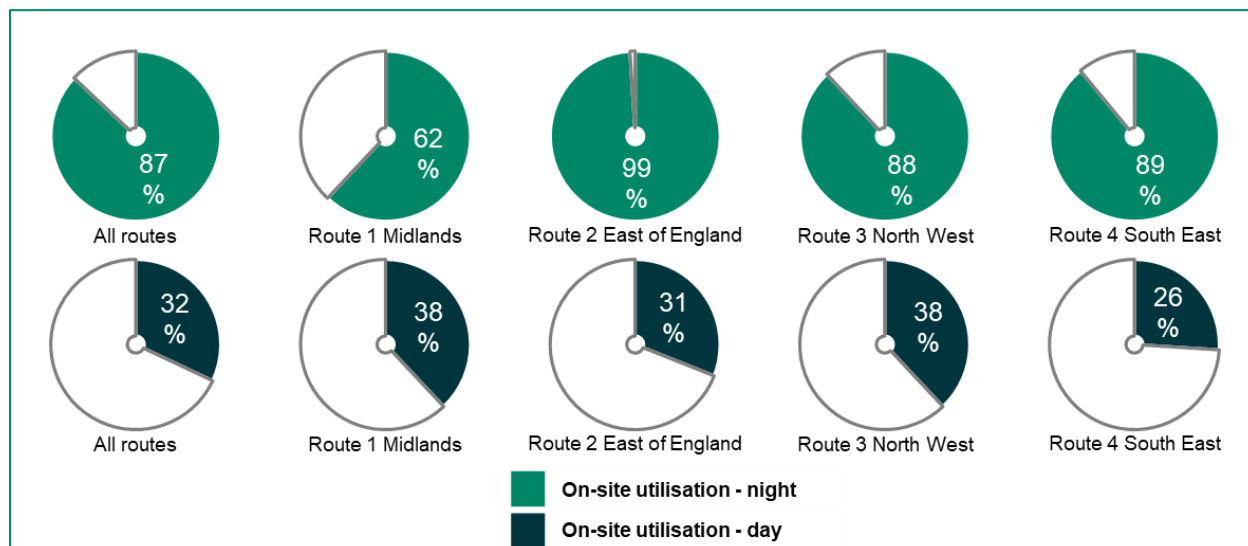


On-site utilisation – Figure E5 and Table E2

- The on-site day lorry parking demand across all four routes was around a third of night-time demand:
 - The night on-site utilisation averaged 87 per cent of total on-site capacity – this exceeds the critical utilisation level and is four per cent above the March 2022 national night on-site utilisation average
 - The day on-site utilisation averaged 32 per cent of total on-site capacity
- All routes, except parking Route 1 Midlands, averaged night on-site utilisation above the March 2022 national average and above the critical on-site utilisation level of 85 per cent or more:
 - Route 1 Midlands: 62 per cent
 - Route 2 East of England: 99 per cent
 - Route 3 North West: 88 per cent
 - Route 4 South East: 89 per cent

- The lowest night on-site utilisation across all routes was in April 2022 and the highest was in December 2022

Figure E5: On-site utilisation by on-site vehicles by route, by night and day



- The greatest percentage point difference in average on-site utilisation between day and night was for Route 2 East of England at 68 per cent, followed closely by Route 4 South East at 63 per cent – Table E2

Table E2: Night and day average on-site utilisation over 12 months, and percentage point difference between night and day, by route

Routes	Night average on-site utilisation (12 months)	Day average on-site utilisation (12 months)	Percentage point difference in day and night on-site average utilisation (12 months)
Route 1 Midlands	62%	38%	24%
Route 2 East of England	99%	31%	68%
Route 3 North West	88%	38%	50%
Route 4 South East	89%	26%	63%
All routes	87%	32%	55%

1 Introduction

In March 2022, AECOM undertook a national survey of lorry parking within five kilometres of the strategic road network (SRN) in England on behalf of the Department for Transport (DfT). The findings, which were published by the DfT in September 2022 in a report titled ‘National survey of lorry parking 2022 – Part one’, are helping the DfT and other public bodies understand user experience to inform and provide an evidence base for policy development on the HGV parking and welfare needs of drivers.

This Part two document reports on a parallel piece of work – longitudinal lorry parking audits - commissioned by the DfT alongside the main study. The research objectives were to better understand how levels of lorry parking fluctuate throughout the year and if there are regional differences in seasonal fluctuations. There were several research questions, including:

- How many vehicles were observed at lorry parking locations over the year
 - How this varied by on-site and off-site lorry parking locations
 - How this varied by day and by night
 - How this varied by UK and non-UK registered vehicles
 - How this varied by different routes in England

- To what extent on-site lorry parking facilities were utilised over the year
 - How this varied by different routes in England
 - How this varied by day and by night

The longitudinal lorry parking audits were undertaken one day and one night each month for 12 months, from March 2022 to February 2023 inclusive, on four different routes in England where the same on-site and off-site locations were audited at every visit.

A total of 236 sites were visited each month across the four routes selected. This included 27 on-site parking facilities (motorway services areas, trunk road service areas, and independent truckstops) and 209 off-site parking locations (laybys and industrial estates).

The four routes selected for this study were: Route 1 Midlands; Route 2 East of England; Route 3 North West; and Route 4 South East. A methodology was applied to this selection to provide as accurate a national picture as possible. Section 2.2.5 of this report provides detailed information on the route selection.

The results in this report are either presented as a total for the four specific routes, or individually by route. The data recorded is a snapshot in time of the vehicles observed during a day audit and a night audit in a given month, and findings are reported separately for night and day.

All observations in this report relate to the one-year study only and any patterns identified may not necessarily apply to other years, for example due to the current economic climate and wider global influences.

This report should be read in conjunction with the National survey of lorry parking 2022 - Part one, [published on GOV.UK](https://www.gov.uk/government/publications/national-survey-of-lorry-parking-part-one-2022), which can be accessed at:
<https://www.gov.uk/government/publications/national-survey-of-lorry-parking-part-one-2022>.

2 Methodology

2.1 Introduction

The longitudinal lorry parking audit was a continuation of the national survey, based on the methodology process detailed in Figure 2-1 of the 'National survey of lorry parking 2022 – Part one' report.

However, unlike the March national survey, which was a night-time audit, the longitudinal audits were conducted during the day and during the night, from March 2022 to February 2023.

The data collected included UK and non-UK registered vehicle numbers at the following types of locations:

- **On-site parking facilities**

- Independent truckstops
- Motorway service areas (MSAs)
- Trunk road service areas (TRSAs)

- **Off-site parking locations**

- Industrial estates
- Laybys

2.2 Longitudinal audit

2.2.1 Scheduling and resource planning

The longitudinal lorry parking audits were conducted during the day and during the night, once a month, on the four selected routes. For consistency, the audits took place in the first half of the month, on Tuesdays, Wednesdays, or Thursdays. The day audits took place between 10.00am and 5.00pm, and the night audits between 8.00pm and 2.00am. These hours were selected to best capture driver behaviour and choices, either during their shift for 45-minute stops or their overnight rest periods.

Teams of two auditors were allocated to each route each month, for the day audit and the night audit. Where possible, the same auditors conducted the audits each month, were local to their respective route, and had generally all conducted audits in March 2022. Auditors were therefore familiar with the local area, the route, and the task. Where a new auditor was introduced, they were provided with instructions by the audit manager and paired with an experienced auditor who also briefed them on the task.

2.2.2 Risk mitigation

A formal safety, health, and environment (SHE) plan, which included a full risk assessment and a communications plan, was put in place for the March national survey and reviewed by AECOM's Health and Safety Lead.

This SHE plan continued to be maintained for the longitudinal audits and was updated several times. Staff involved in the longitudinal audits were asked to sign it at the start of the study and several times during the year to refresh their knowledge and be aware of any amendments.

The SHE plan fully identified the risks associated with conducting audits, as well as ways to mitigate these. It also included a variety of areas to reduce personal risk to staff as well as risk of incidents such as collisions with other vehicles, vehicle breakdowns, and driver fatigue. Emergency contact details were collected for each auditor, stored separately and only shared with the relevant team members to maintain confidentiality.

The WhatsApp Group created for the national programme of audits for all communications relating to the audits, including queries, continued to be used for the longitudinal audits although the communications procedure was changed – this was reflected at Version 03 of the SHE plan.

2.2.3 Letter of authority

All audit teams were required to carry hard copies of the DfT letter of authority which demonstrated the authenticity of the study and provided details of project objectives and activities being undertaken during the site audits. The letter was signed by a DfT representative and included the Work Package Manager's contact details in the event of audit teams being stopped by security at a site or the police whilst auditing. This letter was shown on a number of occasions by several auditor teams.

2.2.4 Data collected and findings

Auditors collected data using the same mobile application, 'ArcGIS Field Maps', as for the March 2022 national survey. This is a cloud-based mapping platform designed by the Environmental Systems Research Institute (ESRI).

2.2.5 Route selection

The monthly one-day/one-night lorry parking audits were conducted on the following four routes: Route 1 Midlands; Route 2 East of England; Route 3 North West; and Route 4 South East – the four routes are shown at Figure 2-1.

Figure 2-1: Map of all routes



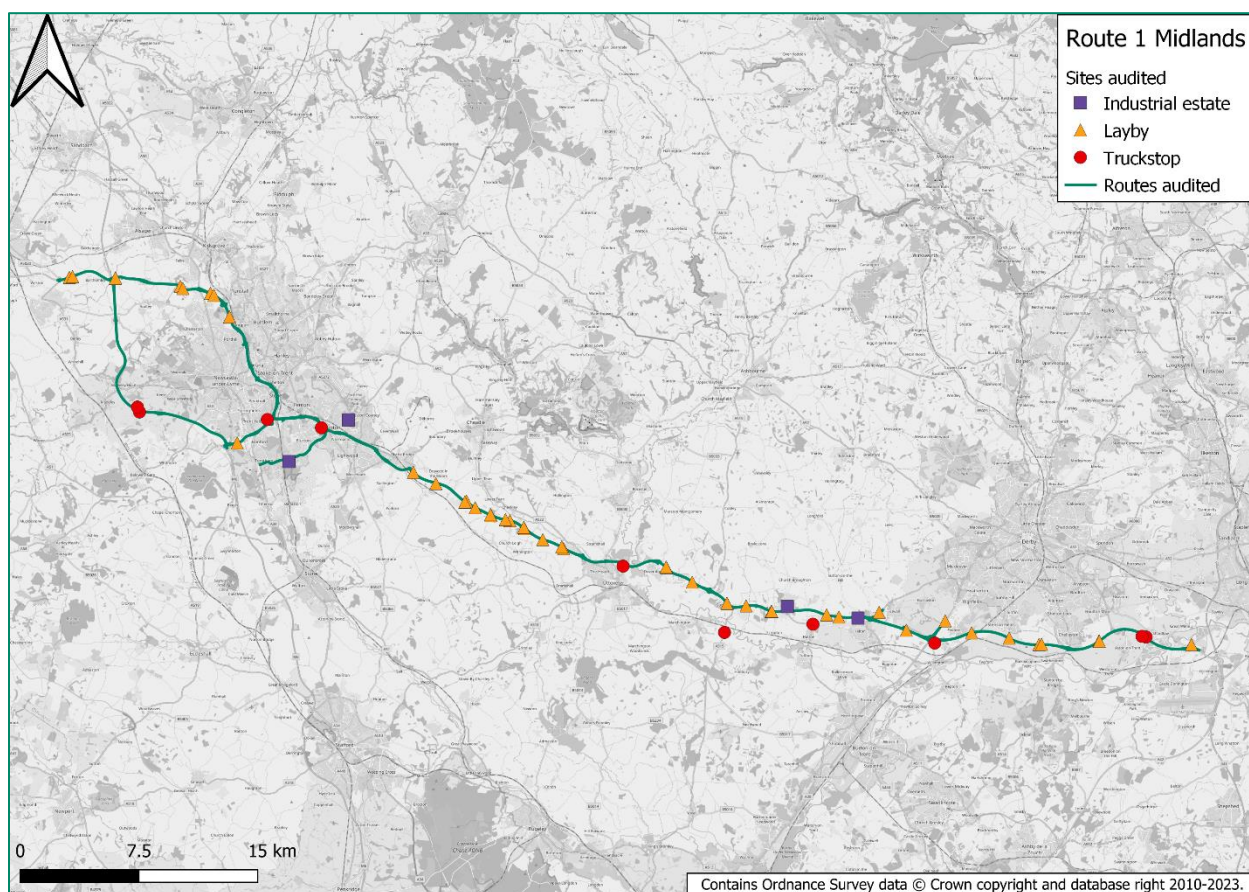
The methodology applied for the route selection was designed to make as much effort to ensure that the routes chosen were as reflective as the whole of England as possible, by including key trade corridors, routes to centres of population, industrial areas, and areas of mixed economies.

Figure 2-2 to Figure 2-5 show the routes and sites audited on each route.

Route 1 Midlands – North Staffordshire/South Derby corridor, M1/M6 connector including Stoke (A500, A50) – Figure 2-2.

Middle to long distance freight corridor connecting M1 and M6, also servicing regional freight for Derby, Burton, Uttoxeter and Stoke.

Figure 2-2: Map of Route 1 Midlands



The A50 corridor is a busy corridor linking major manufacturing facilities in the North Midlands. This corridor is a useful barometer of activity in several major industrial sectors due to the presence of leading companies such as JCB, Rolls Royce, Toyota, Nestlé, multiple companies in the Potteries and linking to the Freeport at East Midlands Airport and the new East Midlands Gateway rail freight interchange.

Parking facility breakdown:

Route 1 Midlands					
Type of site	Number on route	Number in region	% of region total	Number in national survey	% of national survey
Independent truckstops	*3	16	19%	137	2%
Local authority truckstops	0	2	0%	15	0%
Motorway service areas	4	18	22%	126	3%
Trunk road service areas	2	5	40%	66	3%
On-site - all types	*9	41	22%	344	3%
Off-site - industrial estates	4	69	6%	839	0%
Off-site - laybys	40	295	14%	3293	1%
Total on-site and off-site	*53	405	13%	4476	1%

* One independent truckstop and its data omitted as detailed in the methodology

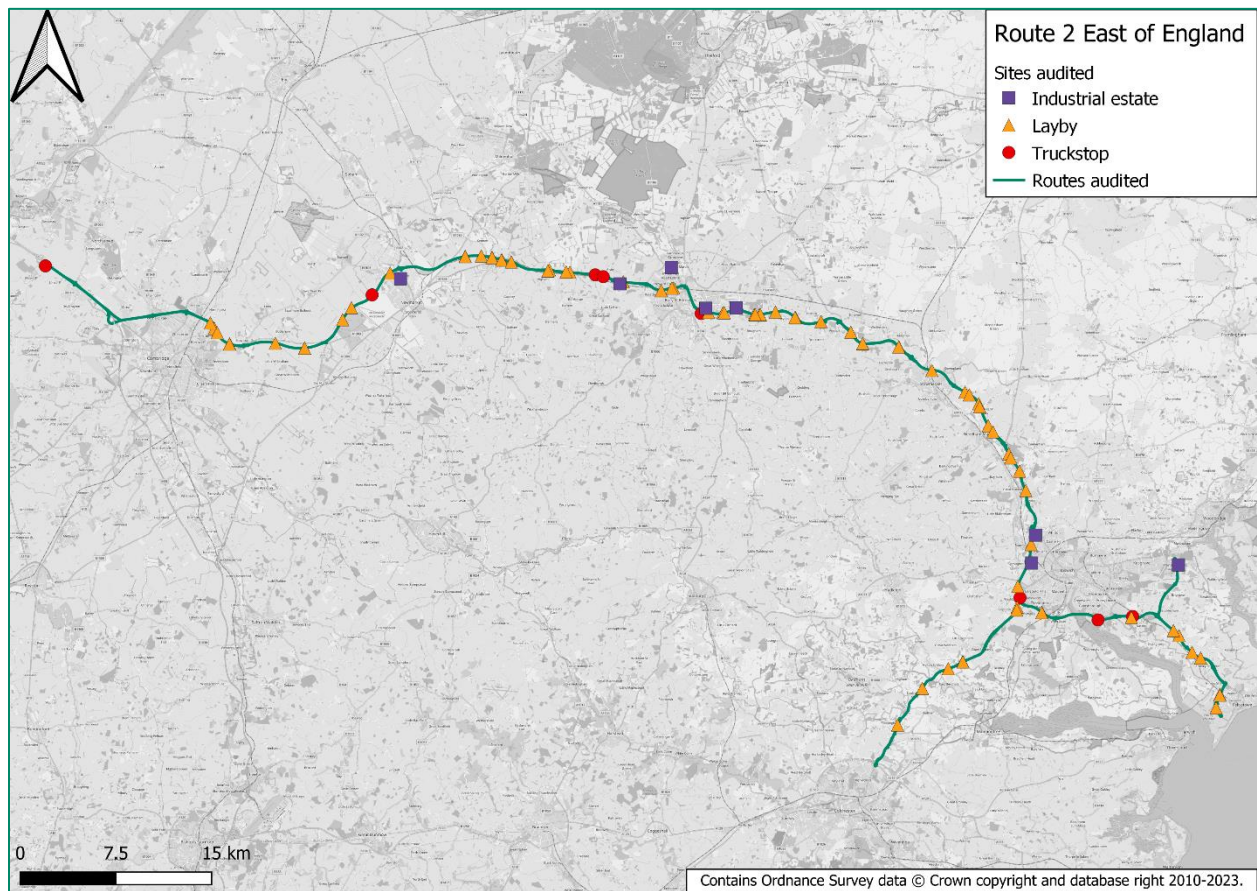
Route bias/Facility observations to note:

It is unlikely that there will be any international vehicle bias as the route is not a specific international corridor. There is a representative spread of the different types on-site parking facilities compared to the number in the region (bearing in mind there are very few local authority truckstops regionally and nationally).

Route 2 East of England – Felixstowe, Ipswich, Bury St Edmunds, Newmarket, Colchester, Cambridge (A14, A12) – Figure 2-3.

A14 servicing East Anglia from the west and Felixstowe Port, A12 servicing East Anglia and Felixstowe Port from London. Regional routes servicing local economy and strategic container route.

Figure 2-3: Map of Route 2 East of England



The Port of Felixstowe is the UK's largest container port and so the A12 and A14 carry significant volumes of deep-sea trade to all parts of the UK. This corridor is busy with a range of goods from all around the world. The trend to larger 25,000 twenty-foot equivalent unit (TEU) ships may also be causing spikes in traffic due to the higher number of containers being delivered or collected from the port. The area is also home to the production of grain, sugar beet and other seasonal produce so seasonal peaks may be evident.

