
FREETHS

South Holland District Council
Planning Services
Council Offices
Priory Road
Spalding
Lincolnshire
PE11 2XE

Direct dial: +44 (0)845 030 5748
Direct fax: +44 (0)115 859 9642
Switchboard: +44 (0)115 936 9369
Email: mark.bassett@freeths.co.uk

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Our Ref: MBA/2003/2162079/1/MB

By Email

Dear Sir/Madam

PROPOSED ROADSIDE SERVICES AND RECHARGE CENTRE COMPRISING EIGHT PUMP PETROL FILLING STATION AND SIX HGV PUMPS WITH CANOPIES, SERVICES BUILDING INCLUDING ANCILLARY RETAIL (118M²) (CLASS E(a)), SANDWICH SERVERY (58M²) (CLASS E(a) DRIVE THRU COFFEE SHOP (169M²) (CLASS E(b)), RESTAURANT/CAFÉ (120M²) (CLASS E(b) AND TOILETS/SHOWER FACILITIES; TWO ELECTRIC CHARGING POINTS; HGV PARKING AREA (61 SPACES) NEW VEHICULAR ACCESS/EGRESS, PARKING, SECURITY FENCING AND LANDSCAPING
LAND TO THE SOUTH OF JAMES ROAD, NORTH OF A16, CROWLAND

1. Further to our pre-applications discussions we submit on behalf of our client, Recharge Roadside Services Ltd, ("the Applicant"), a planning application for a roadside services and recharge centre, together with HGV parking and driver facilities at land to the south of James Road/ north of the A16.
2. The application comprises the following documents:
 - Completed Application Form and Ownership Certificate
 - CROWLA - WPS-PPL-005-P-01A_Location Plan A3
 - CROWLA - WPS-PPL-005-P-02C_Block Plan A1
 - CROWLA - WPS-PPL-005-P-03A_Existing Site Layout Plan A1
 - CROWLA - WPS-PPL-005-P-04C_Proposed Site Layout Plan 1-400 A1
 - CROWLA - WPS-PPL-005-P-05B_Proposed Site Layout Plan - HGV Only 1-200 A1
 - CROWLA - WPS-PPL-005-P-06B_Proposed Site Layout Plan - PFS Only 1-200 A1
 - CROWLA - WPS-PPL-005-P-07B_Proposed Site Elevations A1
 - CROWLA - WPS-PPL-005-P-08C_Proposed Building Plans A1
 - CROWLA - WPS-PPL-005-P-09B_Proposed Building Elevations A1
 - CROWLA - WPS-PPL-005-P-12A_Security Fence Details A3

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- CROWLA - WPS-PPL-005-P-13A_Compound Details A3
- CROWLA - WPS-PPL-005-P-14A_GRP Sub Station Details A3
- Planning Statement (this letter)
- Sequential Test (appended to this letter)
- Design and Access Statement (Freeths LLP)
- Flood Risk and Sustainable Drainage Strategy (Stirling Maynard)
- Transport Assessment (Connect Consultants)
- Noise Assessment (Acoustic Associates)
- Ecological Appraisal (FPCR)

Site and Surroundings

3. The site comprises approx. 1.37ha of agricultural land to the south of James Road and immediate north of the A16, to the south of Crowland. The site forms an agricultural field and sits directly to the east of a small group of trees, which are to the immediate west of the A16/James Road/Peterborough Rd roundabout. The site is relatively flat, sitting at a lower level than James Road and the A16.
4. With the exception of the west boundary which screens the site on the approach from the west & south, the site is relatively open with dispersed hedging/trees on the southern side. A drainage ditch marks the eastern boundary. The northern boundary with James Road is again open.
5. The site sits to the immediate south of Crowland, just outside the settlement boundary. The surrounding area is characterised by mainly residential development to the north, but also with what appears to be a Coach depot opposite the site on the west side of James Road and a scrap yard to the north of the site, accessed via Carrington Drove. .
6. The site is within Flood Zone 3. The site is not within a conservation area or in the immediate proximity of any listed buildings.

The Proposed Development

7. The proposal comprises the construction of a roadside services and recharge centre, with HGV parking. The site has been specifically identified to meet two specific needs;
 - (i) the day to day needs of Crowland.
 - (ii) to provide services for all drivers travelling along the A16 which connects Boston, Spalding, Peterborough and the A1.
 - (iii) to provide overnight parking and welfare facilities to HGV drivers
8. There are no credible alternatives in terms of sites accessible from suitable junctions and have a common boundary with the highway that can deliver the type of facility that is proposed. The site is in a preferable location as it shares a common boundary with the highway at a junction with a strategic north/south route (the A16) and is adjacent to a Main Service Centre in Crowland.

9. As identified on the Proposed Layout Plan (Ref WPS-PPL-005-P-04C), the proposed roadside services and recharge centre will comprise the following elements:
- Petrol Filling Station comprising x8 pumps for cars, x6 pumps for HGVs, a canopy, and an ancillary convenience store extending to 118m² (gross internal area);
 - Two electric vehicle charging points. The development will however have the infrastructure to enable the ability to expand the number of vehicle charging points as demand increases.
 - A drive thru coffee shop at 169m² (gross internal area);
 - A restaurant area 120m² (gross internal area);
 - A sandwich servery 58m² (gross internal area)
 - Showers/toilets
 - HGV Lorry Park (61 spaces)
 - 31 car parking spaces
10. The proposed development will be managed and operated by an established PFS operator. This will also offer economic and social benefits for the wider area through the creation of local job opportunities and other spin-off investment. It is estimated that circa 15-20 FTE jobs will be created by the scheme.
11. The development will be bound and finished by a combination of hard and soft landscaping.
12. The development is proposed to have separate access and egress points. The site will be accessed from the A16 only through the creation of a new access point, north of the roundabout. Egress will be onto James Road only. A new footway and crossing point is proposed to connect the development to the existing residential area to the immediate north of the site. The scheme has been subject to detailed pre-application advice discussions with the Highway Authority.

Electric Charging Provision

13. On 18 November 2020 the Government announced that the date for the ban on the sale of new petrol and diesel cars was being brought forward to 2030 (from 2040). The Government advised *"the move is underpinned by over £1.8 billion to support greater uptake of zero emission vehicles for greener car journeys. New measures include more chargepoints to build on our world-class infrastructure network, alongside innovation for new clean technologies."*
- <https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030>
14. Electric vehicles was also part of a wider announcement from the Prime Minister of a ten point plan for a green industrial revolution specifically *"to accelerate the transition to electric vehicles, and transforming our national infrastructure to better support electric vehicles."*
15. Yet the challenge to facilitate these ambitions is significant. The International Council on Clean Transportation ("ICCT") published a working paper in August 2020, so prior to the recent Government's announcement to bring forward the abolition of new petrol/diesel cars, entitled

‘Quantifying the Electric Vehicle Charging Infrastructure Gap in the United Kingdom.’ A copy of the report is provided as **Appendix A**. In summary some of the key conclusions are:

- At the end of 2019, approximately 280,000 electric cars had been sold in the UK and the electric share of new passenger cars was 3.2% in 2019
 - ICCT’s model applies two scenarios of electric vehicle growth, where electric vehicle sales reach 50% (scenario 1) and 70% (scenario 2) of new passenger cars sold by 2030 based on the UK government’s similar goals (at the time of the report)
 - The share of annual new registrations that are electric increases by 2030 from approximately 70,000 in 2019 to a projected 1.15 million in scenario 1 and to 1.61 million in scenario 2.
 - Cumulative electric vehicle stock for scenario 1, reflecting a 50% electric sales share in 2030, reaches approximately 5.2 million through to 2030, and 68% of those electric vehicles are Battery Electric Vehicles (BEVs). Scenario 2, with an electric sales share of 70% in 2030, reaches about 6.7 million total electric vehicles, 69% of which are BEVs, by the end of 2030.
 - Whilst ‘at home’ charging will account for 90% of the number of chargers required, the report concludes that *“increased public and workplace charging is critical for a comprehensive and convenient ecosystem for growing electric vehicle fleet”*.
 - Under Scenario 1 a total of 325,701 ‘normal’ chargers will be required (defined as public and workplace) across the UK by 2030 and a further 12,720 ‘fast chargers’. In 2019 there were 19,874 normal chargers and 2,739 fast chargers.
 - Under Scenario 2 a total of 410,168 ‘normal’ chargers will be required and a further 15,830 fast chargers.
16. What is clear is that these figures will need to increase as a consequence of the Government’s announcement on the ban of petrol/diesel cars being brought forward to 2030.
17. The proposed scheme provides the necessary infrastructure for the number of electric charging points to be increased on the site as demand grows.

Planning Policy

18. Section 38 (6) of the Planning and Compulsory Act 2004, requires all planning decisions to be made in accordance with the Development Plan, unless material considerations indicate otherwise.
19. The Development Plan comprises the South East Lincolnshire Local Plan (adopted 2019) (“SELLP”). The key relevant policies of the SELLP, are identified below and the proposed scheme is assessed against these policies further into this statement.
- Policy 1: Spatial Strategy
 - Policy 2: Development Management
 - Policy 3: Design of New Development
 - Policy 4: Approach to Flood Risk
 - Policy 24: The Retail Hierarchy
 - Policy 28: The Natural Environment

- Policy 30: Pollution
- Policy 31: Climate Change and Renewable and Low Carbon Energy
- Policy 36: Vehicle and Cycle Parking

National Planning Policy Framework ("NPPF") (2019)

20. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.
21. Chapter 9 of the NPPF relates to transport matters. The only specific reference relating to service or roadside provision Para 104 (e) of the NPPF states policies should *"provide for any large scale transport facilities that need to be located in the area, and the infrastructure and wider development required to support their operation, expansion and contribution to the wider economy."* The footnote includes roadside services.
22. The proposed development is not considered to be a large scale transport facility of the size that is relevant to this part of the NPPF. Para 104 also relates to plan-making rather than development management. Whilst not directly relevant, the paragraph does however confirm that such facilities can be deemed to be defined as a transport facility.
23. Paragraph 86 of the NPPF states that LPAs should apply a Sequential Test to applications for main town centres uses which are neither in an existing centre nor in accordance with an up to date plan. Paragraph 89 states that retail or leisure impact assessments should be undertaken if over a proportionate locally set threshold (or 2500m² of gross floor space)
24. Chapter 14 of the NPPF sets out policy in respect to flooding. It requires the application of a Sequential Test to direct development to areas of least flood risk, wherever possible, and a site specific flood risk assessment. It also sets out the circumstances on when the Exception Test is applied.

Principle

25. The site is located adjacent but outside of the settlement of Crowland and is therefore classed as countryside. Policy 1 of the SELLP states:

"In the Countryside development will be permitted that is necessary to such a location and/or where it can be demonstrated that it meets the sustainable development needs of the area in terms of economic, community or environmental benefits."
26. The purpose of the proposed development is to meet the sustainable needs of the area. This is defined as Crowland as a settlement and the A16 corridor as a strategic route between Peterborough and Spalding.
27. Crowland is a Main Service Centre as defined in the SELLP and has many day to day services and facilities but no existing petrol filling station/recharge centre, the addition of which would enhance the sustainability of the settlement. The closest existing facility is located at Eye

Green approximately 4 miles to the south of Crowland. Travelling north along the A16 the next services are Applegreen, south of Spalding approximately 9 miles away from Crowland.