Parking facility breakdown:

Route 2 East of England					
	Number on route	Number in region	% of region total	Number in national survey	% of national survey
Independent truckstops	3	21	14%	137	2%
Local authority truckstops	0	1	0%	15	0%
Motorway service areas	1	6	17%	126	1%
Trunk road service areas	*3	16	19%	66	5%
On-site - all types	*7	44	16%	344	2%
Off-site - industrial estates	8	25	32%	839	1%
Off-site - laybys	72	429	17%	3293	2%
Total on-site and off-site	*87	498	17%	4476	2%

* One TRSA and its data omitted as detailed in the methodology

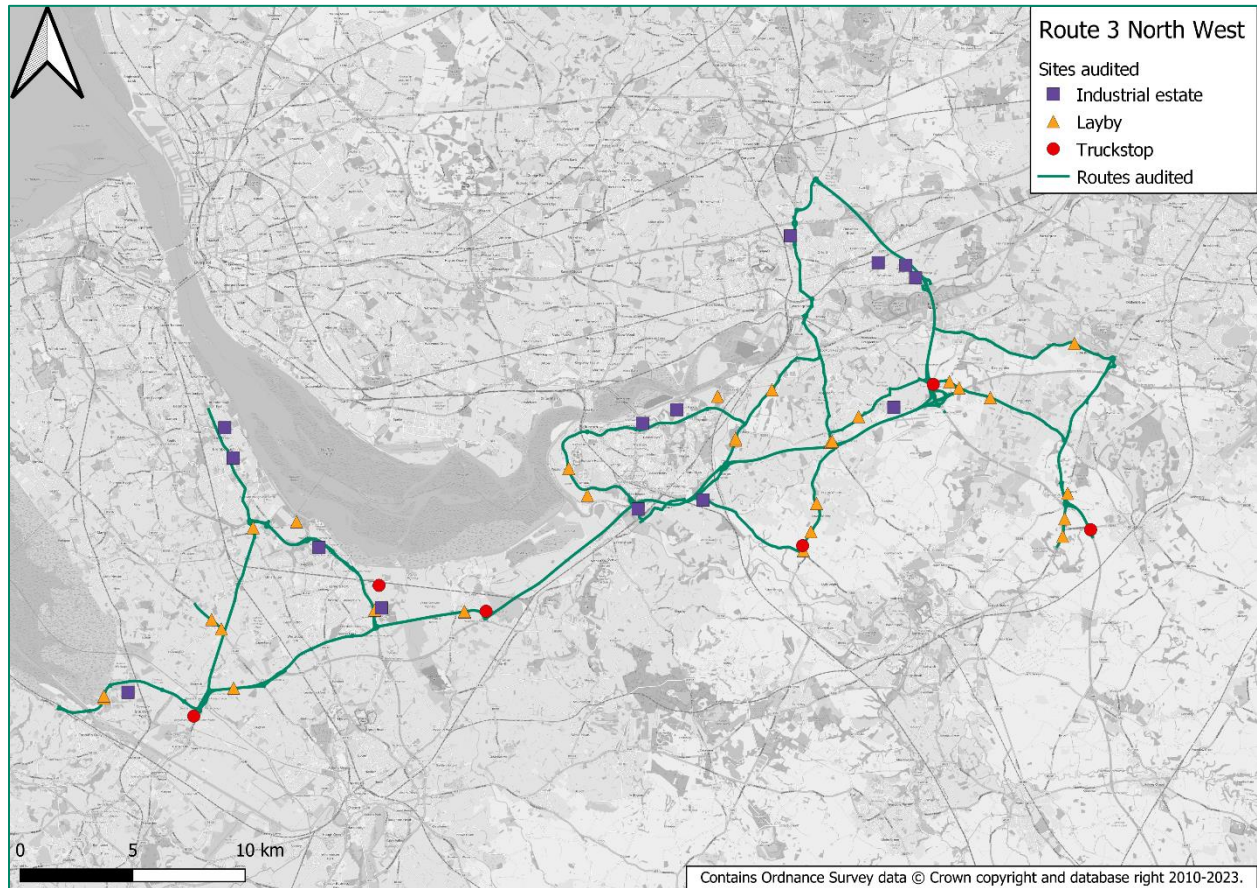
Route bias/Facility observations to note:

There is container traffic bias due to the Port of Felixstowe. The Ipswich area is impacted by the closure of the Orwell Crossing Lorry Park, which was located Eastbound on the A14 at Nacton near Ipswich and which permanently closed in September 2021, decreasing lorry parking capacity in the area by 150 spaces.

Route 3 North West – Warrington, Runcorn, Ellesmere Port, Knutsford and Lymm – Figure 2-4.

Mix of Motorways (M6, M56, M53 and all-purpose trunk roads (APTR) (A49, A50, A56, A557 and A41)) serving the industrial area of Wirral/South Merseyside and longer distance M6 corridor.

Figure 2-4: Map of Route 3 North West



This route is based on busy industrial area of the north linking from Greater Manchester to the border with North Wales including parts of Warrington, Cheshire, Halton, and Merseyside. This corridor carries some traffic on the landbridge route to the Republic of Ireland (the route that connects the Republic of Ireland to Europe via mainland Britain's road and ports network). It also carries chemicals and fuels from the oil refinery and industrial complexes near Runcorn.

Parking facility breakdown:

Route 3 North West					
	Number on route	Number in region	% of region total	Number in national survey	% of national survey
Independent truckstops	2	11	18%	137	1%
Local authority truckstops	0	1	0%	15	0%
Motorway service areas	4	21	19%	126	3%
Trunk road service areas	1	1	100%	66	2%
On-site - all types	7	34	21%	344	2%
Off-site - industrial estates	14	122	11%	839	2%
Off-site - laybys	33	297	11%	3293	1%
Total on-site and off-site	54	453	12%	4476	1%

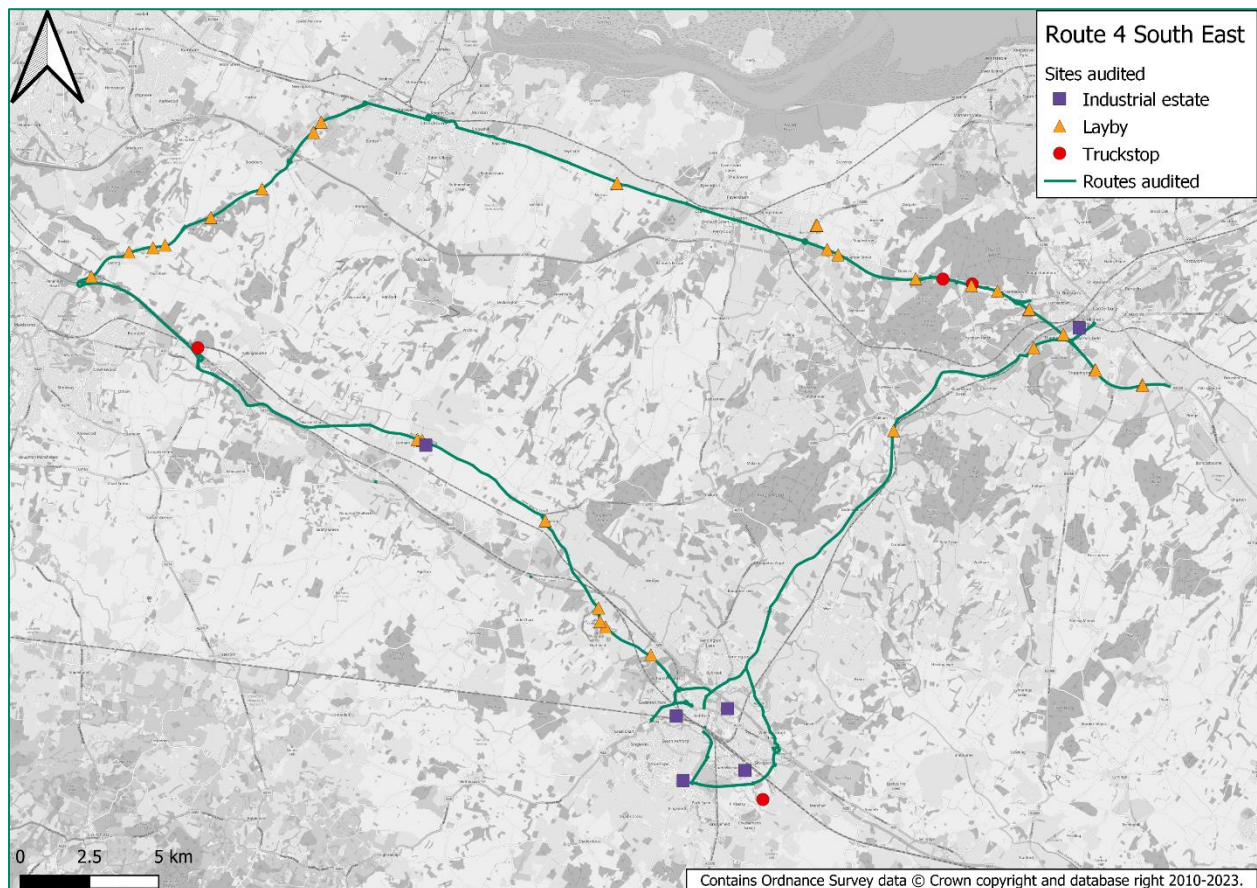
Route bias/Facility observations to note:

On this route there is likely to be a slight international vehicle bias (Irish traffic). There is likely to be a higher than average volume of vehicles carrying dangerous goods due to the chemical and petrochemical industries based in the North West. Due to tighter safety and security requirements for vehicles carrying dangerous goods, they are less likely to park overnight away from base or away from a depot. There is a larger number of MSAs than other longitudinal survey areas.

Route 4 South East – Transport for the South East - Maidstone, Ashford, Canterbury, Sittingbourne – Figure 2-5.

Mix of Motorways (M20, M2, and all-purpose trunk roads (A249, A2, A28)) serving north and west Kent and the Channel crossings.

Figure 2-5: Map of Route 4 South East



This route is based on the dominant international corridor with mainland Europe through Kent, picking up key parking areas including Ashford International Truckstop. This selection monitored movements of driver accompanied freight often with a high percentage of non-UK hauliers. This corridor carries a wide range of goods including urgent parcels, temperature-controlled units and perishable goods and is busy all year round.

Parking facility breakdown:

Route 4 South East					
	Number on route	Number in region	% of region total	Number in national survey	% of national survey
Independent truckstops	1	18	6%	137	1%
Local authority truckstops	0	4	0%	15	0%
Motorway service areas	1	25	4%	126	1%
Trunk road service areas	2	15	13%	66	3%
On-site - all types	4	62	6%	344	1%
Off-site - industrial estates	6	114	5%	839	1%
Off-site - laybys	32	455	7%	3293	1%
Total on-site and off-site	42	631	7%	4476	1%

Route bias/Facility observations to note:

There is a strong presence of international vehicles due to busy cross Channel traffic, more so than other survey areas. There is a higher incidence of industrial estate and layby parking due to the higher proportion of international vehicles. There may be additional parking due to Channel traffic disruption events such as bad weather, strikes, and other service interruptions. There is likely to be some seasonal bias in the run up to public holidays and Christmas due to foreign hauliers returning home in good time for the holidays and shut-down periods. The independent truckstop on the route (Ashford International truckstop) is the largest in the country with strong international bias.

2.2.6 Number of on-site and off-site parking facilities audited on the four routes selected

A total of 236 sites were visited across all four routes each month. This included 27 on-site parking facilities, 177 laybys and 32 industrial estates. The on-site lorry parking capacity was 1,954 spaces, representing 12 per cent of the March 2022 national survey of lorry parking on-site capacity. A breakdown by region is provided in Table 2-1 below.

Table 2-1: Number of on-site and off-site locations across the four routes, and on-site parking capacity

		Routing				
		All routes	Route 1 Midlands	Route 2 East of England	Route 3 North West	Route 4 South East
Sites audited	On-site	27	9	7	7	4
	Off-site - laybys	177	40	72	33	32
	Off-site - industrial estates	32	4	8	14	6
	Total	236	53	87	54	42
On-site capacity	On-site ONLY capacity	1,954	249	349	664	692

2.2.7 Route representation

Most statistical analysis is based on sampling a small proportion of the population. For the March 2022 national survey, the entire population of lorry parking facilities within five kilometres of the SRN was sampled, which can be seen as a snapshot of the current state of the population. It is known that seasonality may be a factor in a longitudinal audit of lorry parking locations, and as such the study adopted a selection for the longitudinal audits ensuring at least 10 per cent of the original national survey was covered. The selection was segmented into four regional routes (see section 2.2.5) to ensure that the insights gleaned are both quantitatively helpful, but also qualitative by sector/route or routing.

Whilst the regional route selection provides a good ‘cross section’ of national activity, there are likely to be local seasonal or non-seasonal variations in lorry parking activity that are not on the selected routes and therefore not captured in the audits, for example agricultural harvesting specific to an area of the country, or localised manufacturing or construction activity.

2.2.8 Conducting future longitudinal audits

Whilst the process of undertaking the national survey of lorry parking is well established having previously been undertaken by AECOM for the DfT in 2010 and 2017, this was

the first time the longitudinal audit process was carried out. If the longitudinal audits are undertaken again, for benchmarking purposes, it will be important to keep the routes the same. However, in the light of experience of undertaking the route audits, the following points may be considered:

- Number of sites/vehicles – whilst not critical from a data or statistical perspective for each route to be the same size, it may be worth undertaking an exercise to look at vehicle numbers and capacity at on-site parking facilities on each route to improve parity across the routes
- International traffic – notwithstanding that it would be important to keep the routes the same for benchmarking purposes, it may be worth amending Route 4 South East to include more ‘representative’ sites than is currently the case with a very large site, that is full all the time, predominantly by non-UK registered vehicles
- Rural route – it may be worth including a fifth route entirely serving a rural economy, perhaps in North Yorkshire or in the South West, to provide a better picture of how, for example, certain types of agricultural economies and their traffic levels change throughout the year

2.3 Analysis and evaluation

Section 3 presents the longitudinal lorry parking audit analysis for vehicles observed on all the routes (section 3.2), and by route (section 3.3).

One independent truckstop on Route 1 Midlands was uncooperative and refused access to their site for the auditors in the fourth month of the study. This was despite the DfT letter of authority being presented and subsequent efforts to obtain the data. Capacity for this site was recorded as 45 during the March 2022 national survey. However, this on-site parking facility and all associated data have been omitted from the analysis to reflect the fact that auditors were unable to collect vehicle numbers there from May 2022 onwards.

One TRSA on Route 2 East of England closed in the third month of the study for refurbishment work and no longer offers HGV parking. Capacity for this site was recorded as 12 during the March 2022 national survey. However, this on-site parking facility and all associated data have been omitted from the analysis to reflect its closure.

All observations in this report relate to the one-year study only and any patterns identified may not necessarily apply to other years, for example due to the current economic climate and wider global influences.

3 Longitudinal lorry parking audit results

3.1 Introduction

The monthly day/night longitudinal audits took place on four selected routes within five kilometres of the SRN across a total of 27 on-site parking facilities and 209 off-site parking locations (177 laybys and 32 industrial estates).

The following sections provide analysis of vehicles observed on all routes and by route, covering:

All routes (section 3.2)	By route (section 3.3)
<ul style="list-style-type: none"> ■ Total on-site and off-site parking locations ■ Split by on-site and off-site parking locations ■ Split by type of on-site parking facilities ■ On-site utilisation ■ Split by UK and non-UK registered vehicles 	<ul style="list-style-type: none"> ■ Total on-site and off-site parking locations ■ Split by on-site and off-site parking locations ■ On-site utilisation ■ Split by UK and non-UK registered vehicles ■ Summarised for the four routes

3.2 Vehicles observed on all routes

This section provides information on vehicles observed collectively across all routes – Route 1 Midlands, Route 2 East of England, Route 3 North West, and Route 4 South East.

At a glance key findings summary

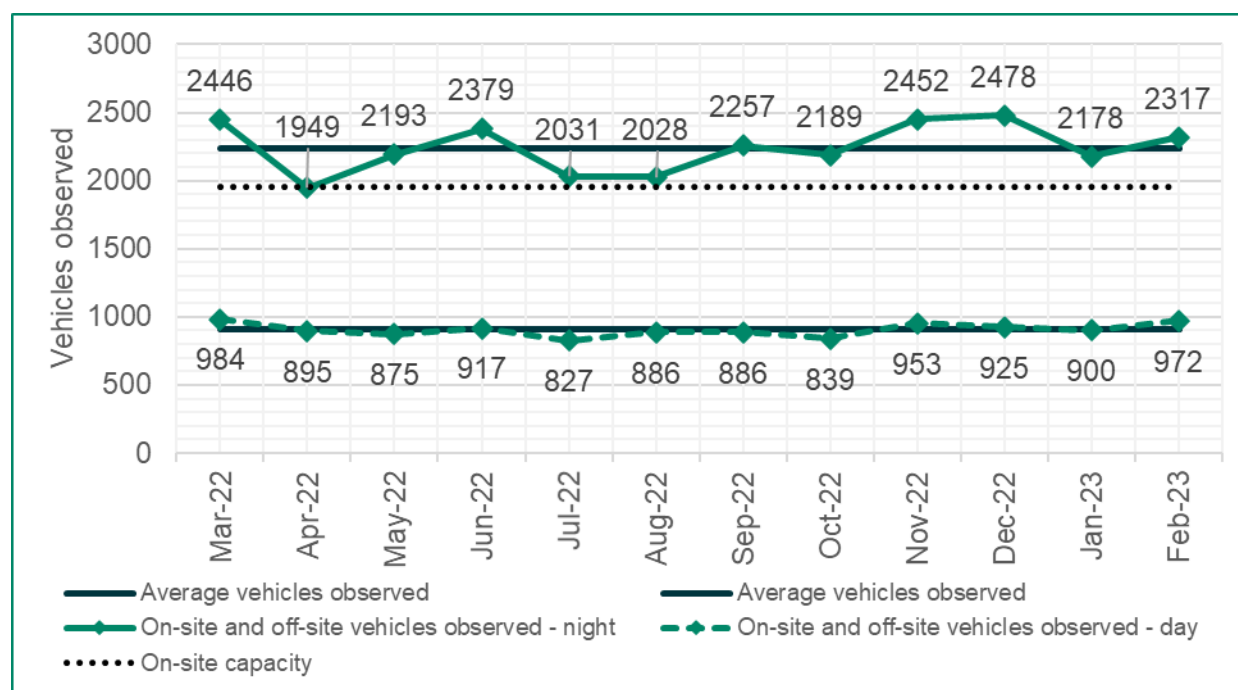
- There were more vehicles observed at night than during the day, with an average of 2,241 vehicles at night and 905 vehicles during the day across all routes over the 12 months
- The busiest months in terms of vehicles observed were December 2022 at night and March 2022 during the day. The quietest months at night for vehicles observed were April, August, and July 2022 respectively
- The number of vehicles at night at on-site and off-site locations exceeded the on-site capacity of 1,954 spaces for 11 out of 12 months
- The on-site day lorry parking demand across all four routes was around a third of night-time demand:
 - The night on-site utilisation averaged 87 per cent of total on-site capacity - this exceeds the critical utilisation level
 - The day on-site utilisation averaged 32 per cent of total capacity
- 60 per cent of vehicles observed at night across all routes were UK registered and 40 per cent were non-UK registered

Detailed findings

3.2.1 Vehicles observed at all on-site and off-site parking locations

As can be seen in Figure 3-1, the busiest month at night in terms of on-site and off-site vehicles observed on all four routes was December 2022 with 2,478 vehicles. The busiest month during the day was March 2022 with 984 vehicles. This highlights that there was a notable difference in the level of vehicles observed during the day and at night across all on-site and off-site locations on the four routes, with a variation between the average day and night of 148 per cent, representing a difference of 1,337 vehicles.

Figure 3-1: Vehicles observed by day and night, at all on-site and off-site parking locations, on all routes



Whilst there were less vehicles observed during the day than during the night, there is a high turnover of vehicles during the day, with vehicles typically just stopping for their legal breaks and comfort breaks (for example 45 minutes under EU drivers' hours rules).

At night, there was a variation of 27 per cent across all routes between the quietest month, April 2022, and the busiest month, December 2022, with an average of 2,241 vehicles observed for the study year.

In the day, the variation was 19 per cent across all routes, between the quietest month, July 2022, and the busiest month, March 2022, with an average of 905 vehicles observed for the study year.

The number of vehicles observed at night at on-site **and** off-site locations on all routes exceeded the on-site capacity available on these routes for 11 months out of 12, with April 2022 being the exception where it was below on-site capacity by five vehicles. Although fewer vehicles were observed in July and August 2022, they were still above on-site capacity by 77 vehicles and 74 vehicles respectively.

Whilst there were monthly variations in the total number of vehicles observed both during the day and during the night, seasonal fluctuations are easier to see in the data for night-time parking. From March 2022, the data shows the number of vehicles observed fell during the Easter period, which was followed by a rise to the mid-year point, followed by a 'summer holiday' low. Vehicle numbers then built strongly through the autumn to a Christmas high, which was quickly followed by a post-Christmas/new year fall and then by a recovery in February 2023.

Assuming the level of observed lorry parking provides a reflection of the overall level of logistics activity across the road network, the seasonality seen in Figure 3-1 can reasonably be expected to reflect the traditional UK Easter, Christmas, and summer holiday periods. The holiday factor is important with workers in many sectors taking time off and significantly fewer industrial production days. The traditional manufacturing industry summer shut-down fortnight still applies in certain sectors such as automotive production and as such the supply chain changes significantly during these periods.

3.2.2 Vehicles observed split by on-site and off-site parking locations

Figure 3-2 and Figure 3-3 provide a breakdown of vehicles observed by on-site facilities, laybys, and industrial estates, during the night and during the day.

Figure 3-2 shows that the quietest month at night in terms of vehicles observed at on-site facilities across all routes was April 2022, and the busiest month was December 2022. For laybys, the quietest month at night was July 2022 and the busiest month was March 2022. For industrial estates, the quietest month at night was May 2022 and the busiest month was November 2022.

The variation across all routes between the quietest month and the busiest month at night was 36 per cent for on-site facilities (510 vehicles), 65 per cent for laybys (167 vehicles), and 38 per cent for industrial estates (72 vehicles).

Figure 3-2: Vehicles observed by night, by type of site, on all routes

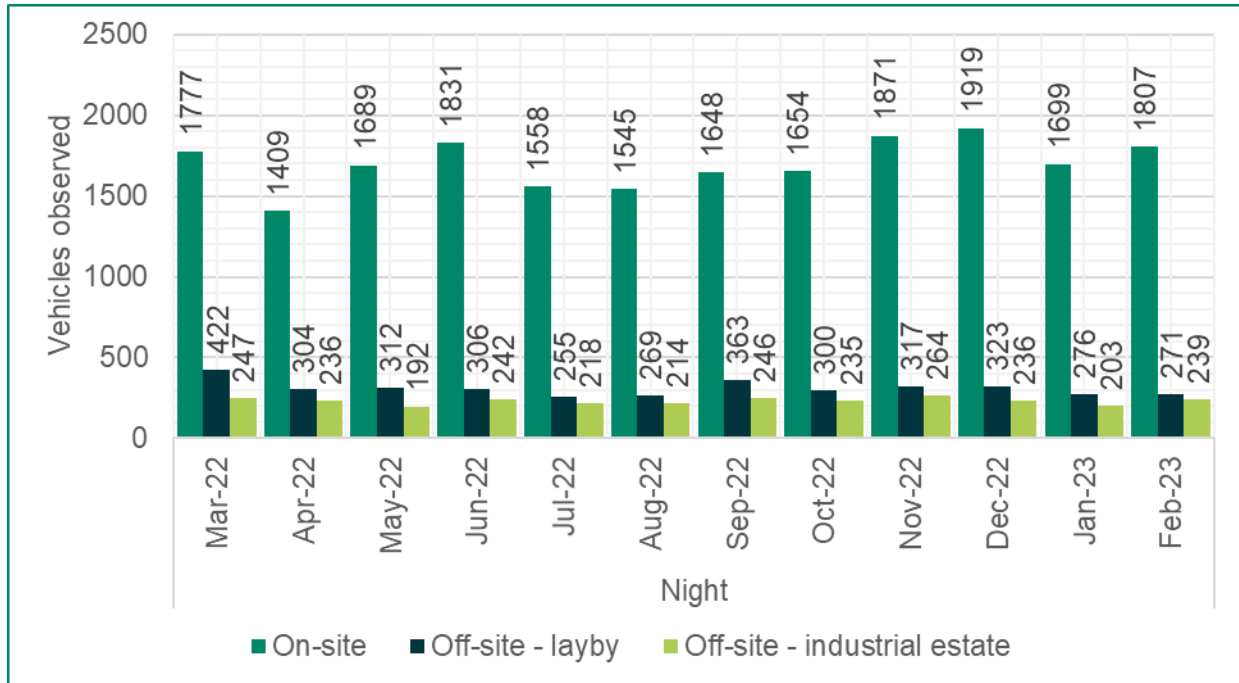


Figure 3-3: Vehicles observed by day, by type of site, on all routes

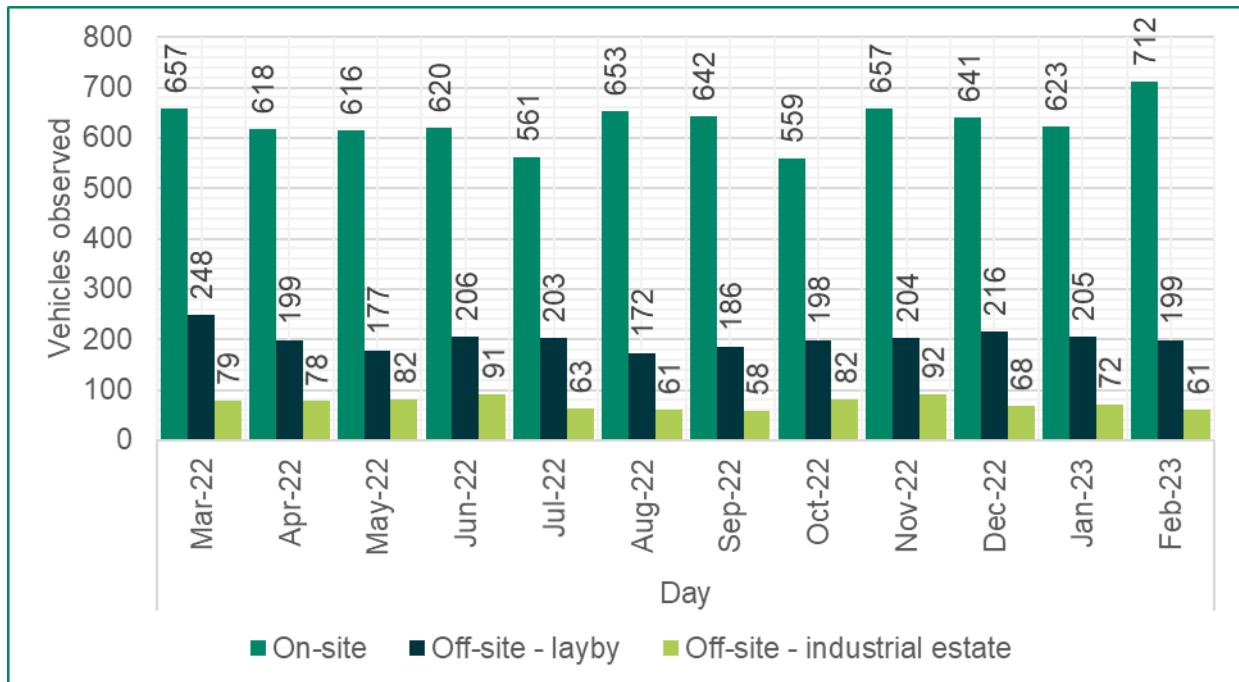
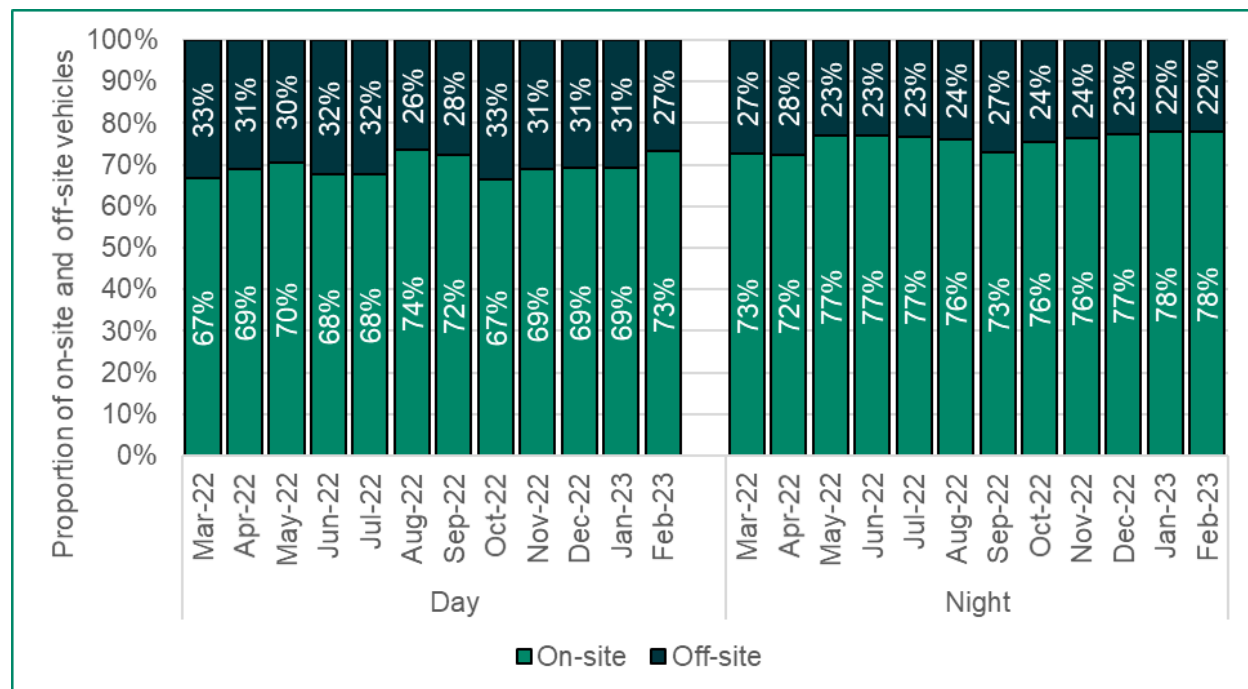


Figure 3-4 shows that, on average, at night, out of the total number of vehicles observed across the four routes, 76 per cent were parked at on-site facilities and 24 per cent at off-site locations (14 per cent at laybys and 10 per cent at industrial estates).

The highest proportion of vehicles parking on-site at night were observed in January and February 2023 (78 per cent), with the lowest proportion in April 2022 (72 per cent).

Figure 3-4: Proportion of vehicles observed by day and night, by site type



3.2.3 Vehicles observed split by type of on-site parking facilities

Figure 3-5 and Table 3-1 highlight the difference in parking patterns between day and night across the different types of on-site parking facilities on all routes.

During the night, the most vehicles were observed at independent truckstops, whilst during the day the most vehicles were observed at MSAs. This may suggest that lorry drivers on shorter legal/comfort breaks during the day stop where the nearest available facility is and typically, for a 45-minute legal break, it is free to stop anywhere (generally up to two hours at MSAs). Whereas at night, the findings could suggest that drivers are more selective about where they choose to park and these destinations could involve more of a detour off the motorway network to an independent truckstop, where they feel they may get better facilities, including secure parking.

Although the number of vehicles observed at the point of the audit was lower during the day than during the night, there is a higher turnover of vehicles during the day. This means there is a higher total number of vehicles visiting the sites each day, as drivers stop throughout the day for shorter periods of time for their legal/comfort breaks than at night.

At night across all four routes, the busiest month at independent truckstops was June 2022, whilst it was December 2022 for MSAs and March 2022 for TRSAs.

Figure 3-5: Vehicles observed by day and night, by type of on-site parking facilities, on all routes

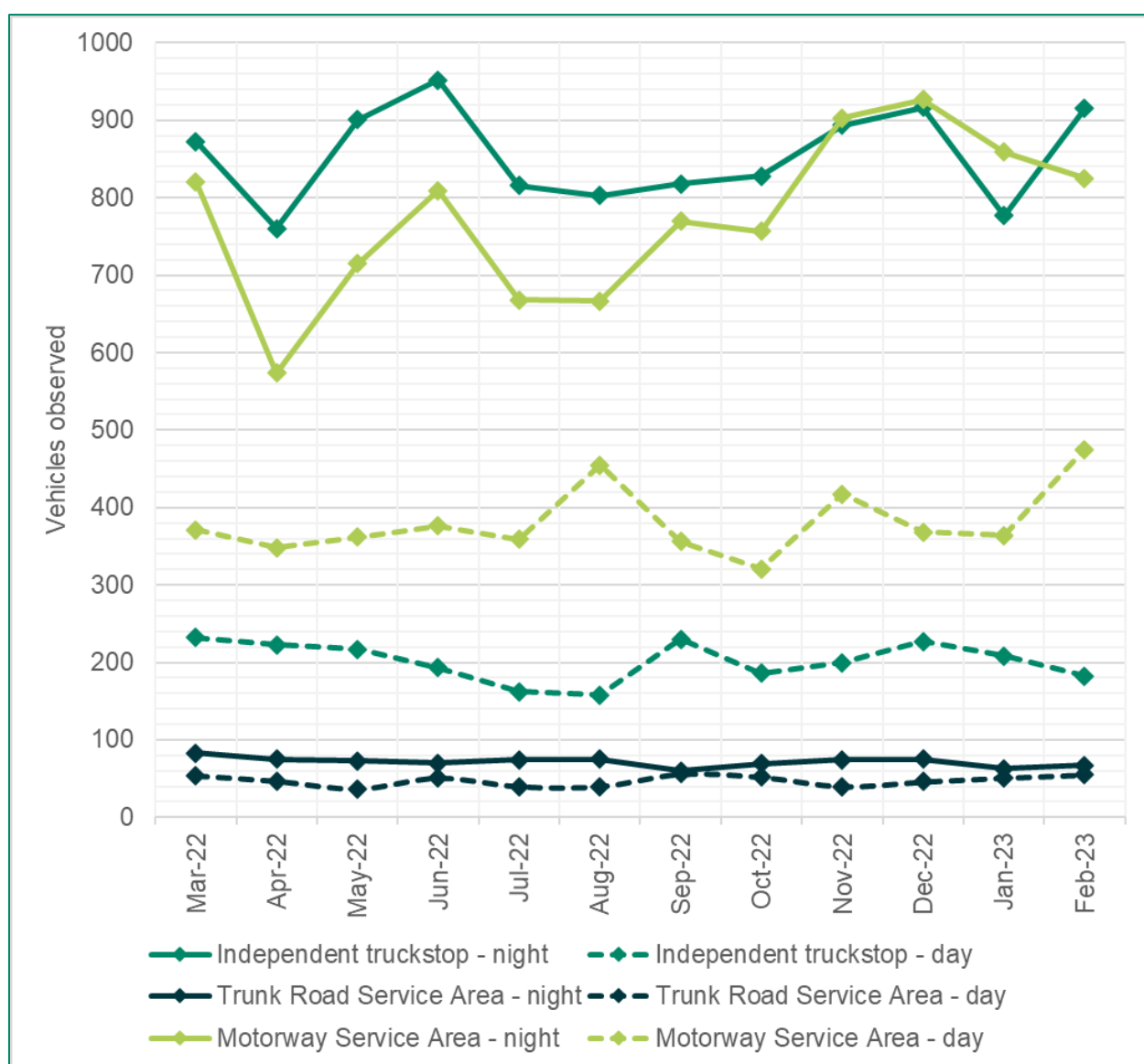


Table 3-1: Number of vehicles observed by day and night, by type of on-site parking facilities, on all routes

Months	Day			Total - all types of lorry parking locations	Months	Night			Total - all types of lorry parking locations
	Independent truckstop	Trunk Road Service Area	Motorway Service Area			Independent truckstop	Trunk Road Service Area	Motorway Service Area	
Mar-22	232	54	371	657	Mar-22	873	83	821	1777
Apr-22	223	47	348	618	Apr-22	760	75	574	1409
May-22	217	37	362	616	May-22	901	73	715	1689
Jun-22	193	51	376	620	Jun-22	952	70	809	1831
Jul-22	162	40	359	561	Jul-22	816	74	668	1558
Aug-22	158	40	455	653	Aug-22	803	75	667	1545
Sep-22	230	56	356	642	Sep-22	818	60	770	1648
Oct-22	186	52	321	559	Oct-22	828	69	757	1654
Nov-22	200	40	417	657	Nov-22	894	74	903	1871
Dec-22	227	46	368	641	Dec-22	917	75	927	1919
Jan-23	208	51	364	623	Jan-23	777	63	859	1699
Feb-23	182	55	475	712	Feb-23	915	67	825	1807
Total	2418	569	4572	7559	Total	10254	858	9295	20407

3.2.4 Utilisation at on-site parking facilities

The night utilisation at on-site parking facilities across the routes averaged 87 per cent of total on-site capacity, which is classed as critical (85 per cent or more) - Figure 3-6. This is four per cent above the March 2022 national survey night utilisation average of 83 per cent across all on-site parking facilities along the SRN in England.

The monthly variations recorded indicate that the lowest night on-site utilisation was in April 2022 at 72 per cent, and the highest in December 2022 at 98 per cent.

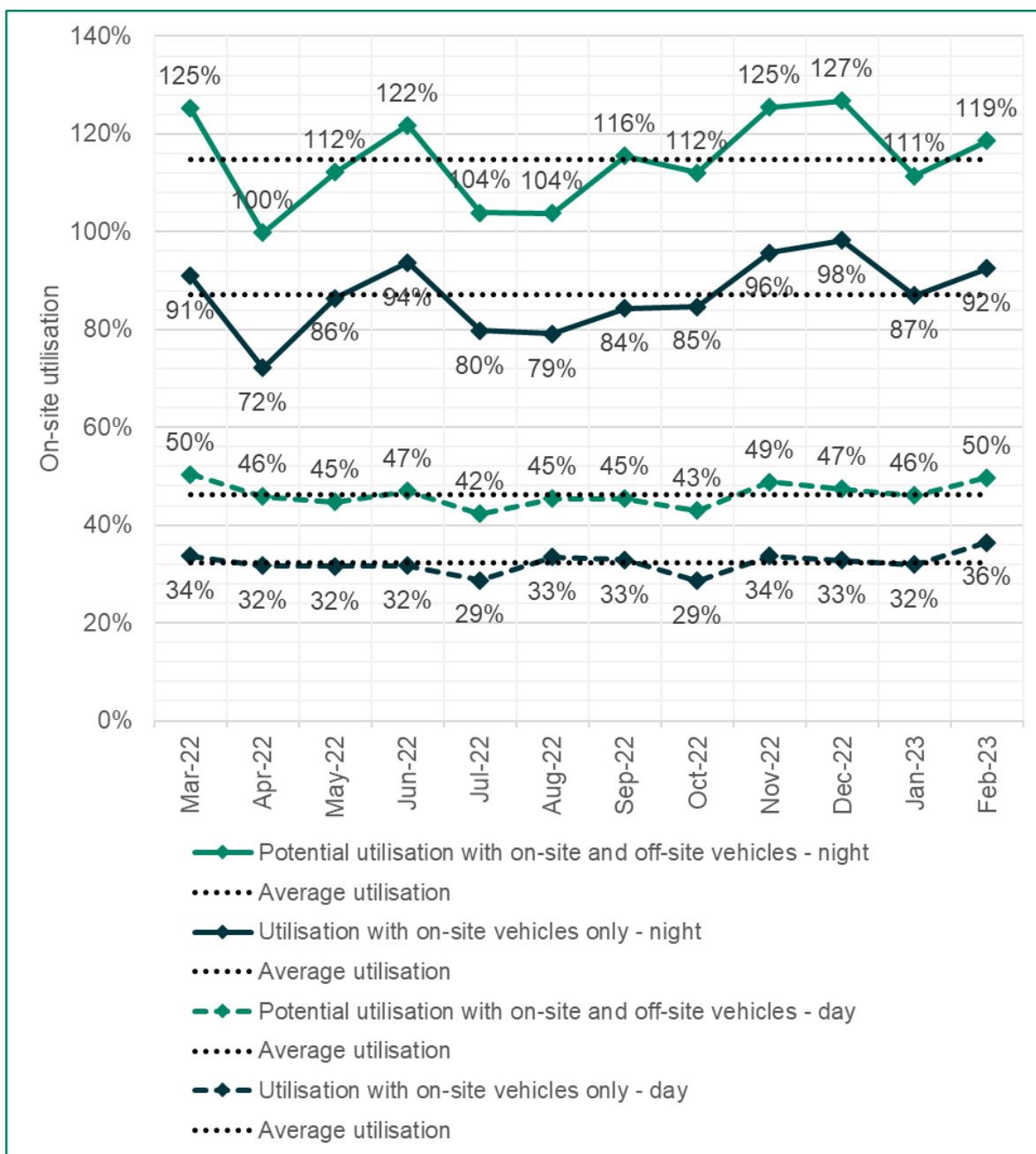
The day utilisation at on-site parking facilities across the four routes averaged 32 per cent of total on-site capacity. The lowest day on-site utilisation was 29 per cent, in July and October 2022, and the highest was 36 per cent, in February 2023.

A comparison of utilisation at on-site parking facilities across all routes between average day (32 per cent) and average night (87 per cent) shows that on-site daytime lorry parking demand was around a third of night-time demand.

On-site utilisation is calculated based on the number of vehicles observed at on-site parking facilities against capacity at these sites, omitting vehicles parked at off-site parking locations as there is no capacity for laybys and industrial estates that can be determined. However, providing drivers with safe parking facilities with suitable washing and food facilities is important for improving driver welfare, perception, and road safety, and most laybys and industrial estates fall far below this standard. It is therefore important to know what the overall utilisation would be based on vehicles observed at on-site parking facilities **and** off-site parking locations to better understand lorry parking demand.

With this in mind, Figure 3-6 also provides potential on-site utilisation for both on-site **and** off-site vehicles. This shows that on-site day utilisation across all routes would average 46 per cent if including both on-site **and** off-site vehicles against on-site capacity only. Similarly, night on-site utilisation across all routes would average 115 per cent if including both on-site **and** off-site vehicles against on-site capacity only.

Figure 3-6: Utilisation by day and night at on-site parking facilities, including on-site vehicles and on-site and off-site vehicles, on all routes



3.2.5 UK and non-UK registered vehicles observed at all on-site and off-site parking locations

Figure 3-7 and Figure 3-8 provide the number of UK and non-UK registered vehicles observed by night and by day at all on-site and off-site parking locations, on all routes.

The combined total number of UK registered vehicles observed at on-site and off-site parking locations was higher than non-UK registered vehicles during both the day and night audits.

The total number of UK registered vehicles observed on all routes combined was higher than non-UK registered vehicles during both night (UK registered highest of 1,562 vehicles in December 2022 and non-UK registered highest of 1,066 in March 2022) and day audits (UK registered highest of 697 vehicles in February 2023 and non-UK registered highest of 354 in March 2022).

There was a greater fluctuation at night throughout the 12 months for UK vehicles than for non-UK registered vehicles - Figure 3-7.