28. Although there is a clear functional need for the development to be located adjacent to the A16, which is the main north/south route, in order to demonstrate that the proposal is necessary in its proposed location, we have examined whether the development could be accommodated within the settlement limits of Crowland.
29. **Appendix B** contains a Sequential Test. The principal purpose of the Sequential Test is to demonstrate the site's acceptability in flooding terms in accordance with Policy 4 of the SELLP and the relevant provisions of the NPPF (wider flooding considerations are dealt with later). However, the Sequential Test also demonstrates that the proposed development cannot be accommodated within the settlement boundary of Crowland (ie: the development cannot be delivered elsewhere which would bring about the benefits to Crowland in any event).
30. The proposed development brings about a number of economic, community and environmental benefits which provide compliance with Policy 1. These are set out below.

Jobs

31. The creation of circa 15-20 full time equivalent jobs. This is an economic benefit.

Crowland's Sustainability

32. The proposed development will widen the provision of facilities for Crowland as a settlement through providing a petrol filling station and recharge centre for its residents. This is a community benefit.

HGV Parking and Welfare Facilities for Drivers

33. The proposed development will provide much required capacity for HGV drivers in respect of parking; fuel pumps and changing facilities. There is a significant shortfall in the provision of services and facilities for HGV drivers on the network. This was confirmed as an issue by the LPA and the Highway Authority during pre-application discussions.
34. In 2018 the Department for Transport (DfT) published a report entitled 'National Survey of Lorry Parking'. Although clearly presenting a national picture, the report also broke findings down to the nine regions. The aim of the study was to assess capacity and demand for overnight lorry parking, a similar study was undertaken in 2010. A copy of the DfT report is provided as **Appendix C**. Some of the key findings of the survey were as follows: *(Note: the site is classed as being within the East Midlands, albeit it is near the 'border' with East of England.)*
 - During the month long survey (March 2017), 18,670 vehicles were counted parked overnight across England in off-site and on-site locations.
 - The total capacity of on-site spaces available in lorry parks or motorway service areas (MSAs) was found to be 15,012.
 - Compared with the total number of vehicles counted, there was an excess of 3,658 vehicles that could not be parked even if every parking space could be filled.

- Regions with $\geq 70\%$ utilisation of lorry parks include:
 - East of England 97%
 - West Midlands 87%
 - South East 84%
 - Yorkshire and Humber 76%
 - East Midlands 72%
 - South West 72%
- Lorry park utilisation has increased nationally from 58% in 2010 to 76% in 2017. In the East Midlands this rose from 56% to 72%
- 39% of all vehicles recorded were parked off-site in laybys or Industrial Estates.

Table 6.1 of the DfT report is shown below:

Table 6.1- National overview of result

Region	Lorry Park Capacity	Parked vehicles				Total Parked Vehicles	Excess Vehicles
		On-site	On site utilisation	Industrial estates	Lay-bys		
East Midlands	2,167	1,550	72%	561	703	3,032	865
East of England	1,943	1,892	97%	107	624	2,854	911
London	207	99	48%	15	16	136	-71
North East	405	244	60%	298	170	745	340
North West	2,573	1,397	54%	536	347	2,357	-216
South East	2,871	2,423	84%	235	655	3,723	852
South West	1,084	783	72%	130	294	1,272	188
West Midlands	1,906	1,663	87%	352	388	2,519	613
Yorkshire and Humber	1,856	1,418	76%	258	305	2,032	176
England	15,012	11,469	76%	2,492	4,709	18,670	3,658

35. The above table demonstrates the volume of excess vehicles for which there is no capacity for parking. The East Midlands has one of the highest figures for excess vehicles.
36. Table 6.6 of the survey also summarises the quality of the provision of Lorry Park's by providing them with a 'truck stop rating'. A rating of '1' being the 'basic', comprising somewhere to park and provision of toilets; up to '5', classed as 'high end' and comprising toilets, lighting, shower, café, security fence, accommodation & CCTV. The East Midlands has one of the lowest proportions of 4 and 5 rated truck stops, with approximately 87% rated 1-3. The proposed scheme would fall within truck stop rating category 4. Whilst it is recognised that these conclusions are on a regional level, it nevertheless underlines the issue of an absence of suitable facilities both from a quantitative and qualitative perspective.
37. The absence of appropriate facilities leads to HGV's parking in undesignated roadside areas which can compromise highway safety and the safety and well-being of the drivers. The proposed development delivers a specifically targeted facility that allows HGV's drivers to visit the site as a destination within planned journeys. This has significant benefits for the welfare

of HGV drivers, who can access appropriate facilities but also reduces inappropriate parking and improves highway safety.

38. The provision of enhanced HGV drivers facilities is an economic benefit through increased expenditure through use of the facilities and a community benefit through making appropriate provision for an identified need.

Electric Vehicle Charging

39. The scheme has an environmental benefit through the provision of EV charging points, with the infrastructure capacity to increase provision as demand dictates. As set out in paragraphs 13-17 the need for EV charging points will increase dramatically over the next 10 years. Whilst the development makes modest provision at present to cater for current demand, the key point is that the infrastructure exists to ensure that the provision can be increased.

Summary of Benefits

40. The proposed development has demonstrated that it meets the sustainable needs of the area providing economic, community and environmental benefits. The proposal will add to the sustainability of Crowland as a settlement but will also meet demand for roadside services, particularly enhanced HGV provision. The Sequential Test has demonstrated that a countryside location is necessary, given the position of the A16 as the strategic highway in the area.

Town Centre Impact

41. Paragraph 86 of the NPPF advises that local planning authorities should apply a Sequential Test to planning applications for main town centre uses which are neither in an existing centre nor in accordance with an up-to-date plan. Policy 24 of the SELLP also has this requirement. The forecourt shop, sandwich servery, coffee shop/drive thru and restaurant would constitute Town Centre uses. The forecourt shop is ancillary to the road services, which, if located within a Town Centre, wouldn't meet the needs of motorists travelling on the A16. The coffee shop/drive thru, sandwich servery and restaurant are complementary uses which should not be disaggregated from the wider development. The strict application of the sequential approach here would be neither proportionate nor appropriate as is required by the Practice Guidance. However, the sequential test exercise undertaken to demonstrate that the site is suitable from a flooding perspective and to demonstrate that the benefits of the proposal could not be delivered within the settlement, also show that the main town centre uses could not be accommodated either within or on the edge of Crowland's primary shopping area.
42. Paragraph 89 of the NPPF advises that, when assessing applications for retail development outside town centres, local planning authorities should require an Impact Assessment if the development is over a proportionate, locally set floorspace threshold. Policy 27 of the SELLP states that a robust assessment of impact on nearby town centres should be provided for schemes with a retail floor space of 250sqm (net) or more outside Spalding town centre boundary and the District and Local Centres. Crowland is classed as a Local Centre.

43. The retail floor space proposed with this development totals 176m² (forecourt shop + sandwich servery outlet) and so is under the threshold for impact assessment on town centres. Notwithstanding this, the proposed development will act as an interceptor of trips, not as a shopping destination and generator of new trips. It will intercept and serve traffic along the A16 and any impact as a result of trade diversion will be dispersed over a wide geographical area.
44. Taking into account all material considerations, the development is acceptable in respect of Town Centre impact and in accordance with Policy 24 of the SELLP and the relevant provisions of the NPPF.

Flooding and Drainage

45. The site is located within Flood Zone 3. The application is accompanied by a Sequential Test (Appendix B of this Statement) and a Flood Risk Assessment and Drainage Statement ("FRA").
46. Policy 4 of the SELLP sets out the approach to flood risk and management of development. It states that "Development proposed within an area at risk of flooding (Flood Zones 2 and 3 of the Environment Agency's flood map or at risk during a breach or overtopping scenario as shown on the flood hazard and depths maps in the Strategic Flood Risk Assessment) will be permitted, where....". The policy then sets out three components of assessment that have to be met, which in summary are:
- i. Sequential Test
 - ii. It can be demonstrated that essential infrastructure in FZ3a & FZ3b, highly vulnerable development in FZ2 and more vulnerable development in FZ3 provide wider sustainability benefits to the community that outweigh flood risk
 - iii. That a site specific FRA can meet a range of requirements including but not limited to, demonstration that the development will be made safe from flooding and that the proposal will not increase risk elsewhere.
47. As referenced earlier in this statement, a detailed Sequential Test exercise has been undertaken in respect of alternative potential sites (Appendix B). There are no sites available to deliver the proposed development that are at a lesser risk of flooding. The proposed development passes the sequential test and in this respect complies with Policy 4 of the SELLP and paragraph 158 of the NPPF.
48. Item 2 of Policy 4 is the Exception Test, as also required under paragraph 160 of the NPPF. The NPPG sets out through table 2 the flood risk vulnerability classifications and table 3 provides flood zone compatibility. Not all vulnerable classifications require the application of the Exception Test. The proposed development would most appropriately fall within the description of "*Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure* (our emphasis added)." This is classed as 'less vulnerable'. Service stations are not specifically referenced in Table 2 but are not considered as 'essential transport infrastructure'.

On this basis of the development being classified as less vulnerable the scheme does not need to pass the Exception Test.

49. The FRA concludes that the main risks of flooding to the development are from a breach of the Crowland washes embankment as stated in the South East Lincolnshire Strategic Flood Risk Assessment (March 2017) and the 2016 Update of South Holland Flood Risk Assessment. The finished floor levels for the site will be a minimum of 0.9mAOD and a Flood Evacuation Plan has been prepared for the site. The FRA explains that in order to ensure that the proposed development does not increase the risk of flooding elsewhere a sustainable urban drainage scheme has been designed that will limit run off to the appropriate rates.
50. The scheme has appropriately considered flood risk and the development complies with the requirements of Policy 4 of the SELLP and the relevant provisions of the NPPF.