Figure 3-7: UK and non-UK registered vehicles observed by night, at all on-site and off-site parking locations, on all routes

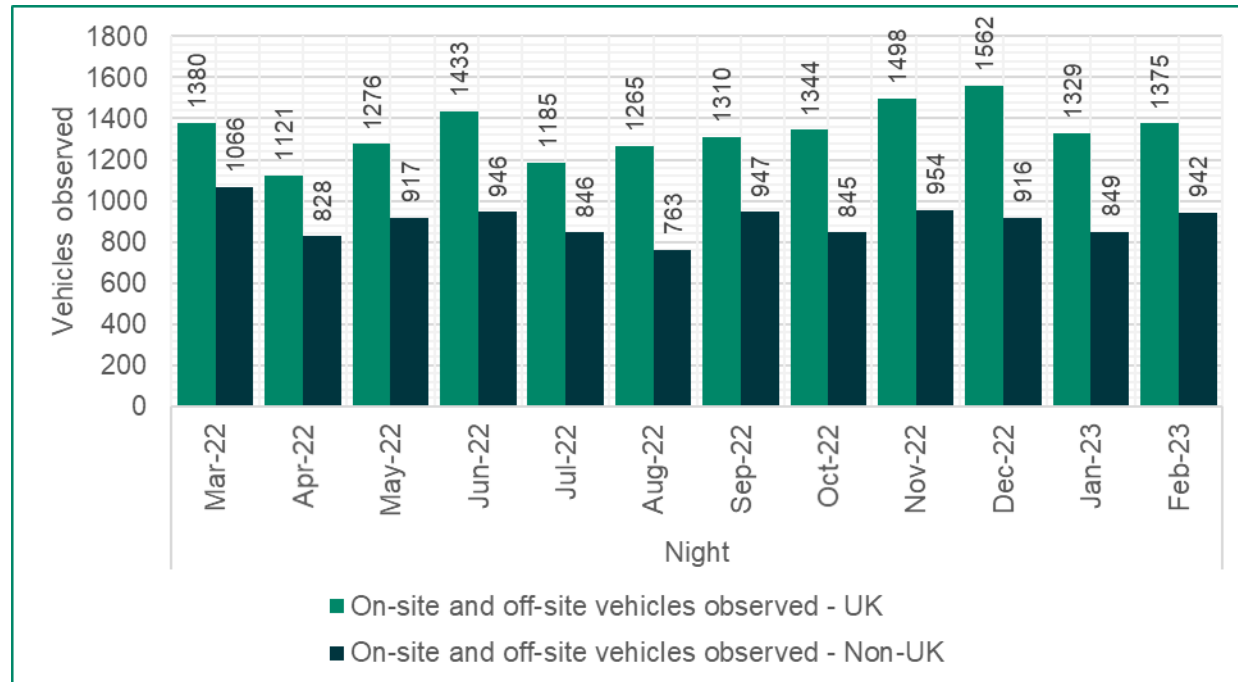


Figure 3-8: UK and non-UK registered vehicles observed by day, at all on-site and off-site parking locations, on all routes

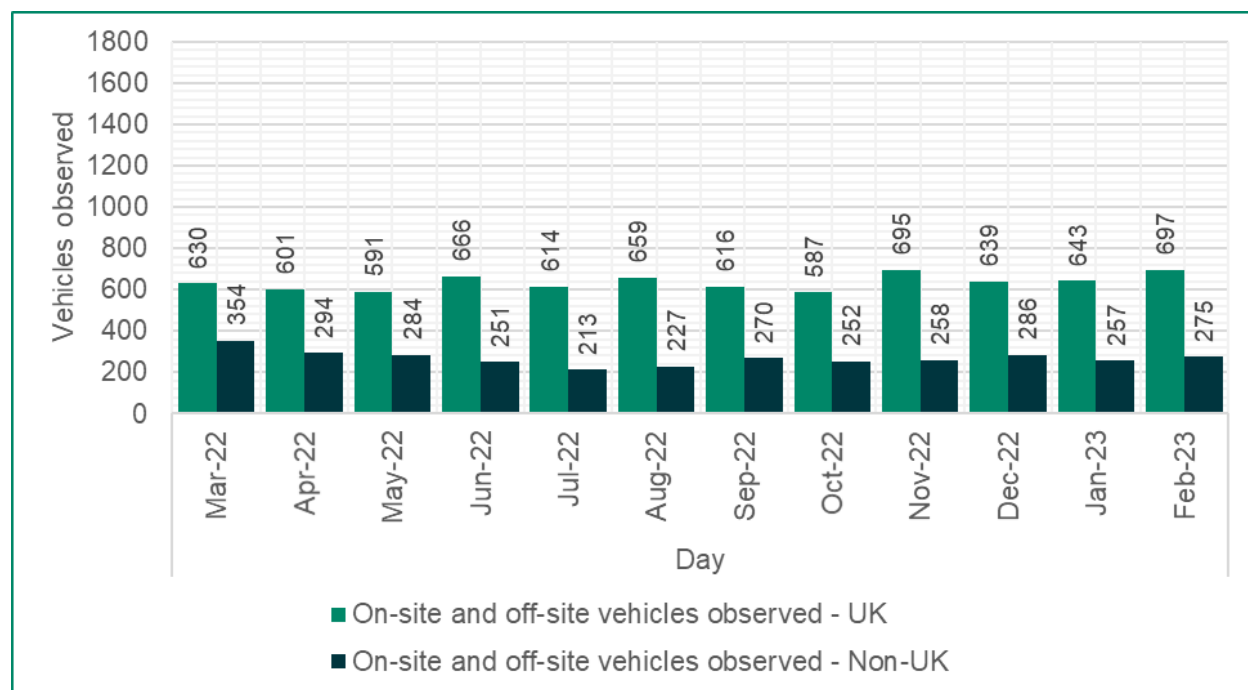
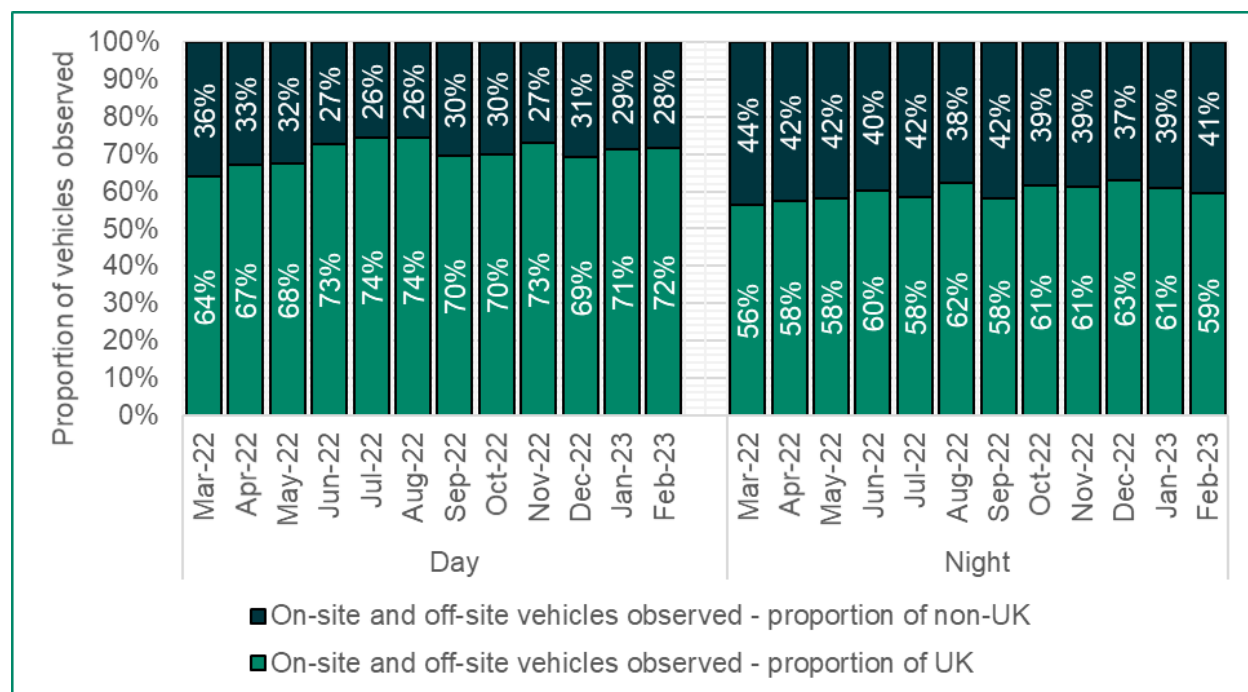


Figure 3-9 highlights that out of the total vehicles observed at on-site and off-site parking locations during the night across all routes, on average 60 per cent of these were UK registered and 40 per cent were non-UK registered. For day time, 70 per cent were UK registered and 30 per cent were non-UK registered.

The variation between UK and non-UK registered vehicles was fairly stable throughout the 12 months.

It is likely that Route 4 South East is influencing the reported proportions due to the strong presence of non-UK registered vehicles on this route. This is expected given the South East's proximity to international gateways to mainland Europe.

Figure 3-9: Proportion of UK and non-UK registered vehicles observed by day and night, at all on-site and off-site parking locations, on all routes



3.3 Vehicles observed by route

This section provides information on vehicles observed by route – Route 1 Midlands, Route 2 East of England, Route 3 North West, and Route 4 South East.

At a glance key findings summary

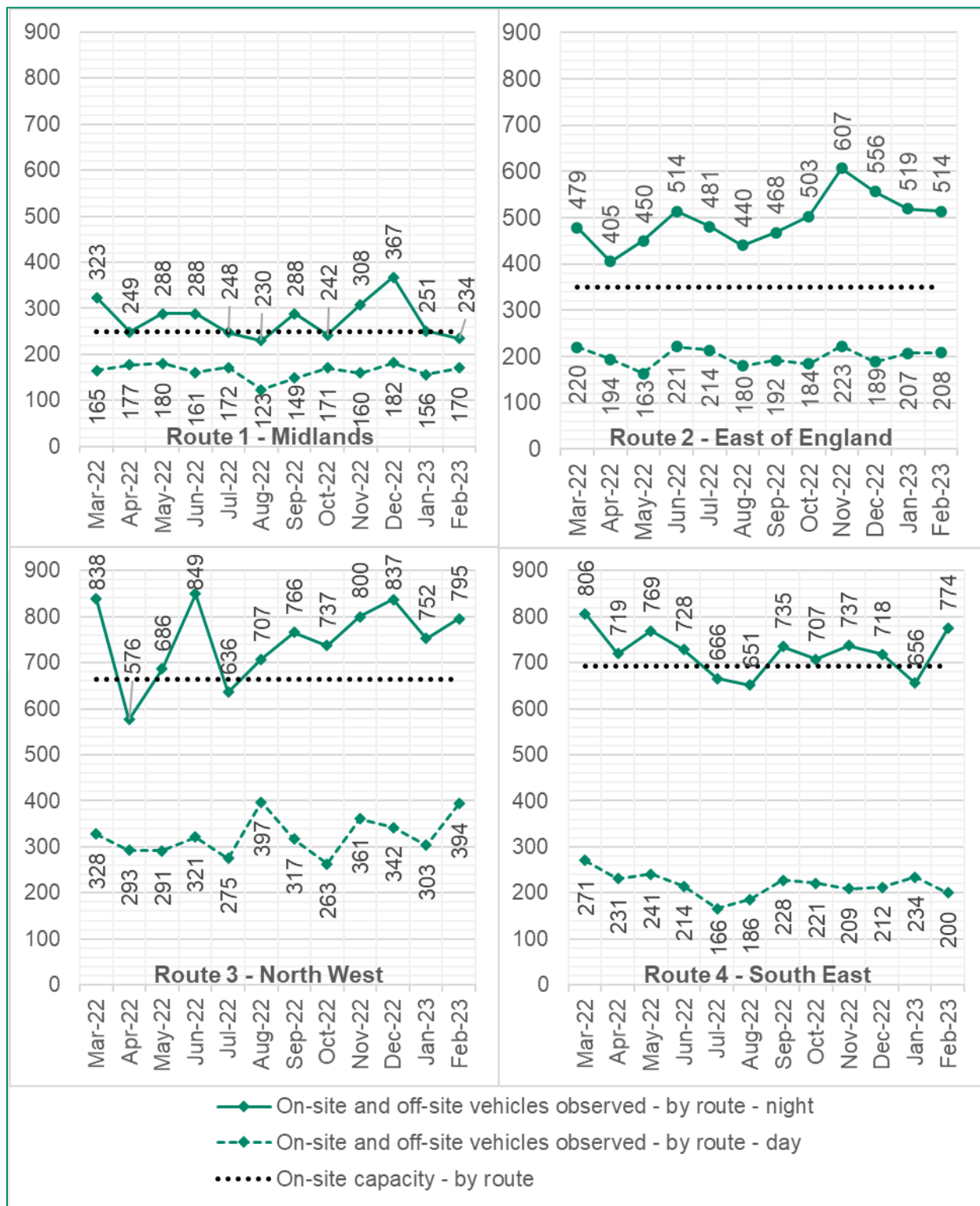
- The quietest routes in terms of vehicles observed at night at on-site and off-site parking locations were Route 1 Midlands and Route 2 East of England
- The busiest routes in terms of vehicles observed at night at on-site and off-site parking locations were Route 3 North West and Route 4 South East
- All routes, except Route 1 Midlands, averaged night on-site utilisation above the March 2022 national average and above the critical on-site utilisation level of 85 per cent or more:
 - Route 1 Midlands: 62 per cent
 - Route 2 East of England: 99 per cent
 - Route 3 North West: 88 per cent
 - Route 4 South East: 89 per cent
- The greatest percentage point difference in average on-site utilisation between day and night was for Route 2 East of England at 68 per cent, followed closely by Route 4 South East at 63 per cent
- There was a higher proportion of UK registered vehicles observed on all routes during both day and night audits, except Route 4 South East where the proportion of non-UK registered vehicles was much higher, especially at night

Detailed findings

3.3.1 Vehicles observed at all on-site and off-site parking locations

Figure 3-10 provides information on vehicles observed by night and by day at all on-site and off-site parking locations by route. The vehicles observed at all on-site and off-site parking locations have been benchmarked against the on-site capacity of the route. This highlights that Route 2 East of England was consistently above the on-site capacity for the route for nights during the study period.

Figure 3-10: Vehicles observed by day and night, at all on-site and off-site locations, by route



The greatest night variation between the quietest and the busiest month in terms of vehicles observed during the 12 months study period was on Route 1 Midlands at 60 per cent, followed by Route 2 East of England at 50 per cent and Route 3 North West both at 47 per cent.

Route 4 South East, which is on the corridor to mainland Europe, had the lowest variation at 24 per cent. This may be attributed to the fact that UK seasonal fluctuations in demand for road freight are being accommodated by UK based hauliers. However, Route 4 South East encompassed the very large 650 capacity Ashford International Truckstop which was predominantly used by non-UK registered vehicles and was consistently observed to be at capacity, plus the small and very busy Maidstone services which was frequently observed to be over capacity. Bans on overnight parking in laybys in and around Ashford and on the A20 mean that at times of seasonal peaks, some drivers may have been forced to park away from the selected longitudinal route and thus the full effects of monthly/seasonal variations may be somewhat hidden.

We can see in Figure 3-10 that vehicle numbers across the four routes are different, and whilst the absolute vehicle numbers recorded are relevant, they reflect the specific route chosen, are a sample of the national survey region, and are not particularly important in their own right (although see section 4.5 on conducting future longitudinal audits). What is more relevant is how the number of vehicles varies, by day and by night, across the months of the year, and how that compares with the actual on-site lorry parking capacity available.

The following provides a detailed analysis of the on-site and off-site vehicles observed broken down by route.

Route 1 Midlands

The busiest month in terms of vehicles observed at night at all on-site and off-site locations on Route 1 Midlands was December 2022 (367). The quietest was August 2022 (230). This equates to a night variation of 60 per cent.

A possible explanation for example is that the A50 route on the audit goes right past the Toyota car plant at Burnaston and its supply chain and the factory which has deliveries from all over Europe is usually shut in the first fortnight of August.

The busiest month in terms of vehicles observed in the day at all on-site and off-site locations on Route 1 Midlands was December 2022 (182). The quietest month was August 2022 (123). This equates to a day variation of 48 per cent.

The variation between average day and average night was 69 per cent (113 vehicles).

Route 2 East of England

The busiest month in terms of vehicles observed at night at all on-site and off-site locations on Route 2 East of England was November 2022 (607). The quietest was April 2022 (405). This equates to a night variation of 50 per cent.

The audit route included parts of the A14 which is a major corridor between the UK's biggest container ports and the Midlands and North. November is often a very busy month for the port, and this can influence volumes of freight traffic in the area.

The busiest month in terms of vehicles observed in the day at all on-site and off-site locations on Route 2 East of England was November 2022 (223). The quietest was May 2022 (163). This equates to a day variation of 37 per cent.

The variation between average day and average night was 148 per cent (295 vehicles).

Route 3 North West

The busiest month in terms of vehicles observed at night at all on-site and off-site locations on Route 3 North West was June 2022 (849). The quietest was April 2022 (576). This equates to a night variation of 47 per cent.

The audit route included some key manufacturing plants such as Vauxhall at Ellesmere Port, INEOS chemical plant at Runcorn and Essar Oil's Stanlow refinery which produces 16 per cent of UK's road fuel requirements. Production of the Vauxhall Astra finished for good in April 2022, so parts deliveries had been dropping before that. New major investment in all of the above plants has been active in the last year for the future production of electric vans, and hydrogen at both the chemical and refinery sites. The summer quarter on the M56 route to North Wales and Ireland is particularly busy supplying goods for the tourists. Apart from seaside resorts such as Rhyl, Llandudno and Colwyn Bay, there are over 250 caravan sites in North Wales meaning there are thousands more people in the summer compared to autumn and winter.

The busiest month in terms of vehicles observed in the day at all on-site and off-site locations on Route 3 North West was August 2022 (397). The quietest was October 2022 (263). This equates to a day variation of 51 per cent.

The variation between average day and average night was 131 per cent (425 vehicles).

Route 4 South East

The busiest month in terms of vehicles observed at night at all on-site and off-site locations on Route 4 South East was March 2022 (806). The quietest was August 2022 (651). This equates to a night variation of 24 per cent.

Many of the major manufacturers are not as busy during August and hence the supply of components from Central and Eastern Europe reduces during this period.

The busiest month in terms of vehicles observed in the day at all on-site and off-site locations on Route 4 South East was March 2022 (271). The quietest was July 2022 (166). This equates to a day variation of 63 per cent.

The variation between average day and average night was 232 per cent (504 vehicles).

3.3.2 Vehicles observed split by on-site and off-site parking locations

This section presents the vehicles observed by day and night by route, split by on-site facilities and by laybys and industrial estates (off-site parking locations).

On all routes, most of the vehicles observed were parked at on-site parking facilities, followed by laybys and then industrial estates. The number of each type of facilities by route, and the proportion for the route, is listed at Table 3-2 below:

Table 3-2: Number of on-site and off-site parking locations by route and proportion for the route

	On-site	Off-site		Total
	Number of parking facilities	Number of laybys	Number of industrial estates	
Route 1 Midlands	9 (*17%)	40 (*75%)	4 (*8%)	53 (*100%)
Route 2 East of England	7 (*8%)	72 (*83%)	8 (*9%)	87 (*100%)
Route 3 North West	7 (*13%)	33 (*61%)	14 (*26%)	54 (*100%)
Route 4 South East	4 (*10%)	32 (*76%)	6 (*14%)	42 (*100%)
All routes	27 (*11%)	177 (*75%)	32 (*14%)	236 (*100%)

*proportion of on-site and off-site parking locations by route

Route 1 Midlands

Figure 3-11 and Figure 3-12 provide the number of vehicles observed by site type by night and day. There was a fluctuation of 114 per cent in the number of vehicles observed at night at the nine on-site parking facilities on Route 1 Midlands between the busiest month of December 2022 and the quietest month of August 2022.

Fluctuation for the overnight parking at the 40 laybys and four industrial estates on the route was less marked across the 12 months, at 80 per cent and 65 per cent respectively.