Access

51. Paragraph 108 of the NPPF requires that appropriate opportunities to promote sustainable transport modes are taken up, given the type of development proposed and its location. Safe and suitable access to the site should be achieved for all users.
52. The application is accompanied by a Transport Statement ("TS"). The TS identifies that given the nature of the proposed development, which typically car drivers for refuelling, the level of customers accessing the development on foot is likely to low. However, there is a need to make the site accessible through walking, particularly given that staff may be local to the site. At present there are no existing footways on the James Road and an opportunity exists to connect the site to the wider pedestrian network, with the closest footway being at the junction of Goldcrest Road and James Road to the north of the site.
53. The application includes a pedestrian connection between the site and Goldcrest Road with a footway on the east side of James Road and a crossing including a dropped kerb and a refuge island. This will allow connection to the wider pedestrian network and ensure that the site is suitably connected to the built settlement of Crowland. The proposed development suitably promotes sustainable transport modes in accordance with the requirements of Paragraph 108 of the NPPF.
54. The vehicular site access will be via a left in only junction from the A16 approximately 80m east of the A16/James Road/Peterborough Road roundabout. Vehicles approaching from the north will have to use the roundabout in order to access the site. Egress will be provided via a priority junction onto James Road. The TS includes swept path analysis to demonstrate that the access and egress arrangements are suitable for the proposed use. The scheme accords with the requirements of Paragraph 108 of the NPPF in respect of the creation of a safe and suitable access.
55. The TS assesses the impact of the proposed development in respect of traffic and identifies a localised study area comprising of the access and egress junctions and the A16 roundabout. The TS adopts an assumption of 90% pass-by/diverted trips and 10% new to the study network. The 90% pass-by and diverted trips will not result in new trips on the study area network, but will result in a redistribution of trips on the A16 and James Road and in particular

at the James Road approach of the A16 / James Road / Peterborough Road roundabout junction. The TS confirms that the number of new trips will be a negligible change. The junction capacity testing confirms that the proposed development will have a minimal effect on the overall operation of the A16 roundabout junction. The development conforms with the requirement of paragraph 109 of the NPPF in that the residual cumulative impact on the road network would not be severe.

56. Policy 34 and Appendix 6 of the SELLP sets out parking requirements for proposed development. The TS confirms that there are no standards specified for a service station and *“all other types of development will be assessed on a site by site basis.”* The proposed parking provision of 21 customer parking spaces, 12 staff parking spaces and 61 HGV parking spaces are proposed based on operator requirements. One of the principal purposes of the development is to provide adequate parking areas for HGV drivers and there is also a requirement to ensure ample parking for people visiting the restaurant/café facilities on the site. The level of parking is considered reasonable for the type of development proposed.

Design

57. Policy 2 (Development Management) of the SELLP seeks to achieve, amongst other matters, appropriate 'size, scale, layout, density' of development, together with quality of design. Policy 3 (Design of New Development) sets out a wide range of requirements which include having regard for the landscape character of the location.
58. The proposed building which will contain the ancillary retail for the service station, the café and restaurant are proposed to be located at the south west point of the site. The small copse of trees to the immediate south west will act as a screen to the development when approaching from the south along Peterborough Road or the south west along the A16. The building is sufficiently set away from the trees, which are not part of the site, to have no impact on them from an arboricultural viewpoint.
59. The discreet location of the building is complemented by a design that recognises the site's rural edge character. The massing of the building is minimised through the floor space being predominately accommodated at ground floor. The building has a gentle curved roof and this will sit lower in height than the adjacent canopy for the petrol filling station. There is an operational requirement to provide showers/changing facilities as part of the development and these are accommodated within the first floor which has been minimised in scale to sit centrally within the roof space and is designed with a flat roof.
60. The proposed building utilises a range of good quality materials, with a high volume of glazing and a combination of silver/grey composite and Cedral wall cladding.
61. The proposed layout incorporates generous areas of landscaping on the north western and south eastern boundaries which will assist in softening the development, complementing existing wide highway verges. Having regard for the character and function of the A16 as a strategic highway route and in the context of built development in the settlement of Crowland, the proposed development will have an acceptable impact on the rural edge landscape of the site. The proposed development complies with the design related aspects of Policies 2 and 3 of the SELLP.

Ecology

62. An Ecological Appraisal (EcA) is submitted in support of the application. It confirms that no statutory or non-statutory designated sites for nature conservation are located on-site or within a 10km radius of the site boundary. As such, no negative effects are likely to be brought on any sites of ecological designation as a result of the proposed works.
63. The EcA identifies that the majority of the site is cultivated arable land and has negligible intrinsic ecological value. The report also confirmed that the very limited loss of tall ruderal habitat and poor semi-improved grassland does not pose a constraint to development.
64. The EcA assessed the potential for the site to support a range of protected species and in each instance does not consider that any further surveys are necessary pre-determination of the planning application. The scheme complies with the requirements of paragraphs 170 and 175 of the NPPF.

Noise

65. Policy 2 of the SELLP lists a range of sustainable development considerations that have to be met including impact on neighbouring land uses by reason of noise. A Noise Assessment ("NA") has been prepared in support of the application.
66. The NA identifies that the main contributors to noise emissions from the proposed site are related to the movement of HGV's on and off the site as well as potentially noise emissions from refrigeration units. It confirms that the noise emissions associated with the movements of vehicles on and off the site are unlikely to be significantly out of character with the existing ambient noise climate, given the proximity of the A16 and James Road. The NA advises that having regard for the existing noise climate and the proposed development's ability to achieve acceptable internal and external noise levels in accordance with BS 8233 and the WHO Guidelines, then this is deemed to be an acceptable noise situation.
67. The NA concludes that the noise impact on the nearest noise sensitive receptors is likely to be at the "Observed Adverse Effect Level" (*applying criteria from the Noise Policy Statement for England* and this is unlikely to affect the acoustic character of the area such that there is a perceived change in the quality of life will occur for nearby residents. This is deemed to be an acceptable noise situation. NPPG). However given the existing ambient noise climate on the A16 and James Road the proposal is not considered to result in a perceived change in the quality of life for nearby residents and is an acceptable noise impact. The proposal complies with Policy 2 of the SELLP.

Conclusion

68. The proposed development will deliver high quality roadside services and recharge centre, together with HGV parking and associated welfare facilities. The application has demonstrated that the proposed development brings about a range of benefits which justify an approval under

Policy 1 of the SELLP, having regard for it's out of settlement location. Further, the Sequential Test has shown that there are no other reasonably available sites that could meet the requirements of the proposal.

69. The scheme is appropriate in flooding terms and has demonstrated that there are no technical constraints to the site or through the impact of the development that are not acceptable. The design of the scheme is appropriate for the development type and has minimised the impact on the wider open countryside.
70. The scheme accords with the requirements of the Development Plan and therefore in accordance with paragraph 11 of the NPPF, permission should be granted without delay.

Yours faithfully

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Mark Bassett
Principal Manager
Freeths LLP
Please respond by e-mail where possible

Appendix A: ICCT working paper '*Quantifying the Electric Vehicle Charging Infrastructure Gap in the United Kingdom*' (August 2020).

Appendix B: Sequential Test

Appendix C: DfT: National Survey of Lorry Parking

Appendix A: ICCT working paper '*Quantifying the Electric Vehicle Charging Infrastructure Gap in the United Kingdom*' (August 2020).

Quantifying the electric vehicle charging infrastructure gap in the United Kingdom

Authors: Michael Nicholas and Nic Lutsey

Keywords: Electric vehicles, charging infrastructure

Introduction

The United Kingdom (UK) has seen rapid growth in the electrification of its passenger car market, and the trend is expected to continue. Plug-in electric models represented 3.2% of new passenger car registrations in 2019, and that share has approximately tripled in the first half of 2020.¹ The UK has set a goal of 50%–70% of the new car market being ultra-low emission by 2030² to achieve climate, air quality, and energy security ambitions. The government also is considering shifting forward its 100% zero-emission new car sales goal to 2035 from the existing 2040 target.³ Scotland aims to fully “phase out the need to buy petrol and diesel cars or vans” by 2032.⁴

Achieving the UK’s electric vehicle targets will require sustained support, including regulations and taxation policies to spur vehicle investment and deployment. Rapid electric vehicle market expansion also will require a convenient charging infrastructure network. The charging infrastructure will need to expand and adapt as battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), with backup combustion engines, are introduced more widely. Whereas early adopters can typically rely on

1 “December – EV registrations,” Society of Motor Manufacturers and Traders (SMMT), January 7, 2020, <https://www.smmt.co.uk/2020/01/december-ev-registrations-3/>; “June – EV registrations,” SMMT, July 5, 2020, <https://www.smmt.co.uk/2020/07/june-ev-registrations-3/>.

2 Department for Transport, “The Road to Zero,” 2018, <https://www.gov.uk/government/publications/reducing-emissions-from-road-transport-road-to-zero-strategy>.

3 Department for Transport, “Open consultation: Consulting on ending the sale of new petrol, diesel and hybrid cars and vans,” February 20, 2020, <https://www.gov.uk/government/consultations/consulting-on-ending-the-sale-of-new-petrol-diesel-and-hybrid-cars-and-vans/>.

4 Scottish Government, “Climate Change Plan: Third report on proposals and policies 2018–2032 (RPP3),” 2018, <https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/pages/12/>.

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[twitter @theicct](https://twitter.com/theicct)

charging at home,⁵ new electric vehicle drivers in the 2020–2030 time frame will increasingly need a variety of charging options.

This paper assesses the electric vehicle charging infrastructure necessary to power electric passenger cars in the UK by 2030. Two plug-in electric vehicle uptake scenarios—50% and 70% of new passenger car sales by 2030—are explored to evaluate the charging infrastructure needed to support the UK's transition to electric. To inform national and local-level charging infrastructure policy, as well as help steer public and private investments, this report quantifies the amount of public, workplace, and rapid charging needed across UK metropolitan and nonmetropolitan areas. The charging assessment reflects best-available market and charging behavior data, expected increases in electric range and charging speed, and the increased need for public charging as the market broadens beyond early adopters. This assessment is based on charging needs for electric passenger cars; additional charging would be needed to support light commercial vans and other vehicle types.

Market characterization of vehicles and charging

In parallel with the growth in the number of electric vehicles on UK roads through 2019, the number of charging points has steadily increased. The following section describes these developments and provides background information on charging infrastructure in the UK, including technical charging specifications, housing stock, and home charging access.

Market overview for electric vehicles and charging infrastructure

Through the end of 2019, approximately 280,000 electric cars had been sold in the UK, and the electric share of new passenger cars was 3.2% in 2019.⁶ Electric car shares vary greatly across metropolitan and nonmetropolitan areas,⁷ as defined on the European Union's Eurostat Metropolitan Region web page.⁸ These metropolitan areas differ from other boundary definitions. Notably the “London metropolitan area” analyzed here is larger than the “greater London area,” which does not include outlying areas. New vehicle registration data are considered in this analysis to be nearly synonymous with new vehicle sales as a measure of new electric vehicle uptake. Electric vehicle uptake and charging trends are assessed across the 41 UK metropolitan areas and 11 nonmetropolitan areas in England, Scotland, Wales, and Northern Ireland.

Figure 1 shows electric vehicle uptake across 52 metropolitan and nonmetropolitan areas of the UK in two ways.⁹ The left map shows the share of 2019 new passenger car registrations that were electric. The electric vehicle uptake varies from about 1% to greater than 4%. Areas outside of a metropolitan area are denoted with a hatched pattern. On the right, the electric vehicle stock through the end of 2019 is shown normalized on a per-million-inhabitant basis. Vehicle stock gives a measure of the cumulative popularity of electric vehicles since 2010 when modern electric vehicles began to be introduced in the market. The red dots denote a charging location and are shown for context. There are 41 metropolitan areas shown and 11 nonmetropolitan regions delineated by thick dark outlines.

5 Systra, “Plugging the Gap: An Assessment of Future Demand for Britain's Electric Vehicle Public Charging Network Summary of Findings,” 2018, <https://www.theccc.org.uk/wp-content/uploads/2018/01/Plugging-the-gap-Assessment-of-future-demand-for-Britains-EV-public-charging-network.pdf>

6 EV-Volumes.com, “EV Data Center, 2020,” retrieved from <http://www.ev-volumes.com/datacenter/>

7 Sandra Wappelhorst, Dale Hall, Mike Nicholas, and Nic Lutsey, *Analyzing policies to grow the electric vehicle market in European cities*, (ICCT: Washington DC, 2020), <http://www.theicct.org/publications/electric-vehicle-policies-eu-cities>

8 Eurostat, “Metropolitan Regions,” accessed May 5, 2020, <https://ec.europa.eu/eurostat/web/metropolitan-regions/background>

9 Dale Hall, Sandra Wappelhorst, Peter Mock, and Nic Lutsey, *European electric vehicle factbook 2019–2020*, (ICCT: Washington, DC, 2020), <https://theicct.org/publications/european-electric-vehicle-factbook-20192020>

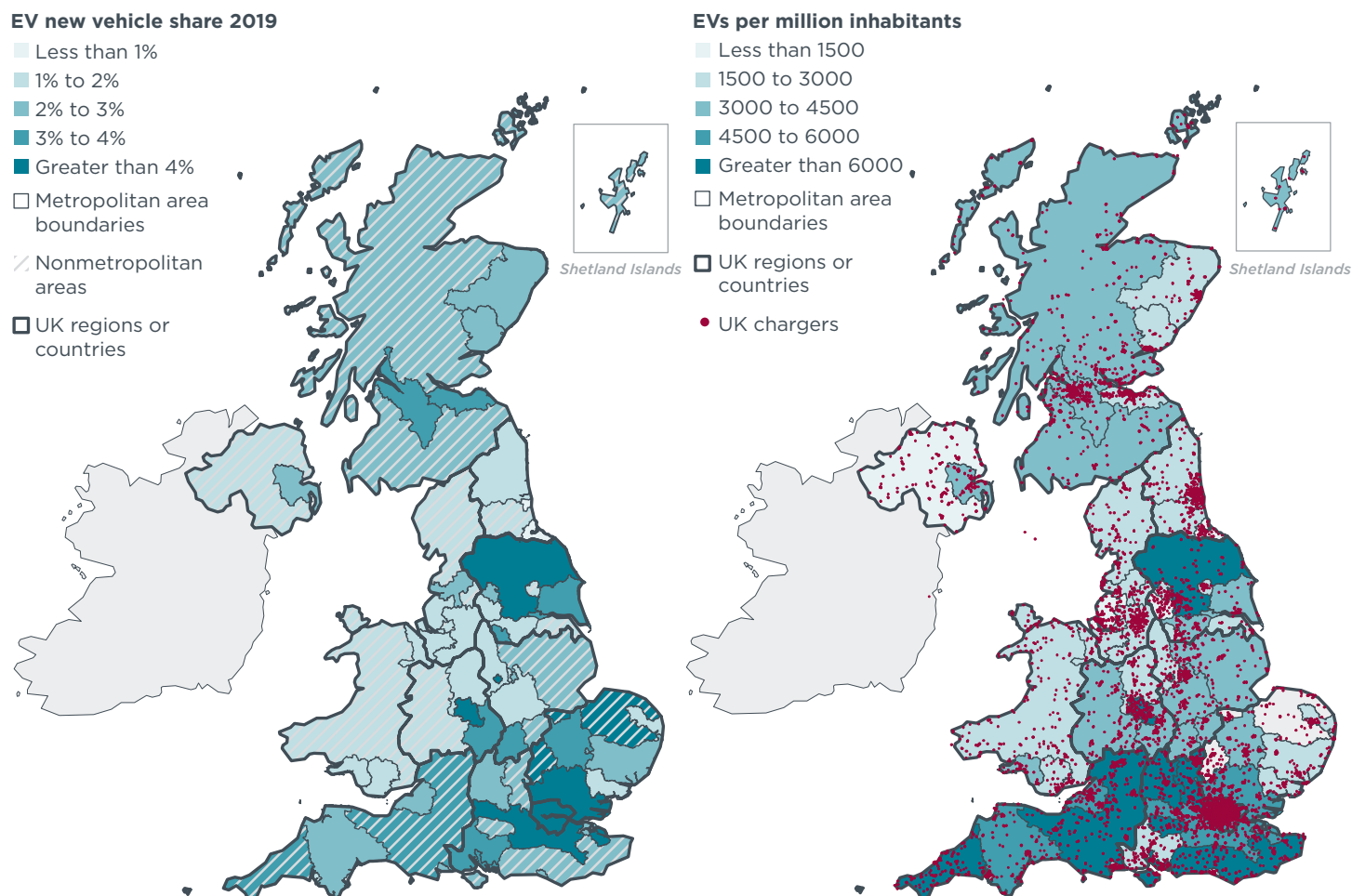


Figure 1. Electric share of new passenger cars in 2019 (left) and cumulative electric cars per million inhabitants overlaid with charging station locations (right).

The maps in Figure 1 show that electric cars per million population in 2019 for metropolitan areas were the highest in Birmingham, Leeds, Oxford, and Portsmouth, each with more than 6,000 electric cars per million inhabitants, compared to the UK average of approximately 4,300. Nonmetropolitan regions of the South East, South West, and East of England also showed relatively high electric vehicle penetration, with more than 6,000 electric vehicles per million inhabitants. Overall, electric vehicle uptake per capita in metropolitan areas was less than in nonmetropolitan areas, with 4,100 versus 4,800 electric cars per million inhabitants.

Table 1 shows the charging terminology used in the analysis related to power level, conventional UK terminology, applicable standards, and current type.¹⁰ This report's terminology for normal (less than or equal to 22 kW) and fast charging (greater than 22 kW) is based on the methods applied across different regions in previous ICCT reports, as described below.

¹⁰ Department for Transport, "The Road to Zero" (see note 2); The Mayor's Electric Vehicle Infrastructure Taskforce, "London Electric Vehicle Infrastructure Delivery Plan" (London: Mayor of London, June 2019), <http://luc.content.tfl.gov.uk/london-electric-vehicle-infrastructure-taskforce-delivery-plan.pdf>

Table 1. Charger terminology, power level, standards, and current type.

Terminology in this report	Typical power level	UK terminology	Standards included in this report	Current type
Normal	Approximately 3 kW	Slow charging	Chargers with Type 2 connectors	Alternating current
	7 kW – 22 kW	Fast charging	Chargers with Type 2 connectors	Alternating current
Fast	43 kW – 99 kW	Rapid charging	Chargers with Type 2, CHAdeMO, CCS, or Tesla connectors	Alternating current and direct current
	Greater than 100 kW	Ultra-rapid charging	Chargers with CHAdeMO, CCS, or Tesla connectors	Direct current

Vehicle charging infrastructure scenarios

This section describes the modeling approach for charging infrastructure scenarios in the UK through 2030. The modeling incorporates charging trends through 2019 and adapts parameters to reflect expected changes in range, vehicle technology, home charging availability, and charging speed. Estimates for the supporting charging infrastructure for given levels of electric vehicle uptake are made for each metropolitan and nonmetropolitan area. The charging infrastructure estimates are made for normal work charging, normal public charging, and fast charging.

Overview of methodology

The electric vehicle charging infrastructure needs for the UK in 2030 follow an analytical framework similar that used in a previous U.S. study.¹¹ This section provides a summary of the methods with a focus on key data and methodology updates to analyze public and workplace charging needs for the UK market.

Baseline data are based on chargers and vehicle registrations for both electric and conventional passenger cars through 2019. Charger data is from Open Charge Map¹² and the National Chargepoint Registry.¹³ The datasets are combined, and duplicates removed. For the fast charging infrastructure, multi-standard fast chargers may have up to three outlets, only one of which can draw electric power at a time. In this charging infrastructure evaluation, a multi-standard charger is counted as one charger. This becomes important when interpreting results or comparing to other studies that use outlets as their basis. For context, the UK at the end of 2019 had an estimated 2.2 outlets per fast charger.

The UK charging infrastructure model used to analyze future charging needs incorporates a series of assumptions through the steps outlined in Figure 2. The blue rectangles represent the model steps, whereas the yellow trapezoids indicate the data and assumptions necessary for each step. Finally, the gray circles explain the steps for what is occurring at each stage. The first step on the top left defines the number of vehicles to serve and the bottom right step is the ultimate estimate of charger infrastructure counts by category needed for the electric vehicle deployment on an annual basis.

11 Michael Nicholas, Dale Hall, and Nic Lutsey, *Quantifying the Electric Vehicle Charging Infrastructure Gap across U.S. Markets*, (Washington, D.C.: International Council on Clean Transportation, January 23, 2019), <https://theicct.org/publications/charging-gap-US>

12 Open Charge Map, "The Open Charge Map API," 2019, <http://openchargemap.org/site/develop/api>

13 Government of the United Kingdom, "National Chargepoint Registry," 2019, <https://www.national-charge-point-registry.uk/>