Figure 3-11: Vehicles observed by night, by site type

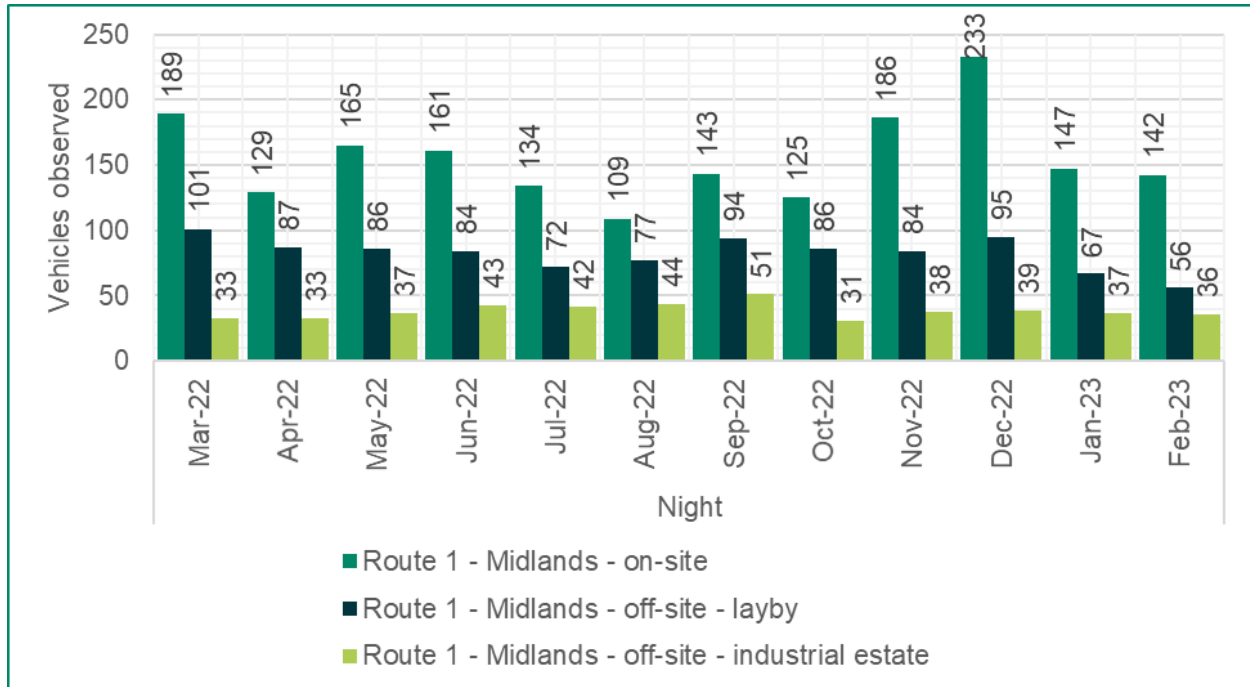
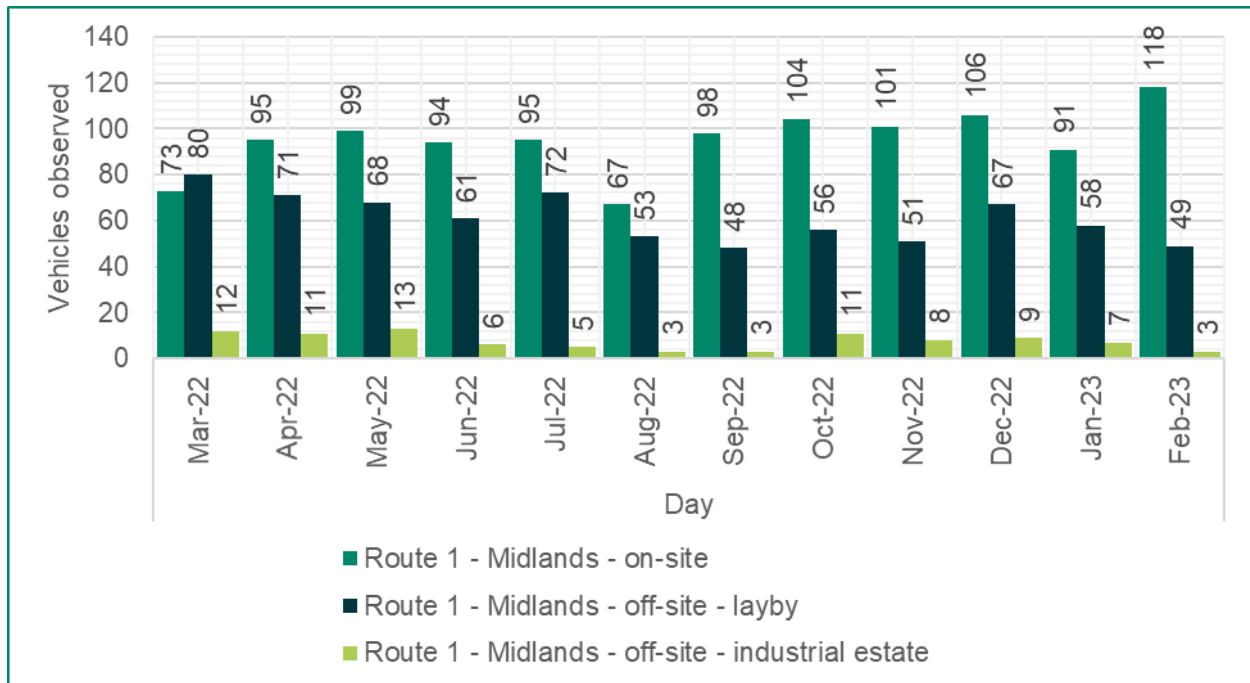
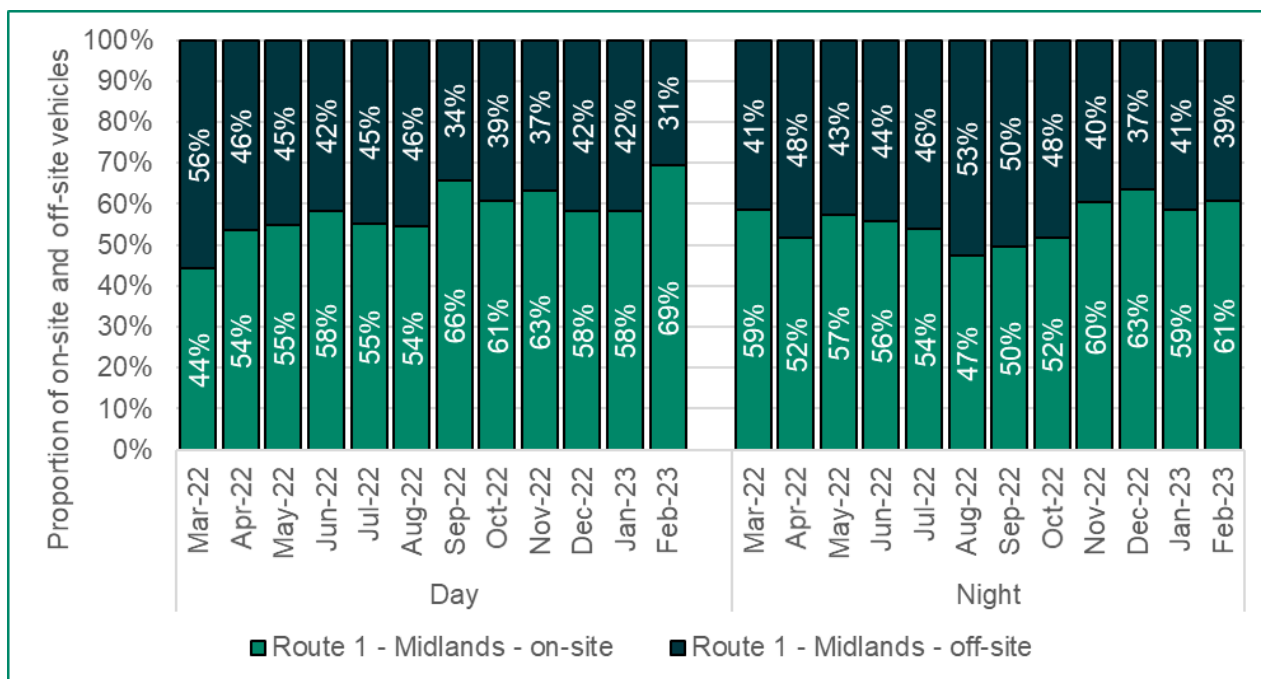


Figure 3-12: Vehicles observed by day, by site type



On average, at night, 56 per cent of vehicles were observed at on-site parking facilities and 44 per cent at off-site parking locations. The months with the highest proportion of vehicles observed at on-site parking facilities at night was December 2022 (63 per cent), with the lowest month August 2022 (47 per cent) - Figure 3-13.

Figure 3-13: Proportion of vehicles observed by day and night, by site type



Route 2 East of England

Figure 3-14 and Figure 3-15 provide the number of vehicles observed by site type by night and day. Figure 3-14 shows that the busiest month for vehicles observed on Route 2 East of England at night at the seven on-site facilities was November 2022, with the quietest month September 2022, representing a fluctuation of 43 per cent.

Overnight parking at the 72 laybys was fairly even across the months, with a peak in March 2022. As with most of the routes on the longitudinal audit, the number of vehicles observed in industrial estates was relatively low. This route did show some quite notable monthly variation, with a low of 17 vehicles in April 2022 and a high of 69 in November 2022.

Figure 3-14: Vehicles observed by night, by site type

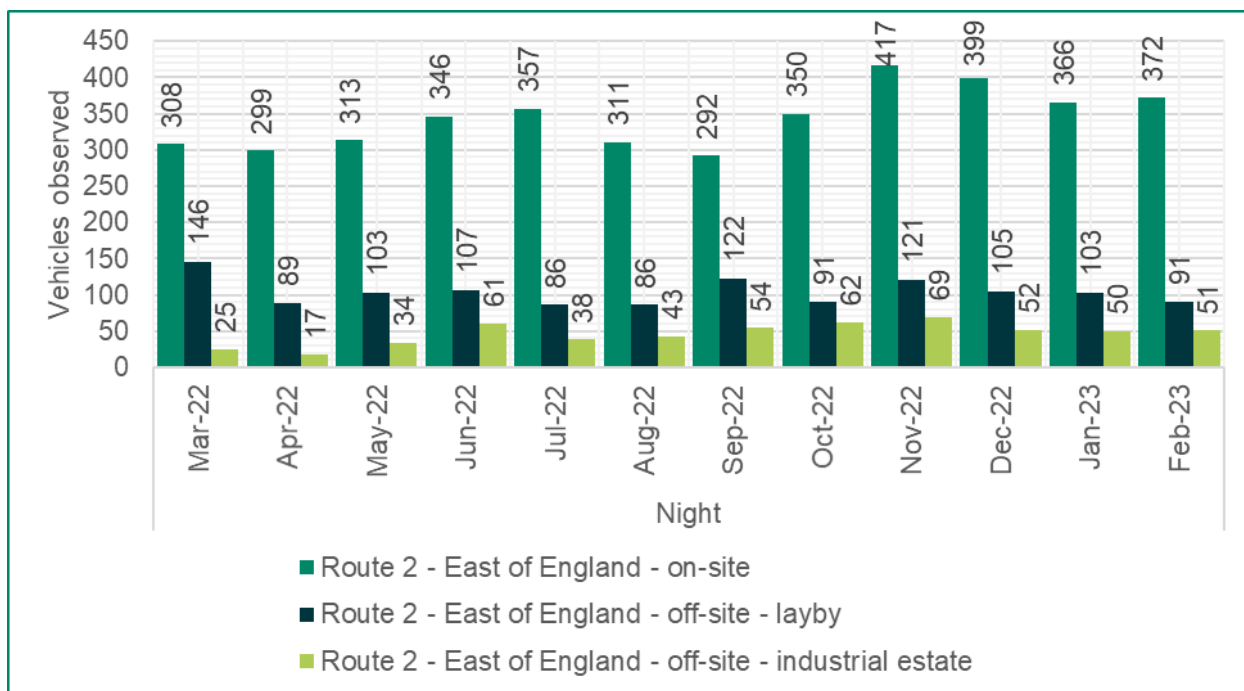
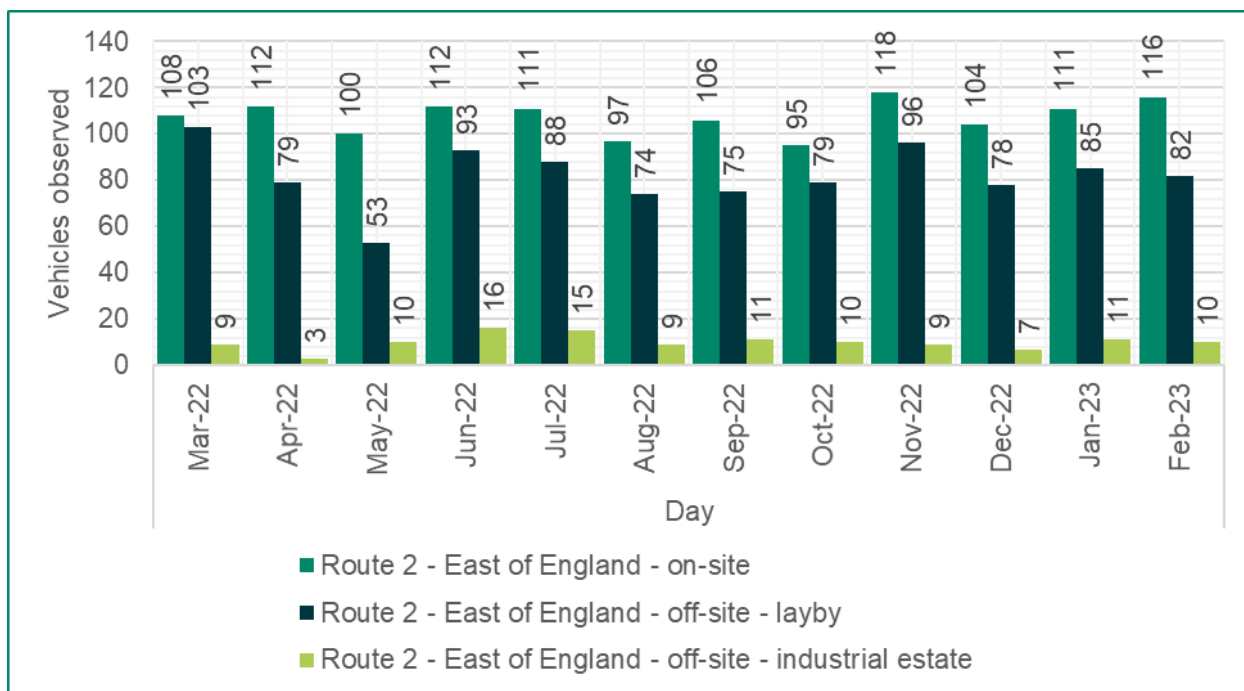
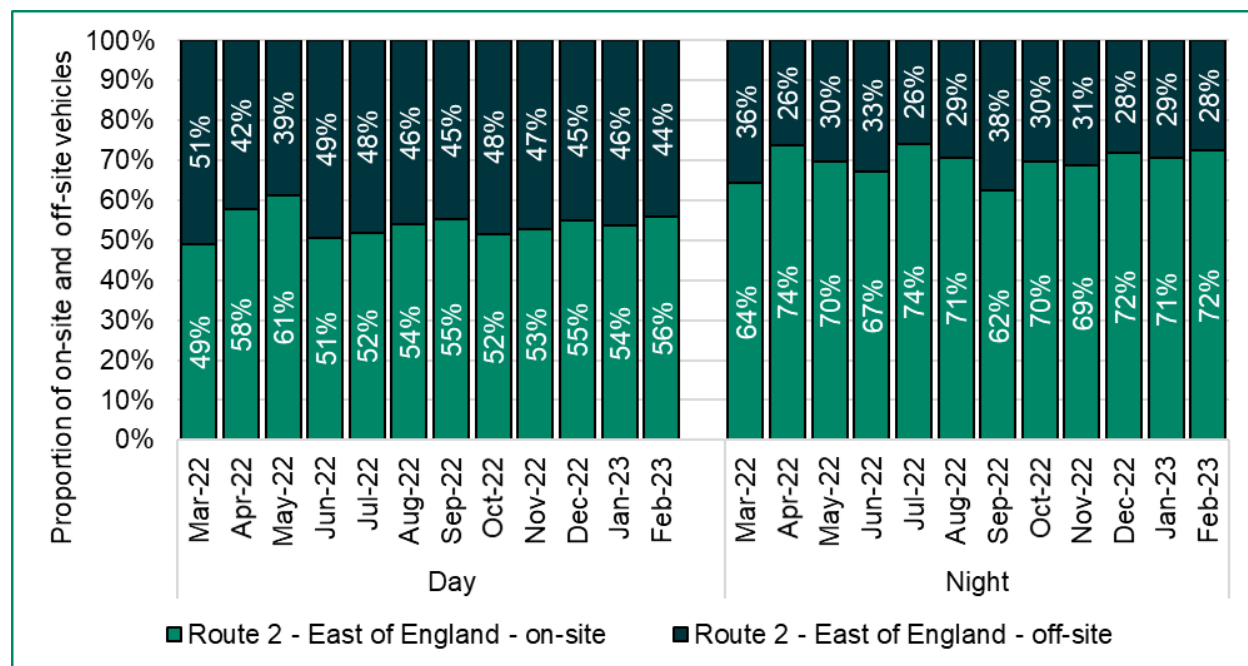


Figure 3-15: Vehicles observed by day, by site type



On average, at night, 70 per cent of vehicles were observed at on-site parking facilities and 30 per cent at off-site parking locations. The months with the highest proportion of vehicles observed at on-site parking facilities at night were April and July 2022 (74 per cent), with the quietest month September 2022 (62 per cent) - Figure 3-16.

Figure 3-16: Proportion of vehicles observed by day and night, by site type



Route 3 North West

Figure 3-17 and Figure 3-18 provide the number of vehicles observed by site type by night and day. Figure 3-17 shows that June and December 2022 were notably busier at night at the seven on-site facilities on Route 3 North West, with April 2022 the quietest month, representing a fluctuation of 64 per cent. Overnight parking at the 33 laybys and 14 industrial estates was fairly steady across all 12 months