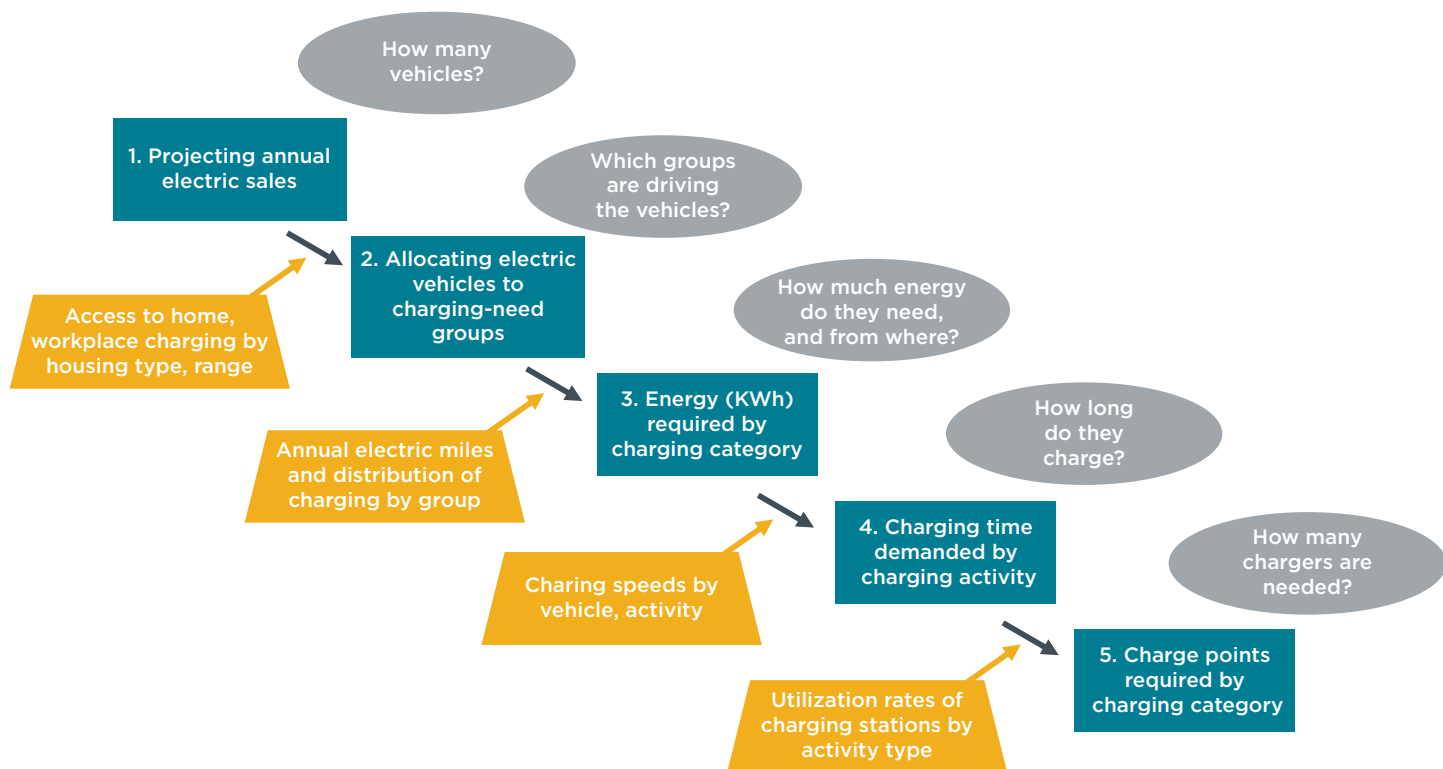


Figure 2. Model to estimate charging infrastructure needs for a given deployment of electric vehicles.

The data inputs shown in the yellow trapezoids are drawn from multiple sources, including commercially available data and other analytical research. Data areas, the variables that depend on these data, and the sources for these data are shown in Table 2.

Table 2. Data sources for key variables.

Data area	Variables	Source
Population	Population by nomenclature of territorial units for statistics (NUTS3) statistical area and future projections	Eurostat ^a
Housing	Number of dwellings in houses and apartments	Eurostat ^b
Metropolitan area definitions	Definition of metropolitan areas in the UK	Eurostat ^c
Electric vehicle registrations by NUTS3 area or local authority	Registrations of new electric vehicles, including battery electric vehicle (BEVs) and plug-in hybrid electric vehicles (PHEVs)	Hall et al., Department for Transport ^d
Existing charging infrastructure	Counts of charging outlets in the UK	Open Charge Map, National Chargepoint Registry ^e
Charging infrastructure relationships	Ratios of electric vehicles to charge point, based on market size and/or electric share	Dodson and Slater, Nicholas et al., Nicholas and Hall, Hall and Lutsey ^f
Charging behavior	Observed charging rates of charging for residential, workplace, public, and fast chargers	Dodson and Slater, UK Government, Electric Nation, Dodson, Systra, Tal et al. ^g
Stock turnover	Retirement of vehicles determining vehicle longevity (assumed 14-year median vehicle life)	Society of Motor Manufacturers and Traders ^h
Vehicle travel	Annual vehicle miles	Department for Transport ⁱ

^a Eurostat, "Population on 1 January by Broad Age Group, Sex and NUTS 3 Region," 2019, https://ec.europa.eu/eurostat/web/products-datasets/-/demo_r_pjanaggr3; Eurostat, "Population on 1st January by Age, Sex and Type of Projection," 2019, https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=proj_18np&lang=en, accessed in April 2020 (data have since been updated at https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=proj_19np&lang=en)

^b Eurostat, "Conventional Dwellings by Occupancy Status, Type of Building and NUTS 3 Region," 2011, https://ec.europa.eu/eurostat/web/products-datasets/-/cens_11dwob_r3

^c Eurostat, "Metropolitan Regions" (see note 8).

^d Hall et al., *European electric vehicle factbook 2019–2020* (see note 9); Department for Transport, "UK Vehicle Registrations," accessed May 5, 2020, <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01>

^e Open Charge Map, "The Open Charge Map API" (see note 12); Government of the United Kingdom, "National Chargepoint Registry" (see note 13).

^f Tristan Dodson and Shane Slater, "Electric Vehicle Charging Behaviour Study" (Element Energy, 2019), <http://www.element-energy.co.uk/wp-content/uploads/2019/04/20190329-NG-EV-CHARGING-BEHAVIOUR-STUDY-FINAL-REPORT-V1-EXTERNAL.pdf>; Nicholas et al., *Quantifying the Electric Vehicle Charging Infrastructure Gap across U.S. Markets* (see note 11); Michael Nicholas and Dale Hall, *Lessons Learned on Early Electric Vehicle Fast-Charging Deployments*, (ICCT: Washington, D.C., 2018), <https://theicct.org/publications/fast-charging-lessons-learned>; Dale Hall and Nic Lutsey, *Emerging Best Practices for Electric Vehicle Charging Infrastructure*, (ICCT: Washington, D.C., 2017), <https://theicct.org/publications/emerging-best-practices-electric-vehicle-charging-infrastructure>

^g Dodson and Slater, "Electric Vehicle Charging Behaviour Study"; UK Government, "Electric Vehicle Charging Device Statistics," 2019, <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01>; Electric Nation, "Summary of the Findings of the Electric Nation Smart Charging Trial," 2019, <http://www.electriconation.org.uk/wp-content/uploads/2019/07/Electric-Nation-Trial-Summary-A4.pdf>; Tristan Dodson, "Charger Use Study: Recharge the Future" (Element Energy, 2018), http://www.element-energy.co.uk/wp-content/uploads/2019/02/20180921_UKPN-Recharge-the-Future-Charger-Use-Study_FINAL.pdf; Systra, "Plugging the Gap" (see note 5); Gil Tal, Jae Hyun Lee, and Michael Nicholas, "Observed Charging Rates in California" [Research Report UCD-ITS-WP-18-02] (University of California, Davis, 2018), https://itspubs.ucdavis.edu/index.php/research/publications/publication-detail/?pub_id=2993

^h Society of Motor Manufacturers and Traders, "Average Vehicle Age," accessed May 24, 2020, https://itspubs.ucdavis.edu/publication_detail.php?id=2993

ⁱ Department for Transport, "National Travel Survey: England 2018," 2019, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/823068/national-travel-survey-2018.pdf

Electric vehicle market scenarios

Specifying electric vehicle sales volume over time is the first step in the charging infrastructure estimation model. Our model applies two scenarios of electric vehicle growth, where electric vehicle sales reach 50% (scenario 1) and 70% (scenario 2) of new passenger cars sold by 2030 based on the UK government's similar goals.¹⁴ Scotland aims to phase out petrol car sales by 2032,¹⁵ which suggests scenario 2 is more relevant. This analysis incorporates year-over-year increases in electric vehicle sales to reach those the targets. This charging infrastructure analysis is for passenger cars, so additional charging needs for electric buses, commercial vans, and heavier freight vehicles are excluded.

Electric and conventional vehicle sales are estimated from new vehicle registrations detailed at a local level (NUTS 3 resolution).¹⁶ New vehicle registrations are assumed to remain at 2019 levels through 2030, consistent with demographic changes and broader goals to encourage alternate modes of transportation. The share of annual new registrations that are electric increases by 2030 from approximately 70,000 in 2019 to 1.15 million in scenario 1 and to 1.61 million in scenario 2. The ratio between BEVs and PHEVs of 56% BEVs in 2019 is assumed to rise to 75% BEVs by 2030, reflecting how automakers are expected to shift to BEV production as BEVs approach cost parity with conventional vehicles.

Several vehicle population adjustments are made in the modeling of vehicle sales and stock patterns. Vehicle flows to successive owners over vehicle life are adjusted to match the new vehicle registration data to overall UK-wide vehicle usage patterns. To account for leasing and the subsequent redistribution of vehicles at lease termination, new passenger vehicle registration data are compared to vehicle stock data.¹⁷ The differential in the new registration per capita versus the stock per capita enables the estimation of vehicle flows from areas that tend to register more new vehicles to areas that tend to receive those vehicles secondhand. In 2019, areas for which electric vehicles are relatively more popular are expected to remain so through 2024. From 2025 on, electric vehicle shares of new vehicle sales are assumed to be the same nationwide in order to evaluate consistent charging infrastructure access across UK regions over time. Electric vehicles are assumed to have the same 14-year median lifetime as conventional vehicles.

Figure 3 shows the electric vehicle stock for scenario 1, on the left, and scenario 2 on the right. Cumulative electric vehicle stock for scenario 1, reflecting a 50% electric sales share in 2030, reaches approximately 5.2 million through 2030, and 68% of those electric vehicles are BEVs. Scenario 2, with an electric sales share of 70% in 2030, reaches about 6.7 million total electric vehicles, 69% of which are BEVs, by the end of 2030.

14 Department for Transport, "The Road to Zero" (see note 2).

15 Transport Scotland, "Switched on Scotland Phase Two: An Action Plan For Growth," 2017, <https://www.transport.gov.scot/media/39306/switched-on-scotland-phase-2.pdf>.

16 Based on Hall et al., *European electric vehicle factbook 2019–2020* (see note 9). The metropolitan regions are defined using nomenclature of territorial units NUTS3 statistical areas to approximate the shape of Functional Urban Areas, which represent urban agglomerations based on commuting patterns. See Eurostat (n.d.), Metropolitan Regions, <https://ec.europa.eu/eurostat/web/metropolitan-regions/background>.

17 Eurostat, "Stock of Vehicles by Category and NUTS 2 Regions," 2018, http://ec.europa.eu/eurostat/product?code=tran_r_vehst&language=en&mode=view.