Figure 3-17: Vehicles observed by night, by site type

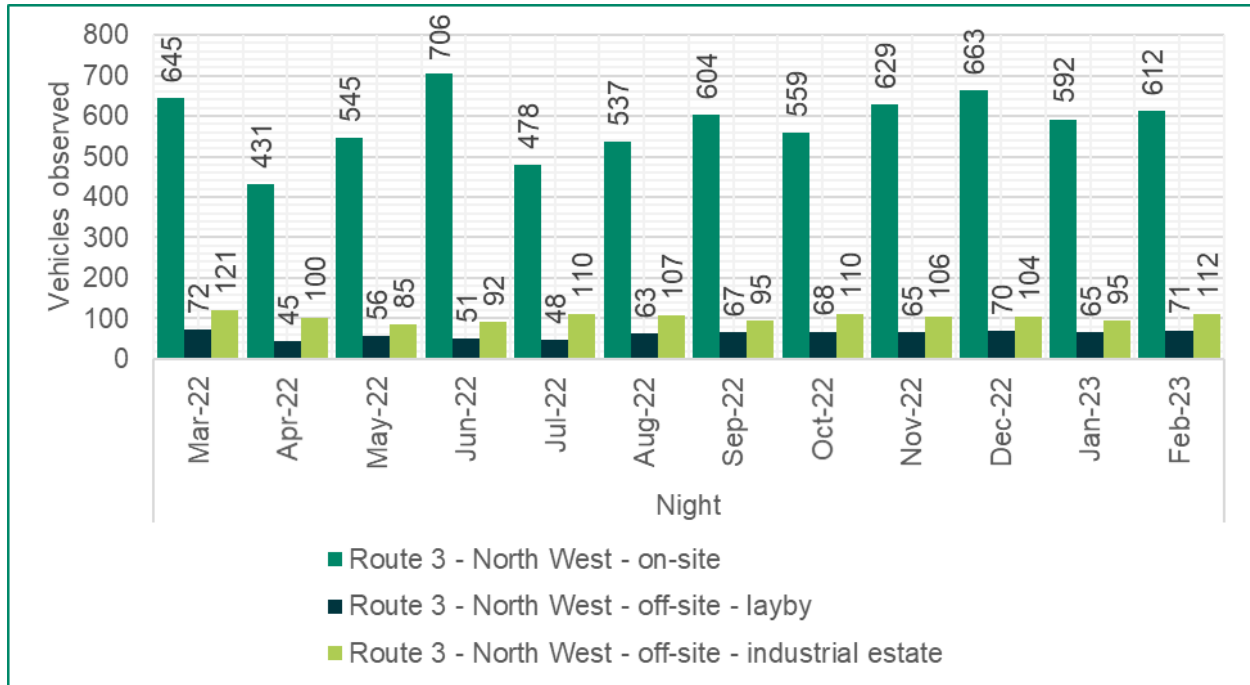
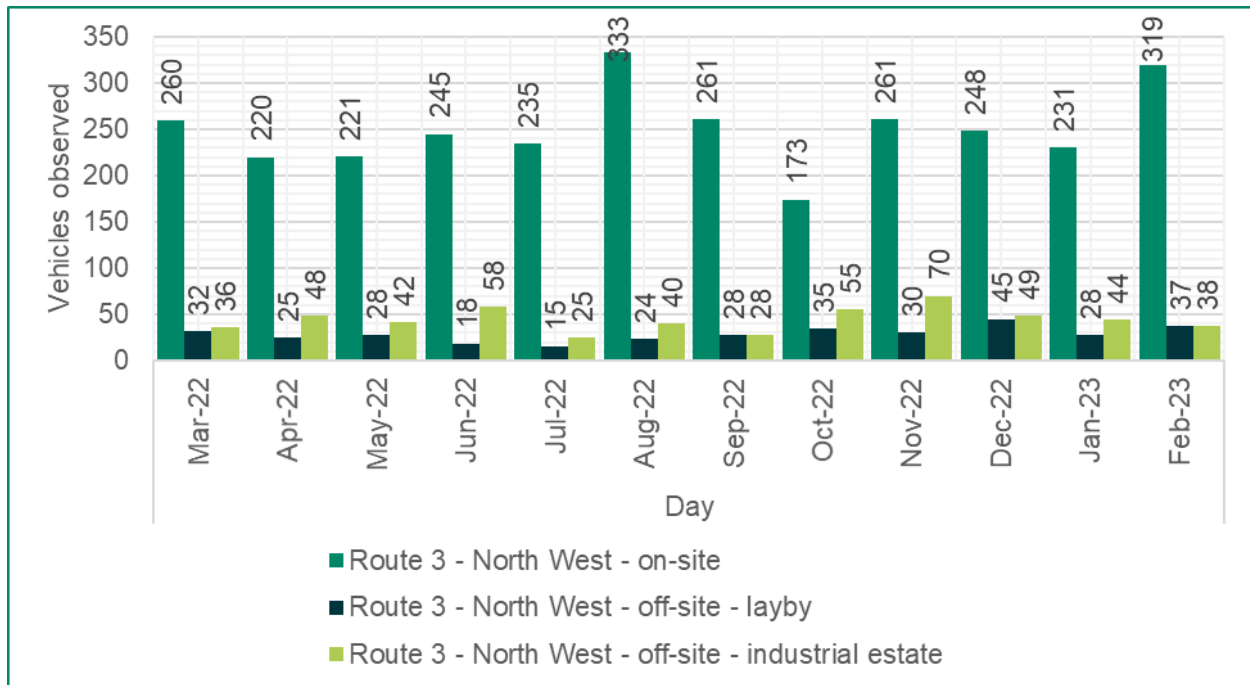
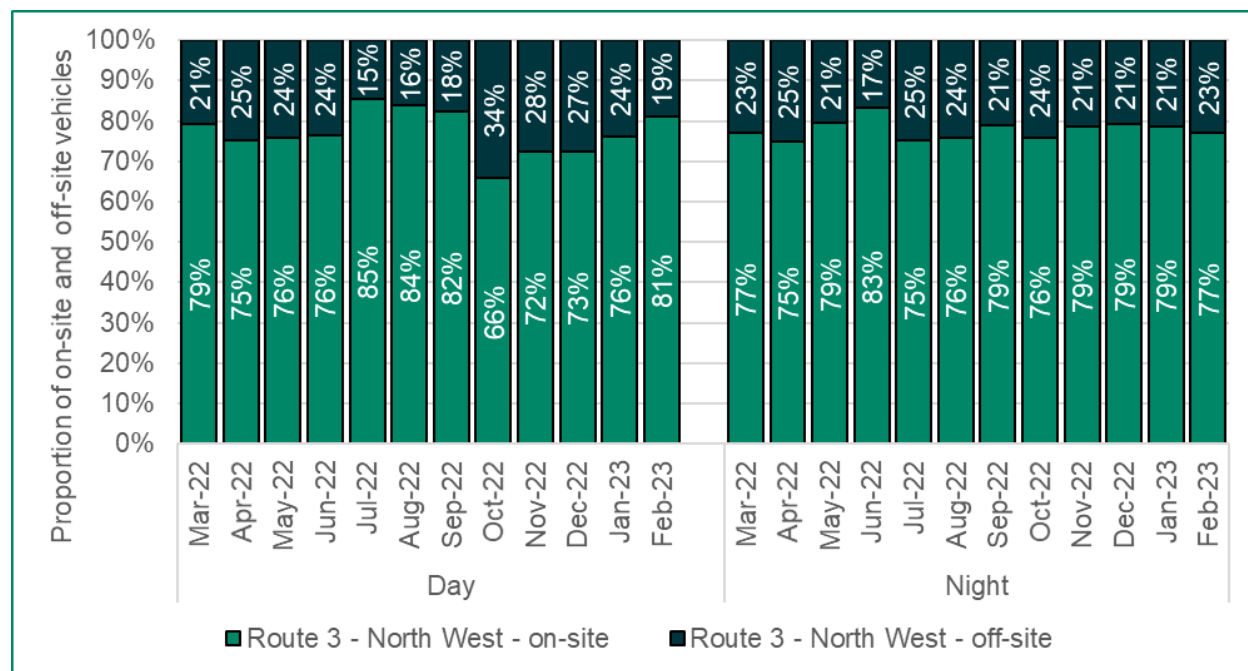


Figure 3-18: Vehicles observed by day, by site type



On average, at night, 78 per cent of vehicles were observed at on-site parking facilities and 22 per cent at off-site parking locations. The months with the highest proportion of vehicles observed parking on-site at night was June 2022 (83 per cent), with the lowest months April and July 2022 (75 per cent) - Figure 3-19.

Figure 3-19: Proportion of vehicles observed by day and night, by site type



Route 4 South East

Figure 3-20 and Figure 3-21 provide the number of vehicles observed by site type by night and day. Figure 3-20 shows that, at night, February 2023 was the busiest month and April 2022 was the quietest month on Route 4 South East. This route included Ashford International Truckstop which was observed to be full all the time during the year the study was undertaken irrespective of season, hence the low fluctuation of 24 per cent.

Overnight parking at the 32 laybys and six industrial estates on the route was relatively low, although there were some notable variations at laybys and industrial estates.

The lowest number of vehicles at laybys ranged from 41 in January 2023 to 103 in March 2022 and vehicles at industrial estates ranged from 20 in August 2022 to 86 in April 2022. Bans on overnight parking in laybys in and around Ashford and on the A20 mean that at times of seasonal peaks, some drivers may have been forced to park away from the longitudinal route and thus the full effects of monthly/seasonal variations may be hidden.

Figure 3-20: Vehicles observed by night, by site type

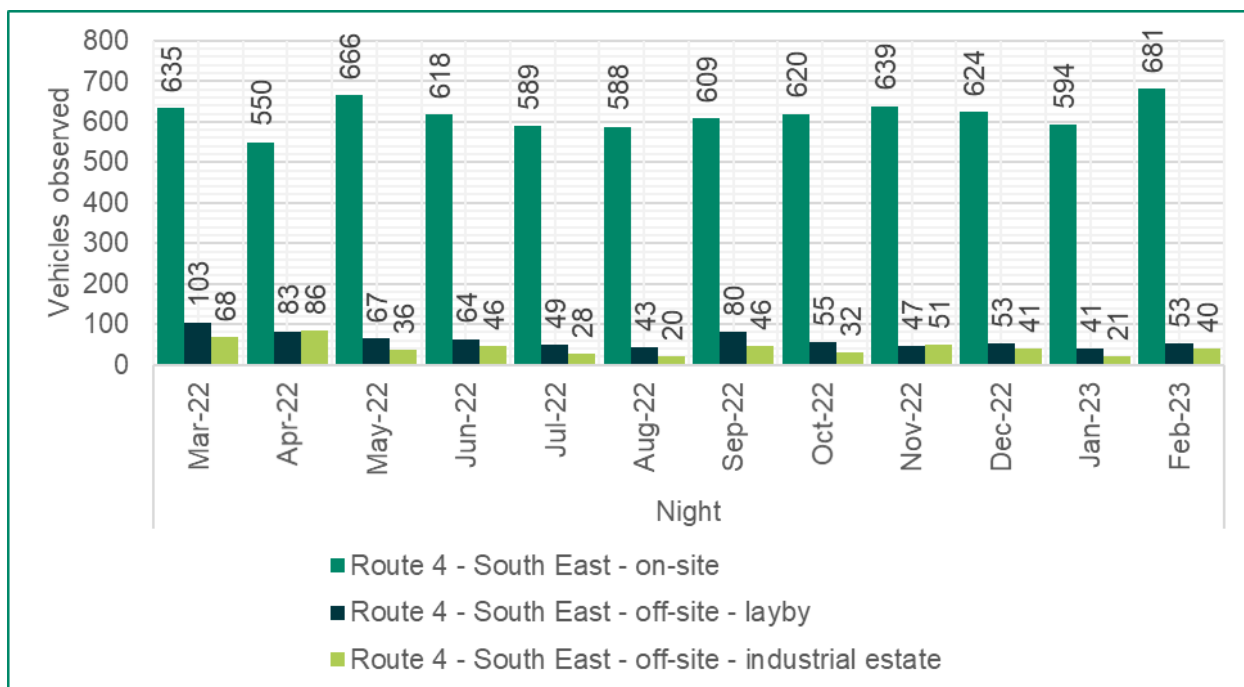
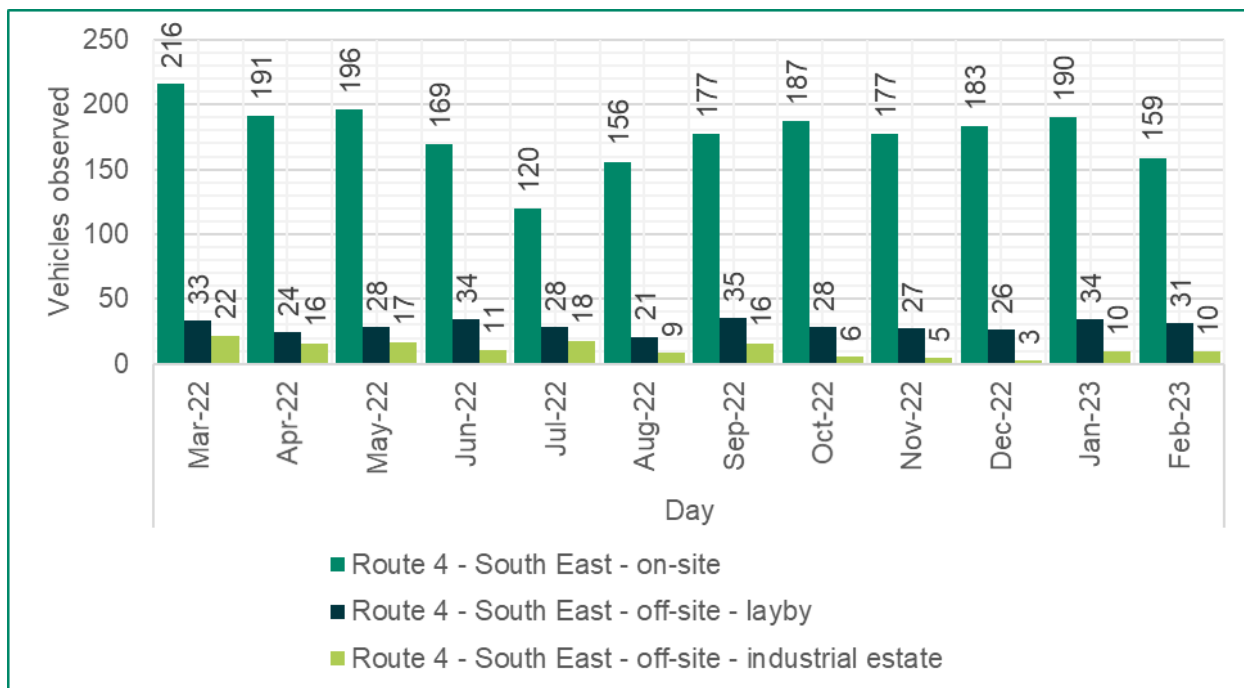
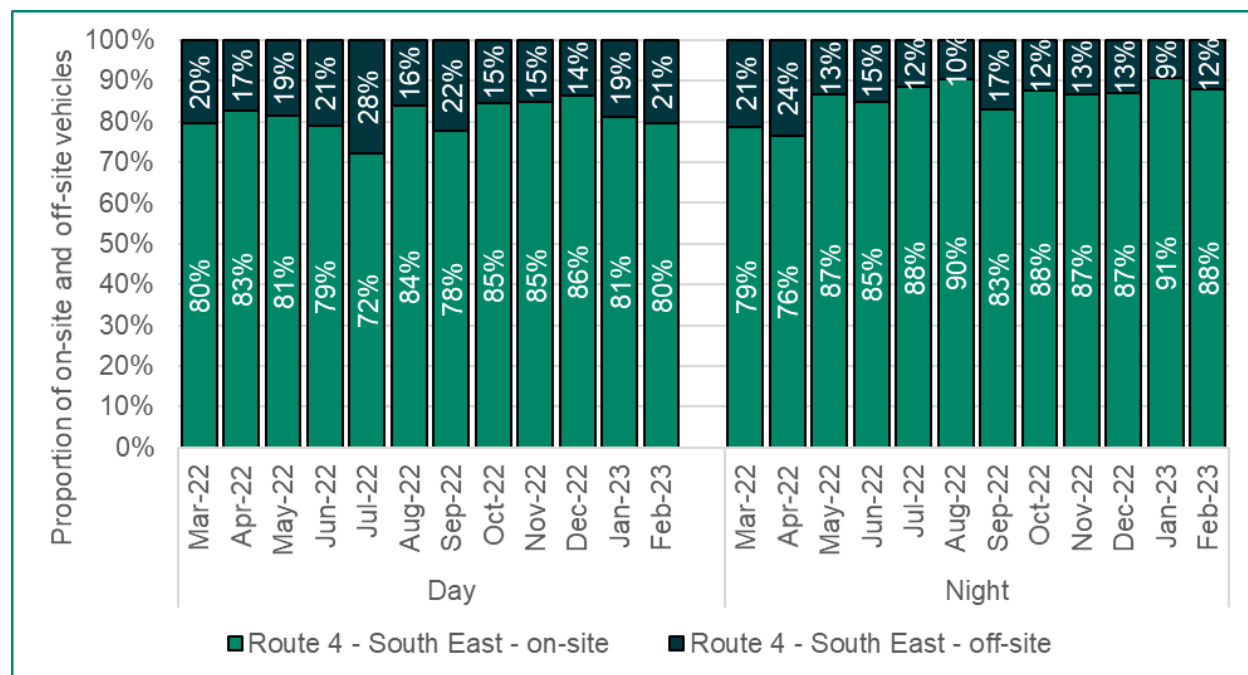


Figure 3-21: Vehicles observed by day, by site type



On average, at night, 86 per cent of vehicles were observed at on-site parking facilities and 14 per cent at off-site parking locations. The months with the highest proportion of vehicles observed parking on-site on Route 4 South East at night was January 2023 (91 per cent), with the lowest month April 2022 (76 per cent) - Figure 3-22.

Figure 3-22: Proportion of vehicles observed by day and night, by site type



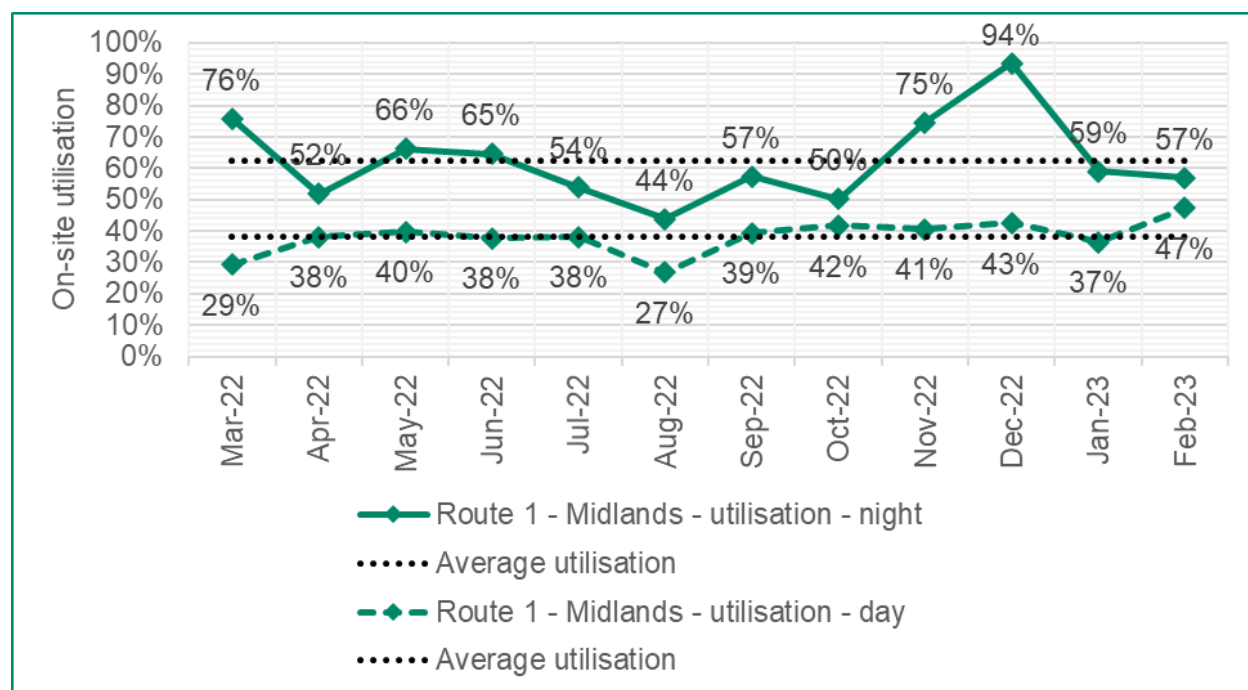
3.3.3 Utilisation at on-site parking facilities

This section looks at day and night on-site utilisation for each of the four routes. Route 1 Midlands had an average night on-site utilisation of 62 per cent, which is below the national average of 83 per cent reported in the March 2022 DfT national survey of lorry parking. Route 2 East of England, Route 4 South East, and Route 3 North West had an average night on-site utilisation of 99 per cent, 89 per cent and 88 per cent for respectively, all above the March 2022 national average. These three routes were above the critical on-site utilisation level of 85 per cent or more.

Route 1 Midlands

Figure 3-23 shows that night on-site utilisation on Route 1 Midlands averaged 62 per cent, whilst day averaged 38 per cent. Night on-site utilisation peaked at 94 per cent in December 2022 and dipped at 44 per cent in August 2022. The reported on-site utilisation is against an on-site capacity for the route of 249 lorry parking spaces.

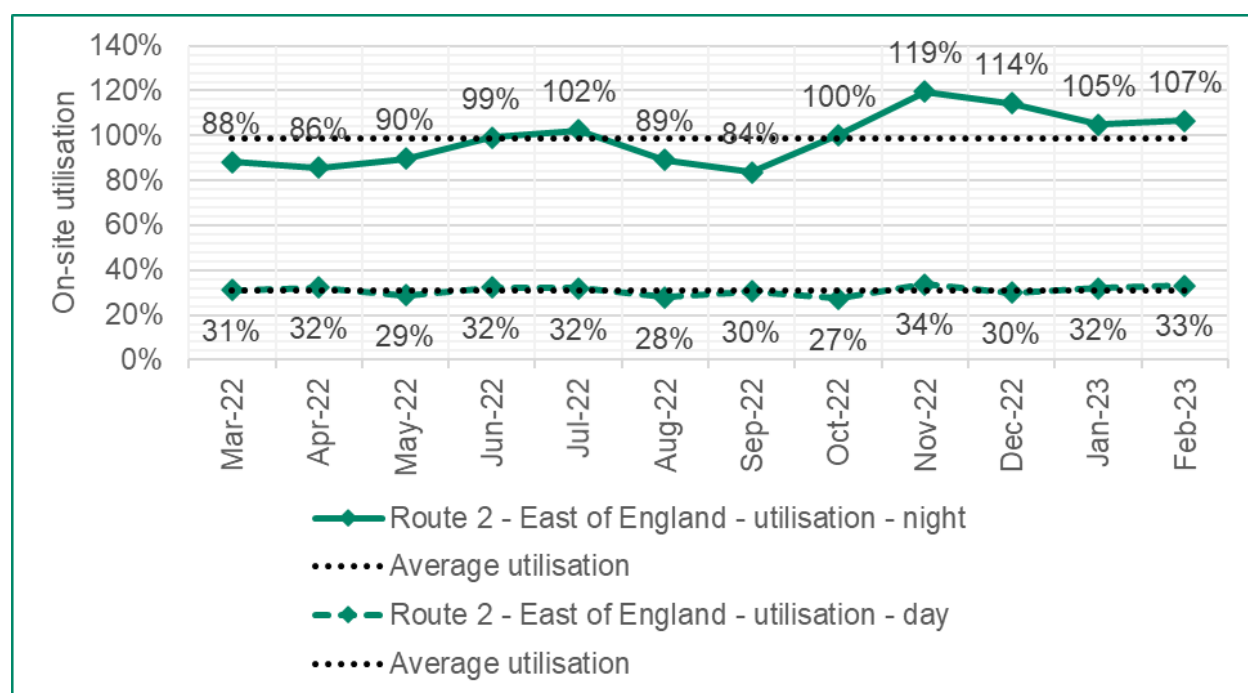
Figure 3-23: Utilisation by day and night at on-site parking facilities, including on-site vehicles



Route 2 East of England

Figure 3-24 shows that night on-site utilisation on Route 2 East of England averaged 99 per cent, whilst day averaged 31 per cent. Night on-site utilisation peaked at 119 per cent in November 2022 and dipped at 84 per cent in September 2022. The reported on-site utilisation is against an on-site capacity for the route of 349 lorry parking spaces. On-site utilisation over 100 per cent indicates that vehicles were observed parked in areas not intended for this purpose (e.g. on slip-road, grass verges, etc) so over the intended capacity.