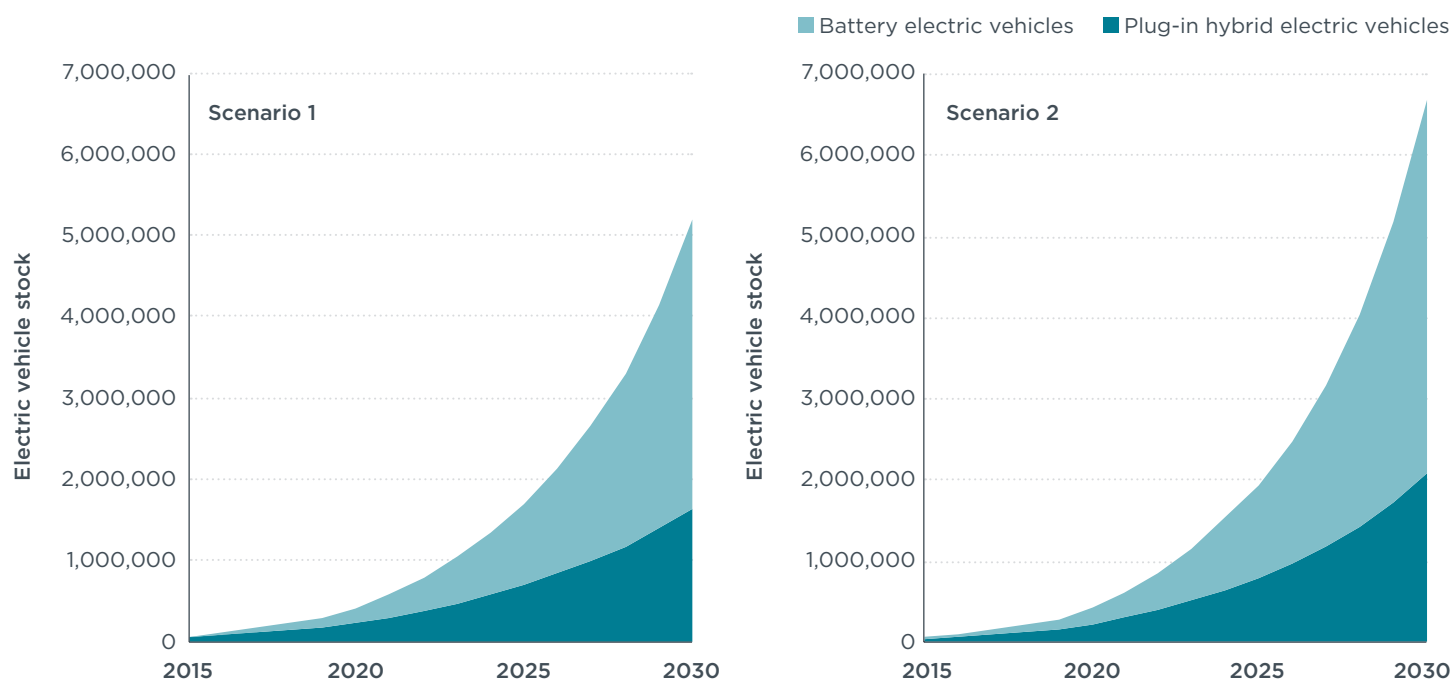


Figure 3. Scenarios for electric vehicle stock in the UK up to 2030, with cumulative electric sales of 50% (left) and 70% (right).

Allocation of electric vehicles to charging need groups

Step two in the model outlined in Figure 2 is to separate the electric vehicle market into groups that exhibit different charging behavior and, therefore, have different charging needs. Three factors—vehicle type (PHEV or BEV), commuting status (commuter or noncommuter), and home charging access (home access, or not)—determine the eight electric vehicle charging need groups. Vehicle type is important because BEVs do not have a backup gasoline engine and their larger batteries allow more charging than PHEVs. Commuting status determines whether work charging is used and affects the overall amount of driving. For 2019, 70% of vehicles are assumed to be driven on a commute, but by 2030 this is reduced to 53% to match trends in the general population.¹⁸

The definitions for workplace and public charging can be somewhat blurred. Work charging is not defined as a location, but an activity, whereby there is an opportunity for increased electric vehicle charging. Many chargers used while working can be in public parking garages, at retail shops if an employee works in retail, and even curbside charging can be considered work charging if used for work purposes. One study indicated that up to 27% of chargers used while working were available to the general public.¹⁹ We expect this trend to continue in the future as electric vehicle use increases to a wider variety of commuters beyond those with dedicated workplace parking. As a result, a large number of workplace chargers are publicly available, and therefore are interchangeable with public charging. Further, we define public charging as having access generally available to the public, but some can be semiprivate, such as chargers in shopping areas or Tesla chargers.

The type of housing is important for determining if home charging is likely to be available and, therefore, the magnitude of the public and work charging needs. Eurostat defines three UK housing categories: single-dwelling buildings, which are defined as having a private entrance at ground level; two-dwelling structures, which may not have a

¹⁸ Dodson and Slater, “Electric Vehicle Charging Behaviour Study” (see Table 2, note f).

¹⁹ Tal, Lee, and Nicholas, “Observed Charging Rates in California” (see Table 2, note g).

private ground level entrance; and three or more dwelling buildings, which include a mix of flats and attached houses.²⁰ The most recent housing census provides comprehensive data on the breakdown of population by the dwelling structure type in the UK by NUTS3 based on data from 2011. Table 3 shows the approximate breakdown of dwellings and population by housing type, conventional and electric vehicle stock by housing type in 2019, and the estimated electric vehicle stock by housing type in 2030. The second row shows the conventional vehicle stock by housing type broken down into the various housing types,²¹ which accounts for differences in the number of vehicles per dwelling.²² As shown, early adopters are more likely to live in single-dwelling buildings, where home charging is typically more available. As the market for electric vehicles grows, a larger percentage of the owners will likely live in more concentrated housing.

Table 3. Housing for the general population in the UK and as evaluated for electric vehicles.

	One-dwelling buildings	Two-dwelling buildings	Three or more dwelling buildings
Percentage of dwellings	23%	30%	46%
Conventional passenger vehicle stock by dwelling type in 2019	28%	33%	38%
Electric passenger vehicle stock by dwelling type in 2019	40%	43%	17%
Electric passenger vehicle stock by dwelling type in 2030	31%	35%	34%

As shown in Table 4, housing type is used to estimate home charging availability using international examples and adjusting for the UK context.²³ This analysis assumes electric vehicle drivers' housing characteristics approach that of general drivers over time and home charging availability by housing type stays constant, meaning that electric vehicles migrate more toward three-or-more-dwelling buildings through 2030. Home charging availability among car owners in this category includes charging installations in dedicated spots and common parking areas serving small housing clusters and large apartment complexes. In Table 4, the availability of home charging by housing type given in the first row is multiplied by the vehicle stock per housing type in 2019 and 2030, from Table 3, to obtain the charging availability by housing type in the respective years.

Table 4. Scenarios for electric vehicle owner housing type and access to home charging.

	EVs in 1-dwelling buildings	EVs in 2-dwelling buildings	EVs in 3-or-more dwelling buildings	Total
Percentage of homes with charging available	92%	83%	65%	—
Percentage of total electric vehicle stock with home charging available in 2019	37%	37%	11%	85%
Percentage of total electric vehicle stock with home charging available in 2030	29%	29%	22%	80%

As shown in Table 4, home charging is available for 85% of electric vehicles in 2019. However, in 2030 that availability has fallen to 80%, showing that over time more electric drivers would not have home charging and would need more charging available away from home. This approach, with 80% of the electric vehicle stock with home charging in 2030, ultimately approaches the general UK National Travel Survey finding that 72%

20 Eurostat, "Conventional Dwellings by Occupancy Status, Type of Building and NUTS 3 Region" (see Table 2, note b).

21 Department for Communities and Local Government, "English Housing Survey: Housing Stock Report 2008," 2010, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/6703/1750754.pdf

22 Ministry of Housing, Communities & Local Government, "English Housing Survey Data on Stock Profile," 2019, <https://www.gov.uk/government/statistical-data-sets/stock-profile>

23 Tal, Lee, and Nicholas, "Observed Charging Rates in California" (see Table 2, note g).

of car owners in England park overnight on private property or in a garage.²⁴ However, we note that overnight parking on private property or in a garage does not guarantee access, and the 80% with home charging access includes some mix of overnight charging solutions at semipublic locations in residential areas.

Energy required by charging category

The third step in the model is to determine the total energy that electric vehicles will require and assign the energy demand to home, work, public, and fast chargers. Energy needs for the vehicle stock are apportioned according to breakdowns in Table 5, which are based on a 2019 analysis of EV drivers.²⁵ It should be noted that the needs are defined by data trends and the trends are influenced by a mix of price and access. There are many possible energy breakdowns to serve the same market and the same number of miles. The three consumer classifications are listed in the first three columns: vehicle type, commuting status, and home charging. The fourth through seventh columns show the percentage of the electric vehicles' energy by charging location comprising home, work, public, and fast charging. The annual kilometers are based on the annual kilometers traveled in the UK and this average is disaggregated by commuting status.²⁶

Table 5. Energy breakdown by location of charging.

Vehicle type	Commuting status	Home charging	Home energy	Work energy	Public energy	DCFC energy	Vehicle kilometers traveled per year	Percent vehicle kilometers traveled that are electric	Vehicle kilometers traveled per year that are electric	Percent of electric vehicle stock in 2030
BEV	Commuter	Home	70%	20%	5%	5%	14,500	100%	14,500	32%
BEV	Commuter	No home	0%	45%	30%	25%	14,500	100%	14,500	8%
BEV	Noncommuter	Home	85%	0%	5%	10%	8,200	100%	8,200	23%
BEV	Noncommuter	No home	0%	0%	40%	60%	8,200	100%	8,200	6%
PHEV	Commuter	Home	65%	30%	5%	0%	14,500	70%	10,100	15%
PHEV	Commuter	No home	0%	65%	35%	0%	14,500	40%	5,800	4%
PHEV	Noncommuter	Home	90%	0%	10%	0%	8,200	50%	4,100	10%
PHEV	Noncommuter	No home	0%	0%	100%	0%	8,200	10%	800	3%

BEV = Battery electric vehicle; PHEV = plug-in hybrid electric vehicle; DCFC = direct current fast charger

The kilometers are converted into energy needed based on the assumed efficiency of an average BEV or PHEV at 5.5 and 5.15 kilometers per kilowatt-hour, respectively. New electric vehicle efficiency is assumed to be constant on average, assuming technical efficiency improvements will continue but will be negated by the shift of new electric vehicles to larger vehicle classes over time.

The charging need characteristics of each group represent the average behavior within the group, but individual charging behavior and access to charging vary widely. For example, in the case of workplace charging, not everyone has access to a charger, and sometimes those with access choose to not charge at work due to personal preference, pricing, or congestion. Similarly, all PHEV owners do not consistently plug in each time they have access to charging. Nevertheless, the average charging behaviors of these groups are distinct enough to warrant separate analysis and modeling.

Although the driver charging energy breakdowns are constant through time, the relative proportions of the driver groups are assumed to change over time. The early market is

²⁴ Based on Department for Transport, "National Travel Survey: England 2018," <https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy>

²⁵ Dodson and Slater, "Electric Vehicle Charging Behaviour Study" (see Table 2, note f).

²⁶ Based on Department for Transport, "National Travel Survey: England 2018."

assumed to have a higher prevalence of commuters than the later market. As cited in another study, in 2019, the percentage of electric vehicles purchased that are regularly used in commuting was 70%, although just 53% of the general car population is used for commuting.²⁷ Therefore, we estimate that 53% of electric vehicles will be used for commuting in 2030, in line with the general car population. This reduces the relative need for workplace charging.

Charging hours and charger power

The fourth step in the charging infrastructure model is to determine the number of charging hours needed by charging category. The rate of power draw varies with the capacity of the charger and the ability of a vehicle to accept given power levels. For BEVs, the average rate of power draw for normal chargers is estimated to be 8 kW, and for PHEVs the average is 3.4 kW. The average rate of power draw is affected both by the acceptance rate of the vehicle over the entire charge cycle, which can taper to less than 8 kW at the end of the charge cycle, and the power limitations of the charger, some of which provide only 3.6 kW of power even if the vehicle can accept more. For fast charging, the average rate per charger is assumed to increase annually from 35 kW in 2019 to 80kW in 2030. Even though the maximum charge rate may increase to more than 80kW, power sharing, battery management over an entire charge cycle, and the lower cost of lower power charging suggest that on average, average power will be much lower than the maximum.