Figure 3-24: Utilisation by day and night at on-site parking facilities, including on-site vehicles

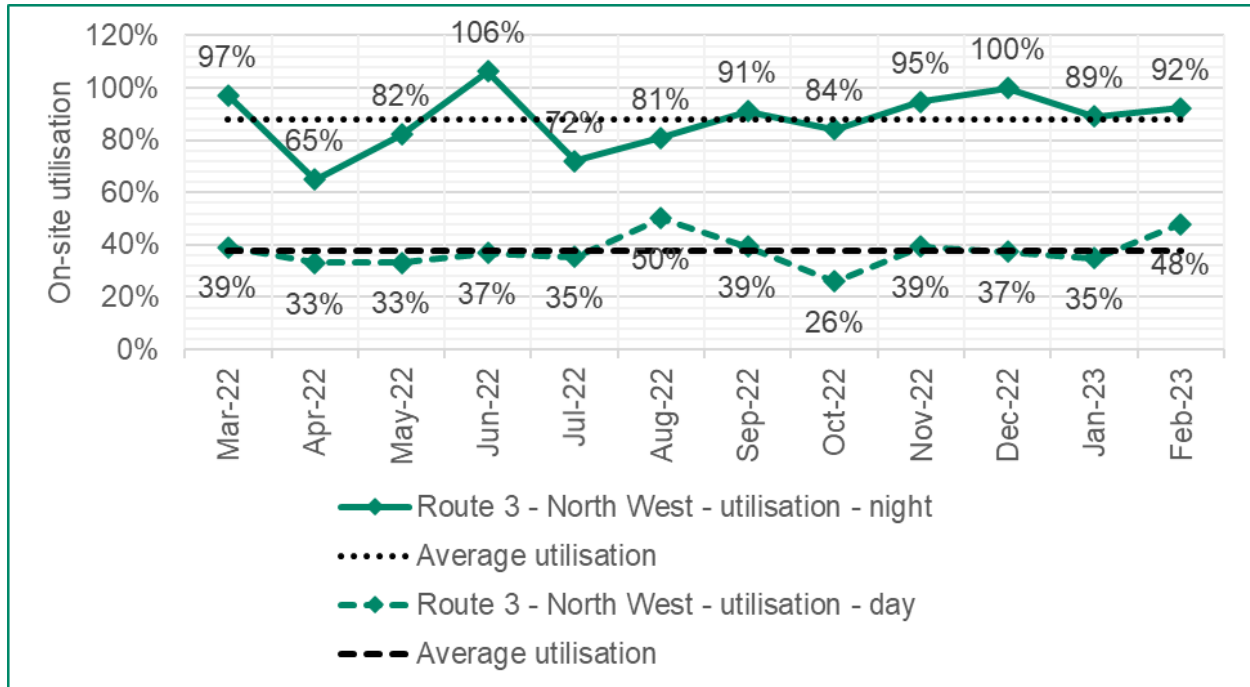


Route 3 North West

Figure 3-25 shows that night on-site utilisation on Route 3 North West averaged 88 per cent, whilst day averaged 38 per cent. Night on-site utilisation peaked at 106 per cent in June 2022 and dipped at 65 per cent in April 2022.

The reported on-site utilisation is against an on-site capacity for the route of 664 lorry parking spaces. On-site utilisation over 100 per cent indicates that vehicles were observed parked in areas not intended for this purpose (e.g. on slip-road, grass verges, etc) so over the intended capacity.

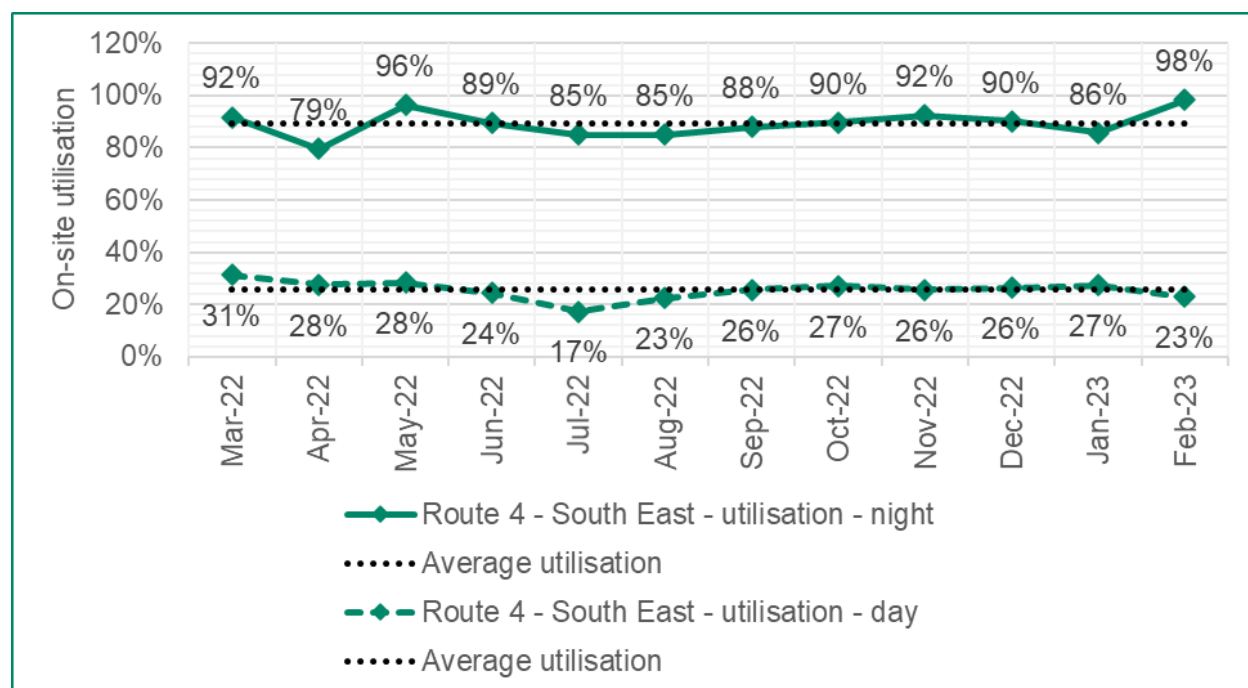
Figure 3-25: Utilisation by day and night at on-site parking facilities, including on-site vehicles



Route 4 South East

Figure 3-26 shows that night on-site utilisation on Route 4 South East averaged 89 per cent, whilst day averaged 26 per cent. Night on-site utilisation peaked at 98 per cent in February 2023, remaining above the national average of 83 per cent for 11 out of 12 months of the study. The reported on-site utilisation is against an on-site capacity for the route of 692 lorry parking spaces.

Figure 3-26: Utilisation by day and night at on-site parking facilities, including on-site vehicles



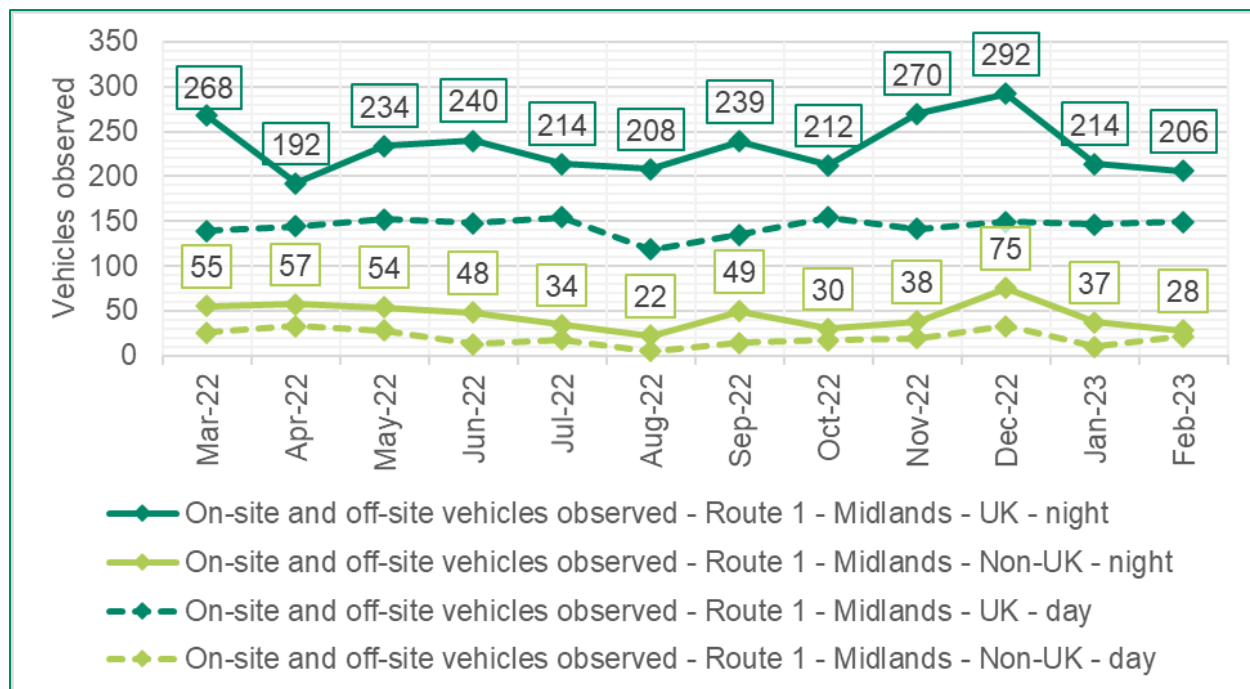
3.3.4 UK and non-UK registered vehicles observed at all on-site and off-site parking facilities

This section provides a breakdown of UK and non-UK registered vehicles observed on each route. A higher number of UK registered vehicles was recorded at on-site and off-site parking locations on all the routes during both day and night audits, except in the South East where the number of non-UK registered vehicles was much higher, especially at night. This can likely be explained by the fact that the South East route is on the corridor to mainland Europe and included Ashford International Truckstop.

Route 1 Midlands

Figure 3-27 shows that during both day and night, the highest number of vehicles observed on Route 1 Midlands was UK registered vehicles (292 in December 2022 at night).

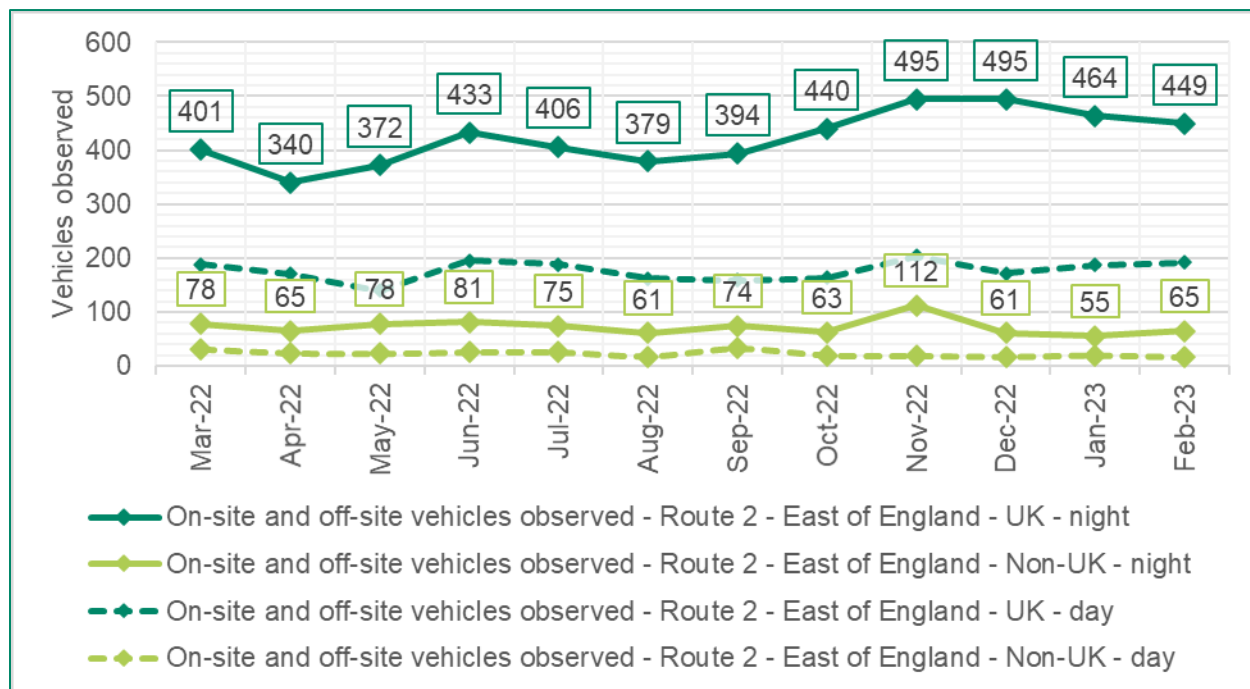
Figure 3-27: UK and non-UK registered vehicles observed by day and night, at all on-site and off-site parking locations



Route 2 East of England

Figure 3-28 shows that during both day and night, the highest number of vehicles observed on Route 2 East of England was UK registered vehicles (495 in November and December 2022 at night).

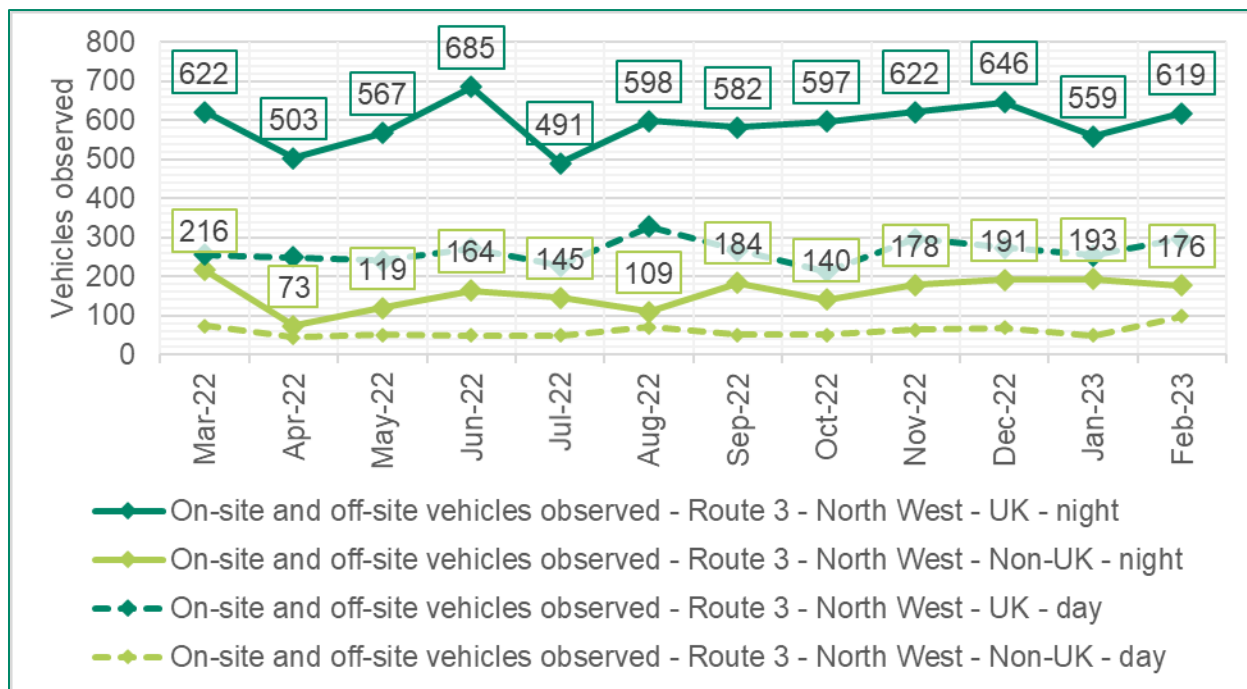
Figure 3-28: UK and non-UK registered vehicles observed by day and night, at all on-site and off-site parking locations



Route 3 North West

Figure 3-29 shows that during both day and night, the highest number of vehicles observed on Route 3 North West was UK registered vehicles (646 in December 2022 at night).

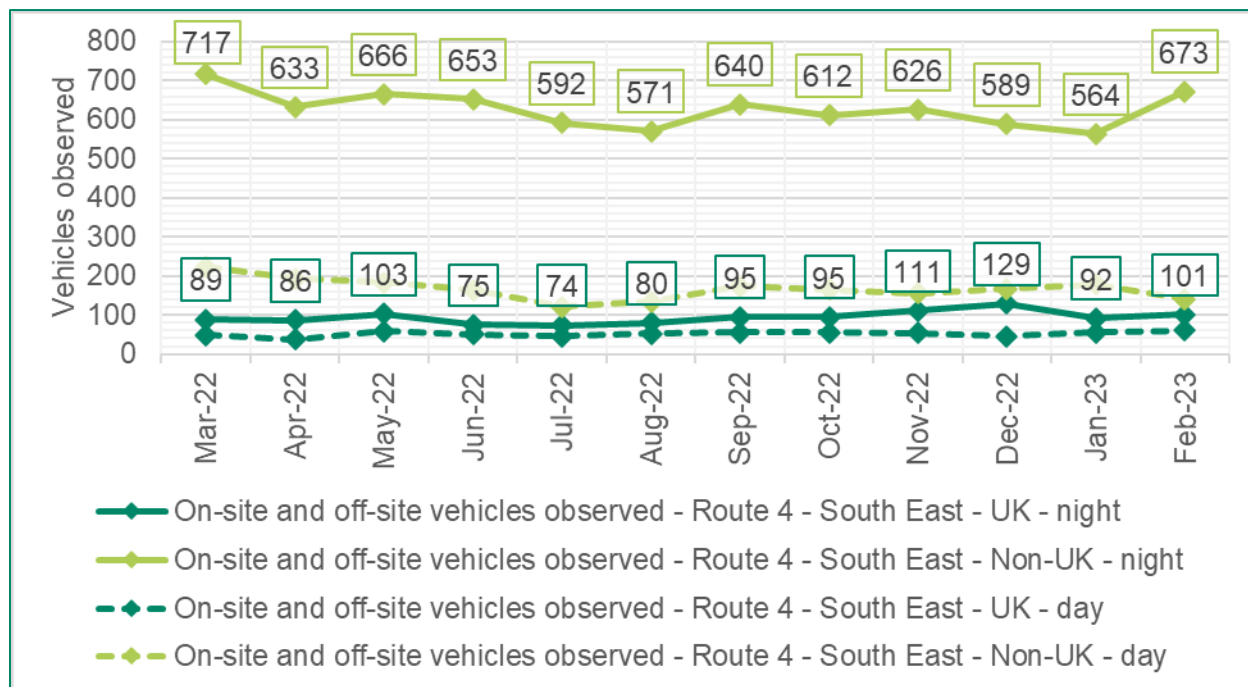
Figure 3-29: UK and non-UK registered vehicles observed by day and night, at all on-site and off-site parking locations



Route 4 South East

Figure 3-30 shows that during both day and night, unlike the other three routes, the highest number of vehicles observed on Route 4 South East was non-UK registered vehicles (717 in March 2022 at night).

Figure 3-30: UK and non-UK registered vehicles observed by day and night, at all on-site and off-site parking locations



3.3.5 Summary of on-site utilisation by route

Table 3-3 shows the difference in average on-site utilisation for each route.

The analysis highlights that the greatest percentage point difference in on-site utilisation between day and night was for Route 2 East of England at 68 per cent, followed by Route 4 South East at 63 per cent.

The smallest percentage point difference in day and night on-site utilisation was Route 1 Midlands at 24 per cent.

All routes had a similar average day on-site utilisation, with a 12 percentage point difference between the highest average day on-site utilisation and the lowest.

Table 3-3: Night and day average on-site utilisation over 12 months, and percentage point difference between night and day, by route

Routes	Night average on-site utilisation (12 months)	Day average on-site utilisation (12 months)	Percentage point difference in day and night on-site average utilisation (12 months)
Route 1 Midlands	62%	38%	24%
Route 2 East of England	99%	31%	68%
Route 3 North West	88%	38%	50%
Route 4 South East	89%	26%	63%
All routes	87%	32%	55%

All routes, except Route 1 Midlands, had an average night on-site utilisation above the national average of 83 per cent reported in the March 2022 DfT national survey of lorry parking, and above the critical level of 85 per cent or more.