Charger utilization and number of chargers

The fifth and final step in the charging infrastructure model shown in Figure 2 is to determine the required number of chargers. Charger output power in kW, as well as the number of hours of active use per day, are used to estimate the daily and annual kWh per charger. The required energy (in kWh) established above for the overall electric vehicle market is divided by this average utilization to determine the number of chargers needed.

As shown in other studies, utilization on public chargers increases as a function of market development.²⁸ The examination of existing chargers in the UK allows for the estimation of charger utilization, in hours per day, by metropolitan area for normal and fast chargers. As part of the analysis, the average daily utilization in terms of hours of active power draw for normal public charging is estimated by the following equation:

$$\text{Average daily hours of usage} = 0.832 * \text{LN (electric vehicles per million population)} - 4.902$$

This equation was derived from inspection of the UK charger data, and the method is comparable to the approach in studies elsewhere.²⁹ Electric vehicles in this case include BEVs and PHEVs. Using a natural log (LN) function bounds the utilization at higher electric vehicle penetrations. For example, the average daily hours of usage of a public charger at 6,000 electric vehicles per million population is 2.3 hours. But at 100,000 electric vehicles per million population, the average utilization rises to 4.7 hours, meaning the utilization doubles while the market increases more than 16 times.

This utilization is an average over an entire metropolitan area and across different days of the week and months of the year. Locational, weekly, and seasonal variation results in some chargers being more highly utilized than others across time and geography. The approximate distribution of utilization is estimated by a truncated normal distribution with a standard deviation of 5 hours. As an example of what this equates to in the modeling, when the daily mean is 2.3 hours, 2% of chargers are used 8 hours or more.

²⁷ Dodson and Slater, "Electric Vehicle Charging Behaviour Study" (see Table 2, note f).

²⁸ Nicholas et al., *Quantifying the Electric Vehicle Charging Infrastructure Gap across U.S. Markets* (see note 11).

²⁹ Ibid.

When the daily utilization is 4.7 hours, 17% of chargers are used 8 hours or more. The implicit assumption is that the average utilization of public chargers will increase along with a growing market. Finally, this usage accounts for only daytime public usage. In the case of curbside or other public charging used for residential charging overnight, the hours of utilization will increase in proportion to the number of public chargers used for overnight charging.

Workplace charging utilization is modeled differently and is set at 6 hours per day of usage regardless of market penetration. Because chargers are not used on weekends, the effective average workplace charger use per day falls to 4.3 hours. Workplace charging usage is constant over time based on the assumption that workplace charging can adapt to an increase in demand in a more controlled manner than publicly available chargers at retail establishments, parking garages, and curbsides.

Fast charging is assumed to follow a trend similar to normal charging, such that average usage in hours increases with market development. In the case of fast charging, the utilization equation includes only BEVs, due to their much more prevalent use of the fast charging infrastructure. The fast charging utilization is separated into two use cases: one for metropolitan areas, which are expected to see higher utilization, and one for nonmetropolitan areas, which are assumed to see generally lower utilization. They are defined by the following two equations:

For metropolitan areas,

Average daily hours of usage = $0.6497 * \text{LN}(\text{BEVs per million population}) - 4.099$

For nonmetropolitan areas,

Average daily hours of usage = $0.483 * \text{LN}(\text{BEVs per million population}) - 3.021$

At a level of 10,000 BEVs per million population, the average estimated hours of power draw for metropolitan and nonmetropolitan areas would be 1.9 and 1.4 hours per day, respectively, and at 100,000 BEVs per million, the hours of power draw would be 3.4 and 2.5 hours. These are averages across the entire year and across a metropolitan region, and many individual chargers would still be expected to have much a higher or lower rate of utilization. Similar to the distribution described above, the mean hours of power draw are assumed to follow a truncated normal distribution with a standard deviation of 5 hours. As an example of what this equates to in the modeling, when the daily mean is 1.9 hours, 12% of chargers are used 4 hours or more per day. When the daily utilization is 3.4 hours, 34% of chargers are used 4 hours or more per day.

The number of chargers in the model is determined using the variables of charger power and utilization defined above. The estimated output per charger in a year is equal to the utilization in hours of power draw, multiplied by charger output (in kW), multiplied by the number of days per year.

Home charging and highway fast chargers are calculated separately from the above calculations for workplace, public normal, and fast charging. Home charging depends on the housing type of vehicle owners, with electric vehicles increasingly sold to households with less home charging availability in the future, as previously noted. Highway fast charger counts rely on outside analyses and are added at a rate of one fast charger for every 1,500 BEVs in metropolitan areas and one fast charger for every 1000 vehicles in nonmetropolitan areas.³⁰ These highway corridor chargers for long-distance trips are in addition to the local fast chargers described above and are assumed to have power available over 150 kW.

30 Patrick Jochem, Eckhard Szimbac, and Melanie Reuter-Oppermann, "How Many Fast-Charging Stations Do We Need along European Highways?" *Transportation Research Part D: Transport and Environment.*, 2019, (73) 120–29. <https://doi.org/10.1016/j.trd.2019.06.005>

Summary of data inputs

The inputs for the future scenarios described above are summarized in Table 6. Each of these inputs affects the number of chargers. As indicated, some inputs shift over time from 2019 to 2030, whereas others remain constant over the analysis period.

Table 6. Summary of data inputs and assumptions for the charging infrastructure model.

	2019	2030
Electric vehicle stock	280,000	5,200,000 – scenario 1 6,700,000 – scenario 2
Market share of electric new car registrations	3%	50% – scenario 1 70% – scenario 2
Portion of BEV and PHEV new car registrations	46% BEV, 54% PHEV	75% BEV, 25% PHEV
Dwelling type of electric car owners	One dwelling = 40% Two dwelling = 43% Three or more dwelling = 17%	One dwelling = 29% Two dwelling = 33% Three or more dwelling = 38%
Home charging availability by dwelling type	One dwelling = 92% availability Two dwelling = 83% availability Three or more dwelling = 65% availability	
Commuter share of electric new car registrations	70%	53%
BEV average charging acceptance rate for normal	8 kW	
PHEV average charging acceptance rate	3.4 kW	
Workplace charging daily utilization in hours	6 on weekdays, 0 on weekends	
Public charging daily utilization in hours	Average daily hours = $0.832 * \text{LN}(\text{EV per million population}) - 4.902$	
Fast charging daily utilization in hours for metropolitan areas	Average daily hours = $0.650 * \text{LN}(\text{BEV per million population}) - 4.099$	
Fast charging daily utilization in hours for nonmetropolitan areas	Average daily hours = $0.483 * \text{LN}(\text{BEV per million population}) - 3.021$	
Fast charging outlet to charger ratio	2.2:1	—
Fast charging kW acceptance per charger	35 kW	80 kW
BEVs per high power highway fast charger	1,500 in metropolitan areas, 1,000 in nonmetropolitan areas	
Electric vehicle electricity consumption	BEVs 0.182 kWh/km, PHEVs 0.194 kWh/km	
Average vehicle kilometers per year	Commuter 14,500 km, noncommuter 8,200 km	

BEV = Battery electric vehicle; PHEV = plug-in hybrid electric vehicle; DCFC = direct current; LN = natural log

Evolution of charging over time

Because many of the variables shown in Table 6 vary over time, the ratio of electric vehicles per charger changes over time as well. A decrease in the availability of home charging increases the need for other charging, but a corresponding increase in usage per charger decreases the number of chargers needed to serve the same energy demand. Increasing the assumed average charger power (and BEV charge acceptance rate) further decreases the number of chargers needed. The net effect of the various changes is that even though more power is expected to pass through public charging, one charger can support more vehicles in 2030, as estimated and shown in Figure 4.

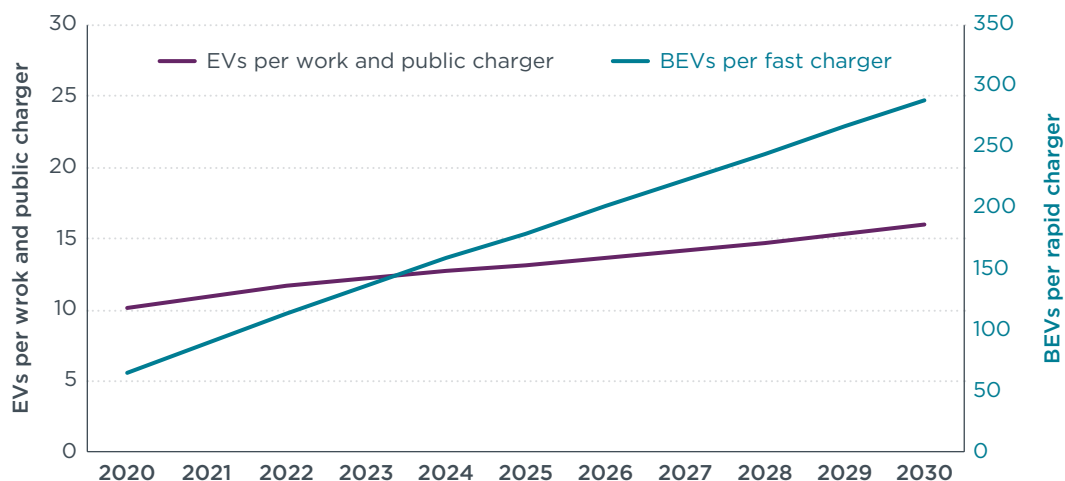


Figure 4. Electric vehicles per workplace and public charger and battery electric vehicles supported per fast charger.

Figure 4 shows that for normal charging at workplace and public locations, the electric vehicles per charger increases from 10 in 2020 to 16 in 2030. For fast charging, the BEVs per charger increases from 66 in 2020 to more than 300 in 2030. As discussed above, this is because of the increased utilization and faster charging on average in future years. The low number of BEVs per fast charger suggests that in early years it is necessary to obtain geographic coverage, but once sufficient coverage is achieved, fewer chargers per BEV are needed to address capacity. These ratios vary by metropolitan area. The higher utilization implies an improving business case for both normal and fast charging between 2020 and 2030.

The energy dispensed by location also changes over time. In 2020, 86% of charging energy is dispensed either at home or at work. By 2030, the portion of electric vehicle charging energy provided by home and work charging declines to 80%. A decline in the fraction of electric vehicle buyers that use their electric cars for commuting by 2030 causes a corresponding shift away from workplace charging. Similarly, access to home charging decreases by 2030, as more electric vehicles are deployed where there is less home charging availability, causing an increase in the need for public charging. Finally, a relative increase in BEVs increases the share of electric vehicle power coming from fast charging.