Variations in terms of night on-site utilisations are shown by route at Table 3-4, which highlights the lowest and highest night on-site utilisation per route and the month for each. The highest night on-site utilisation was observed on Route 2 East of England in November 2022 (119 per cent) and the lowest on Route 1 Midlands (44 per cent) in August 2022. Route 4 South East had the smallest percentage point difference (19 per cent).

All four routes appeared to be the least utilised around the traditional UK Easter and summer holiday periods, although there does not seem to be any relationship between routes and the highest on-site utilisation – each one having a peak in a different month.

Table 3-4: Routes ranked by highest average night on-site utilisation over 12 months, showing lowest and highest monthly on-site utilisation, and the percentage point difference

Routes in ranked order (highest to lowest night average on-site utilisation over 12 months)	Night average on-site utilisation (12 months)	Lowest monthly utilisation	Lowest utilised month	Highest monthly utilisation	Highest utilised month	Percentage point difference in monthly on-site utilisation
1 Route 2 East of England	99%	84%	Sep-22	119%	Nov-22	35%
2 Route 4 South East	89%	79%	Apr-22	98%	Feb-23	19%
3 Route 3 North West	88%	65%	Apr-22	106%	Jun-22	41%
4 Route 1 Midlands	62%	44%	Aug-22	94%	Dec-22	50%

4 Summary and conclusion

The longitudinal audits undertaken from March 2022 to February 2023 inclusive are helping to better understand how levels of lorry parking fluctuate throughout the year and if there are regional differences in seasonal fluctuations.

Using the methodology detailed in section 2, a total of 236 sites were visited day and night each month across four different routes – Table 4-1. The routes selected were: Route 1 Midlands; Route 2 East of England; Route 3 North West; and Route 4 South East. The on-site lorry parking capacity for all routes was 1,954 spaces, representing 12 per cent of the March 2022 national survey of lorry parking on-site parking capacity.

Table 4-1: Number of on-site and off-site facilities across the four routes, and on-site parking capacity

		Routing				
		All routes	Route 1 Midlands	Route 2 East of England	Route 3 North West	Route 4 South East
Sites audited	On-site	27	9	7	7	4
	Off-site - laybys	177	40	72	33	32
	Off-site - industrial estates	32	4	8	14	6
	Total	236	53	87	54	42
On-site capacity	On-site ONLY capacity	1,954	249	349	664	692

All observations relate to the one-year study only and any patterns identified may not necessarily apply to other years, for example due to the current economic climate and wider global influences.

4.1 Seasonal fluctuations in vehicles observed at on-site and off-site parking locations

National – There was a notable difference in the number of vehicles observed at night and during the day across all on-site and off-site locations on the four routes, with an average of 2,241 vehicles at night and 905 during the day over the 12 months. The busiest month in terms of vehicles observed during night audits was December 2022, and the quietest months were April, August, and July 2022 respectively. The busiest month during day audits was March 2022.

At night, there was a variation of 27 per cent in vehicle numbers across all routes between the quietest month April 2022 and the busiest month December 2022.

In the day, the variation was 19 per cent across all routes, between the quietest month July 2022 and the busiest month March 2022.

Whilst there were monthly variations in the total number of vehicles observed both during the day and during the night, seasonal fluctuations are easier to see in the data for night-time parking. Assuming the level of observed lorry parking provides a reflection of the overall level of logistics activity across the road network, the seasonality seen in Figure 3-1 at section 3.2.1 can reasonably be expected to reflect the traditional UK Easter, Christmas, and summer holiday periods.

The number of vehicles observed at night at on-site **and** off-site locations on all routes combined exceeds the on-site capacity available on these routes for 11 months out of 12, with April 2022 being the exception where it was below on-site capacity by five vehicles. Although vehicles observed were also notably lower in July and August 2022, they were still above on-site capacity by 77 vehicles and 74 vehicles respectively.

Regional - The greatest night variation in terms of vehicles observed between the quietest month and the busiest month during the 12 months study period was on Route 1 Midlands at 60 per cent, followed by Route 2 East of England at 50 per cent and then Route 3 North West at 47 per cent. Route 4 South East, which is on the corridor to mainland Europe, had the lowest variation at 24 per cent. This may be attributed to the fact that UK seasonal fluctuations in demand for road freight are being accommodated by UK based hauliers. However, Route 4 South East encompassed the very large 650 capacity Ashford International Truckstop which was predominantly used by non-UK registered vehicles and was observed to be consistently at capacity during the year the study was undertaken, plus the small and very busy Maidstone services which was frequently observed to be over capacity. Bans on overnight parking in laybys in and around Ashford and on the A20 mean that at times of seasonal peaks, some drivers may have been forced to park away from the selected longitudinal route and thus the full effects of monthly/seasonal variations may be hidden.

Route 2 East of England was consistently above the on-site capacity for the route for nights during the study period.

The findings confirm that there are some regional variances in terms of seasonal fluctuations. Examples appear more obvious in the East of England and partially reflect volumes of trade. The A14 corridor from Suffolk to the Midlands is a major freight artery and it carries a high number of HGVs mainly due to it serving the largest container port in the country at Felixstowe. Although the container trade is a year-round business, there are seasonal fluctuations in volume that reflect, for example, consumer purchase cycles. Also, there is variation on Route 1 Midlands, which may be attributed to industrial shutdowns in to holiday periods in April and August.

4.2 Seasonal fluctuations in on-site utilisation

National - Although there was some seasonal fluctuation, the longitudinal audits confirm that there is a shortage of overnight lorry parking throughout the year, with an average night on-site utilisation for the 12 months across the four selected routes of 87 per cent, which is classed as critical (85 per cent or more). This aligns closely to the March national survey night on-site utilisation of 83 per cent.

Table 4-2 provides a comparison of the average night on-site utilisation across the 12 months compared with the March national survey. It shows that for Routes 2 East of England, Route 3 North West, and Route 4 South East, the night on-site utilisation is within eight per cent of the utilisation identified in the March national survey for the respective regions. Route 1 Midlands is 26 percentage point lower than its regionwide average.

Table 4-2: Comparison of night on-site utilisation between the longitudinal audit and the March national survey

Longitudinal audit (Part two)			March national survey (Part one)			Percentage point difference between longitudinal and national utilisation
12 months average night on-site utilisation			March national survey night on-site utilisation			
Route	Capacity	On-site utilisation	Region	Capacity	On-site utilisation	
Route 1 Midlands	249	62%	East and West Midlands	4889	88%	26%
Route 2 East of England	349	99%	East of England	2009	95%	4%
Route 3 North West	664	88%	North West	2107	80%	8%
Route 4 South East	692	89%	South East	3729	94%	5%
All four routes	1954	87%	All four regions	12734	89%	2%
			All nine regions	16761	83%	4%

When adding the total number of vehicles observed at off-site parking locations to the total number of vehicles observed at on-site parking facilities, and comparing this to the total on-site parking capacity, the potential average night on-site utilisation across all study routes would be 115 per cent.

The average day on-site utilisation across the four routes was 32 per cent (Table 4-3). There was a higher turnover of vehicles during the day than for overnight parking, but nonetheless this lower on-site utilisation highlights that there could be opportunities for roadside facility operators to improve their business model by diversifying during the day, for example using the space for trailer interchange, driver training, etc.

With the number of spaces needed for daytime being fairly consistently around a third of the night-time requirement, the 'spare' daytime spaces identified during the audit process could also be used for coaches, reverting to lorry parking at night. This utilisation of space would be most useful at MSAs where space for passenger vehicle

parking can become constrained during the day time. Equally, at night-time, coach spaces could be utilised by HGVs.

Table 4-3: Night and day on-site monthly utilisation across all routes, and average for the 12 months

On-site utilisation	Longitudinal audit period												Average on-site utilisation over 12 months
	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	
Night	91%	72%	86%	94%	80%	79%	84%	85%	96%	98%	87%	92%	87%
Day	34%	32%	32%	32%	29%	33%	33%	29%	34%	33%	32%	36%	32%

Regional - The individual average night on-site utilisation was above critical level (85 per cent or more), for all routes except Route 1 Midlands which was at 62 per cent. Night on-site utilisation for Route 2 East of England was 99 per cent, Route 3 North West was 88 per cent, and Route 4 South East was 89 per cent.

Table 4-4 summarises the night on-site utilisation by month. This highlights that night on-site utilisation was the lowest in August 2022 for Route 1 Midlands, September 2022 for Route 2 East of England, and April 2022 for Route 3 North West and Route 4 South East. All four routes were most utilised at different months of the study period, with no relationship between the months. Route 2 East of England peaked the highest at 119 per cent.

Table 4-4: Night on-site utilisation by month, across all routes, and by route

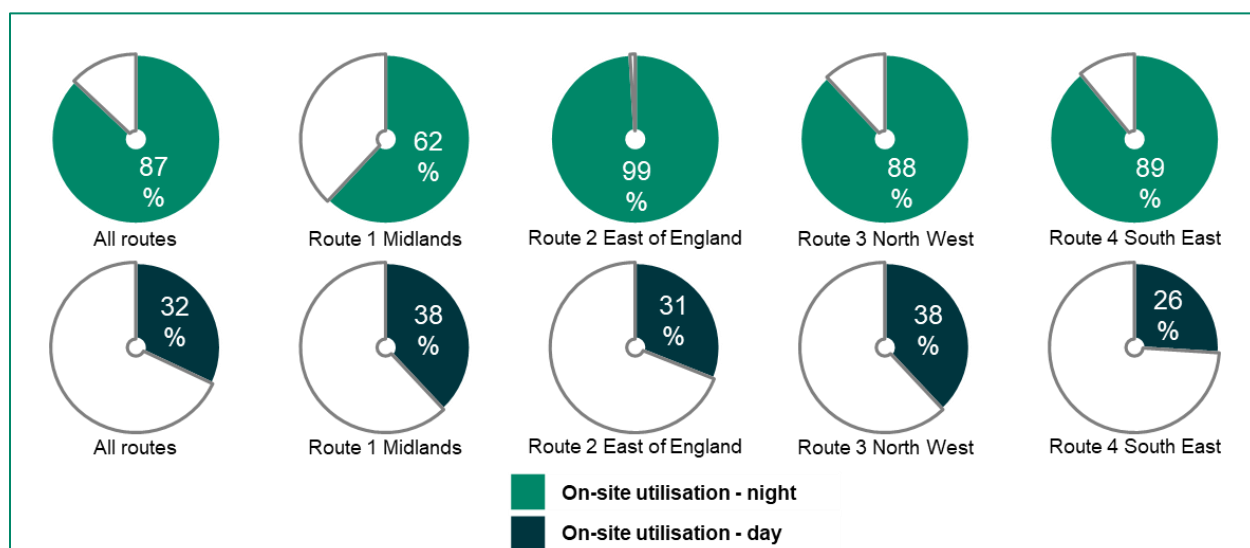
		Routing				
		All routes	Route 1 Midlands	Route 2 East of England	Route 3 North West	Route 4 South East
On-site utilisation at night by month	Mar-22	91%	76%	88%	97%	92%
	Apr-22	72%	52%	86%	65%	79%
	May-22	86%	66%	90%	82%	96%
	Jun-22	94%	65%	99%	106%	89%
	Jul-22	80%	54%	102%	72%	85%
	Aug-22	79%	44%	89%	81%	85%
	Sep-22	84%	57%	84%	91%	88%
	Oct-22	85%	50%	100%	84%	90%
	Nov-22	96%	75%	119%	95%	92%
	Dec-22	98%	94%	114%	100%	90%
	Jan-23	87%	59%	105%	89%	86%
	Feb-23	92%	57%	107%	92%	98%
	Average	87%	62%	99%	88%	89%

National and regional summary - Figure 4-1 summarises night and day average on-site utilisation by route

The on-site day lorry parking demand across all four routes was around a third of night-time demand, with the night on-site utilisation averaging 87 per cent of total on-site capacity.

Route 2 East of England had the highest average night on-site utilisation (99 per cent of total on-site capacity), and Route 1 Midlands had the lowest average (62 per cent of total on-site capacity).

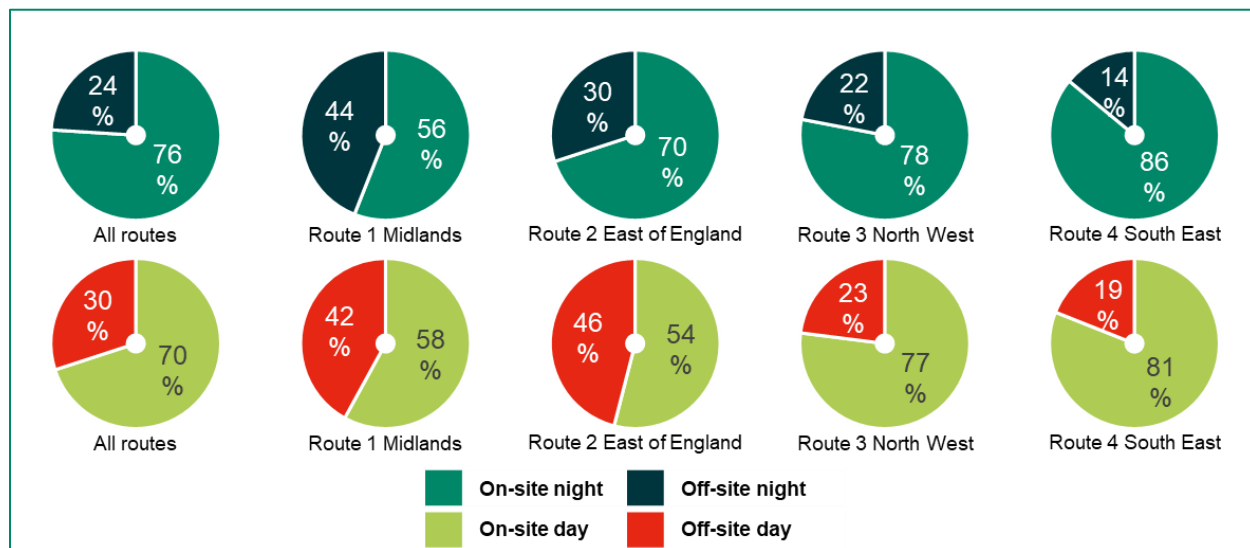
Figure 4-1: Average on-site utilisation by on-site vehicles by route, by night and day



4.3 Parking patterns

National - On average, at night, 76 per cent of vehicles across the four routes were observed at on-site parking facilities, whilst 14 per cent were observed at laybys and 10 per cent at industrial estates. This compares to the March 2022 national survey at 65 per cent of vehicles observed at on-site parking facilities in England. Figure 4-2 summarises day and night parking patterns for each route.

Figure 4-2: Split of vehicles observed at on-site and off-site parking locations by route, by night and day



The parking patterns identified during the longitudinal audits imply that lorry drivers on shorter legal/comfort breaks during the day stop where the nearest available facility is (MSAs), whereas at night, the data seems to indicate that drivers choose to travel to a facility of choice which may take them slightly off the motorway network (independent truckstops).

Regional - The data shows that Route 1 Midlands had the lowest proportion of vehicles observed at night at on-site parking facilities, 56 per cent, with 44 per cent at off-site parking locations.

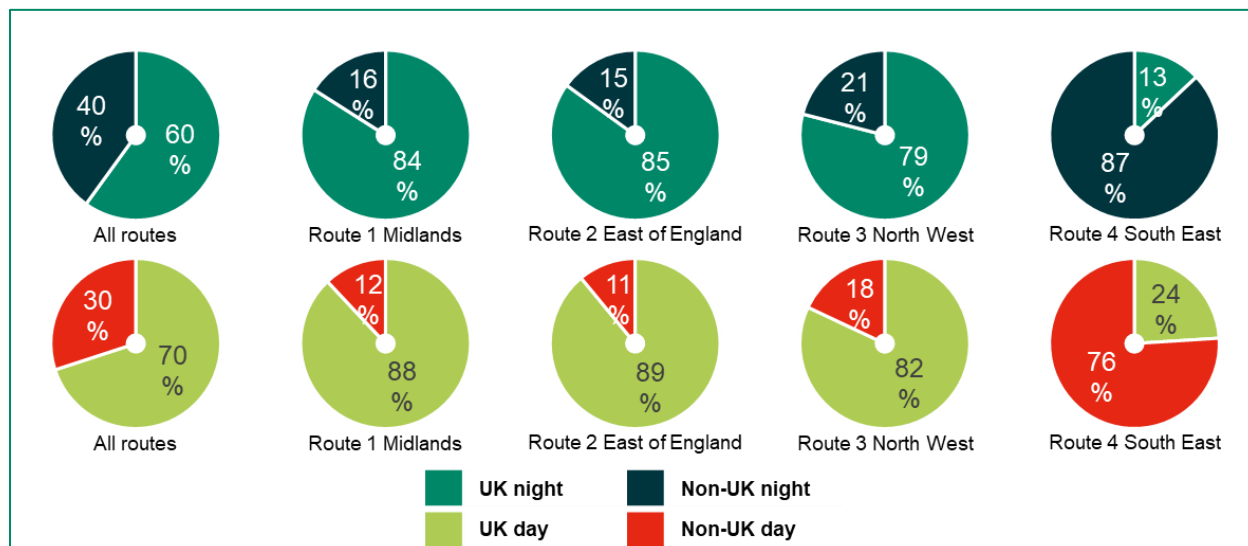
Route 4 South East had the highest proportion of vehicles observed at night at on-site parking facilities at 86 per cent, with 14 per cent at off-site parking locations – a likely explanation is that this route covers areas where overnight parking in industrial estates and laybys is banned.

The on-site proportions for Route 2 East of England and Route 3 North West for on-site parking facilities were 70 and 78 respectively, against 30 and 22 for off-site parking locations respectively.

4.4 UK and non-UK registered vehicle patterns

On average, 60 per cent of vehicles observed at night throughout the 12 months across the four selected routes were UK registered, and 40 per cent non-UK registered. Figure 4-3 summarises day and night UK and non-UK registered vehicle patterns.

Figure 4-3: Split of UK and non-UK registered vehicles observed by route, by night and day



A higher number of UK registered vehicles was recorded at on-site and off-site parking locations on all the routes during both day and night audits, except in the South East where the number of non-UK registered vehicles was much higher, especially at night (87 per cent on average at night). This may be explained by the fact that the South East route was on the corridor to mainland Europe and included Ashford International Truckstop.

There was a greater fluctuation throughout the 12 months for UK vehicles than for non-UK registered vehicles.

4.5 Conducting future longitudinal audits

Whilst the process of undertaking the national survey of lorry parking is well established, having previously been undertaken by AECOM for the DfT in 2010 and 2017, it was the first time the longitudinal audit process was carried out. A rationale for route selection was established, as detailed at section 2.2.5, that sought to find routes that represented a good cross section of the SRN in terms of levels and types of freight traffic and that

were manageable by the audit teams within the available study resource in terms of location, length, and parking intensity, as well as routes.

If the longitudinal audits are undertaken again, for benchmarking purposes, it will be important to keep the routes the same. However, in the light of experience of undertaking the route audits, the following points may be considered:

- **Number of sites/vehicles**

Table 2-1 in section 2.2.6 shows the number and type of parking location for each route. It can be seen from the longitudinal data in section 3.3.1 (Figure 3-10) that Route 3 North West and Route 4 South East had similar number of vehicles observed (between around 600 and 800 per monthly night audit), whereas Route 1 Midlands and Route 2 East of England are ‘smaller’ in terms of vehicle numbers (between 400 and 600 vehicles for Route 2 and between around 230 and 380 vehicles for Route 1). Whilst it is not critical from a data or statistical perspective for each route to be the same size (and in very rural locations this would be difficult), it would be easier from an audit planning and resourcing perspective to have routes of the same size. A further exercise could be undertaken to look at vehicle numbers and capacity at on-site parking facilities on each route to address this.

- **International traffic**

Route 4 South East covered part of the SRN that is the most intensively used by international freight vehicles. It included Ashford International Truckstop which is very large (650 vehicle capacity), was observed to be full all the time during the year this study was undertaken and was dominated by non-UK registered vehicles. This route also covered areas where overnight parking in industrial estates and laybys is banned. It seems probable that these factors are influencing the ‘seasonality’ of the data, in terms of dampening down seasonal variations as excess traffic will be parking off the route.

Notwithstanding that it would be important to keep the routes the same for benchmarking purposes, it would be worth considering removing Ashford International Truckstop from future longitudinal audits and include some alternative more ‘representative’ sites by altering the route.

- **Rural route**

A route entirely serving a rural economy could be added as a fifth route. Parts of the current routes serve rural locations but the addition of a fifth route, perhaps in North Yorkshire or the South West could provide a better picture of how, for example, certain types of agricultural economies and their traffic levels change throughout the year.