Results

The charging infrastructure requirements calculated from the model reveal the extent to which workplace, public, and fast charging infrastructure will be needed to support the growing electric vehicle market in the 2025–2030 time frame. Although this research is focused on quantifying how much publicly accessible electric vehicle charging infrastructure is needed, home charging remains the predominant charging type for most drivers. The underlying modeling approach previously described reveals that home charging accounts for more than 90% of total chargers and 60% of all the charging energy needed across the UK through 2030. The results which follow focus on the broader charging infrastructure needs in work, public, and fast charging situations. The results include region-level charging needs, followed by the overall UK results, which are compared to other studies.

Regional results

Based on the detailed electric vehicle and charging infrastructure assessment previously described, chargers needed by type and by region were estimated through 2030.

Figure 5 depicts the electric vehicle charger counts needed in 2025 and 2030 for scenario 1, which assumes 50% electric car sales by 2030, and scenario 2, which assumes 70% electric car sales by 2030, compared to total 2019 charger counts for selected regions. The figure shows charging needs for the seven metropolitan areas and three nonmetropolitan regions with the largest populations, which represent locations with more than two-thirds of projected UK electric car uptake by 2030. Across the 10 areas, as many as 28% (London area) to as few as 5% (Birmingham area) of the 2025 chargers needed had been installed by the end of 2019. Detailed tables for the 2025 and 2030 chargers for each area are shown in the Appendix.

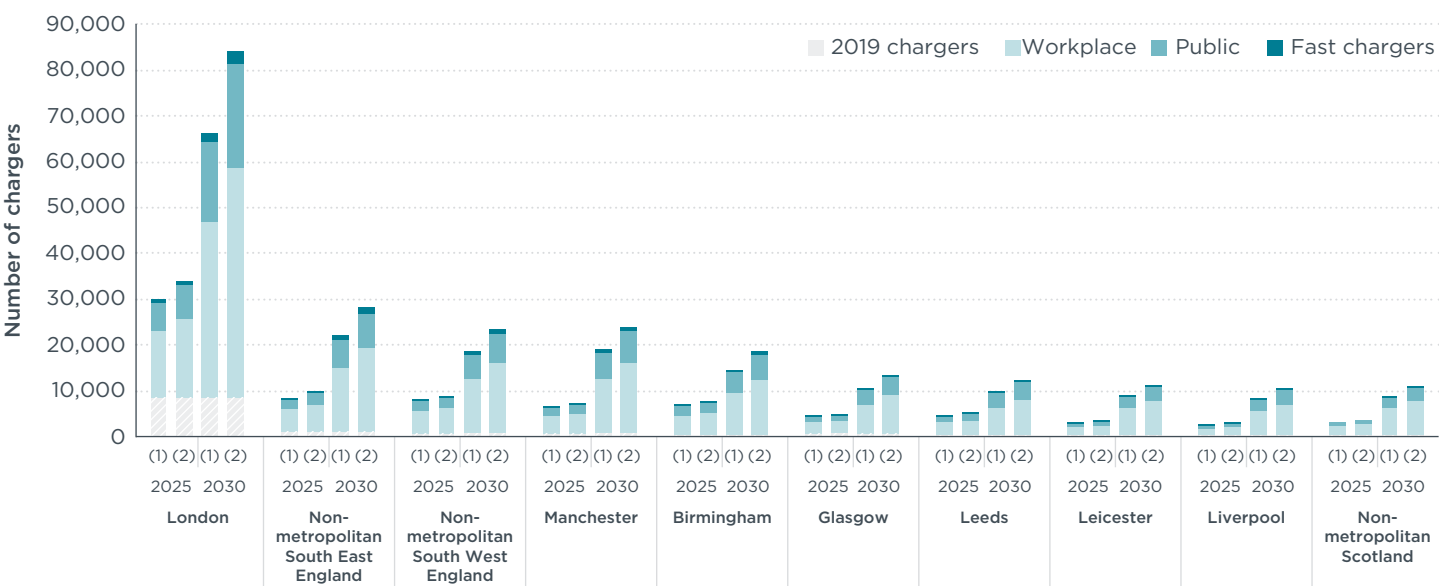


Figure 5. Chargers existing in 2019 versus chargers needed by 2025 and 2030 for selected areas for the UK reaching 50% (scenario 1) and 70% (scenario 2) electric car sales by 2030.

Comparing scenario 2 to scenario 1 indicates that many more chargers will be needed across all regions to support the higher goal of 70% electric car sales—an additional 12% to 15% chargers by 2025, and 25% to 27% more chargers beyond that by 2030. The proportion of work charging is greater than that for public charging due to the large number of vehicles used for commuting, although as we note, much workplace charging will be done at public locations, and the workplace and public definitions are interchangeable for many chargers.

As shown, London in 2019 had between 25% and 28% of the public and workplace charging it needs by 2025, but just 10% to 12% of what it needs by 2030. Nonmetropolitan South East England in 2019 had about 12% to 14% of its 2025 charging needs but only 4% to 5% of its 2030 charging needs. The Birmingham urban area, on the other hand, in 2019 had only 5% of the charging it will need in 2025 and 2% of its 2030 needs. In general, nonmetropolitan areas need fewer chargers per vehicle, primarily because of their greater relative availability of home charging compared to denser urban areas. The findings also indicate that the need for workplace chargers exceeds that of public chargers because of the expected convenience of charging at work.

Figure 6 depicts the charging infrastructure in place in 2019 as a percentage of the chargers needed by 2025 for scenario 2, which is to say 70% electric car sales share by 2030. The national average charging in place in 2019 is 15% of what is needed for 2025, and 6% of what is needed by 2030. As shown in the figure, some areas in 2019 had less than 10% of the needed chargers in 2025, whereas others had more than 25% of the needed chargers. Nonmetropolitan areas are shown with a hatched pattern, and the colors indicate the charging gap as a percentage of charging installed by the end of

2019 that will be needed by 2025. For example, the London metropolitan area had about 8,400 chargers installed in 2019 but 34,000 are needed by 2025, meaning the area was at a 25% level. Darker colors indicate a larger charging gap than lighter colors.

Charging infrastructure in 2019 as a percentage of that needed by 2025

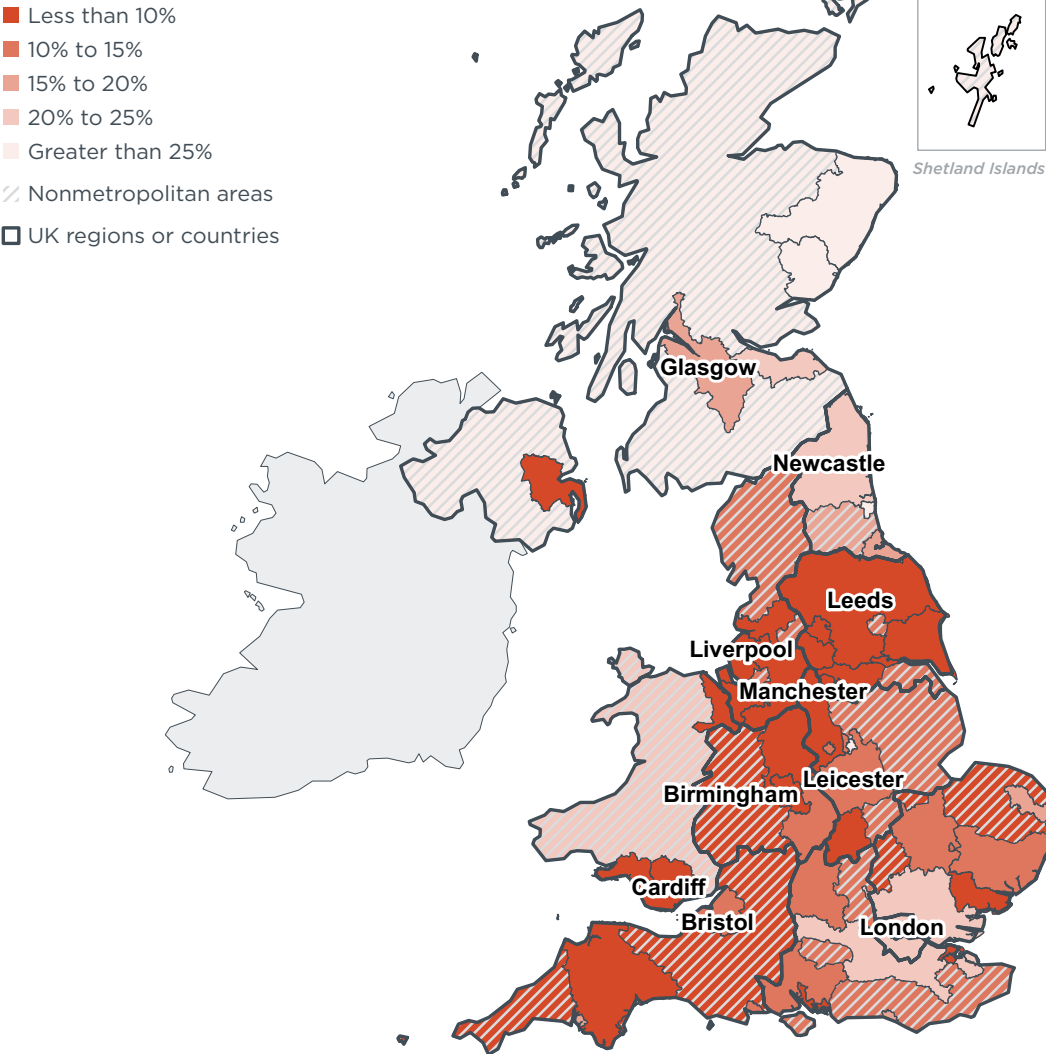


Figure 6. Percentage of charging infrastructure installed as of 2019 relative to what will be needed by 2025 for electric vehicle shares increasing to 70% of new vehicles by 2030.

The Figure 6 map shows several broad trends. In general, areas in England have a larger charging gap than areas in Wales, Scotland, or Northern Ireland. A notable exception is London, which has installed 25% of its 2025 charging infrastructure needs. However, this need is only defined for passenger cars and London will need to install additional charging for ride-hail and commercial vehicles. Among the top 10 metropolitan areas by population, Birmingham shows the greatest gap. In the north, Scotland shows a relatively small charging gap, with Glasgow and the nonmetropolitan areas in Scotland having 16% and 28% of the charging infrastructure needs for 2025 met, respectively.

Overall United Kingdom results

Table 7 summarizes the overall public and workplace charging infrastructure needs in the UK for 2025 and 2030, including overall results for the metropolitan and nonmetropolitan areas and comparisons to chargers installed through 2019. By the end of 2019, the UK had installed 7% of the workplace, public, and fast charging

infrastructure it needs in 2030 in scenario 1 and 5% of what it needs in scenario 2. To meet its electric vehicle goals, the overall UK chargers must increase from about 23,000 in 2019 to 134,000 for scenario 1 and to 152,000 for scenario 2 by 2025. To meet the electric vehicle goals through 2030, a total of 338,000 to 426,000 chargers will be needed for scenario 1 and 2, respectively. This means 6 to 7 times more charging is needed in 2025, and 15 to 19 times more charging by 2030, than was installed by the end of 2019. The annual growth rate in charging to reach these targets is from 35% to 37% from 2019–2025 or 28% to 31% from 2019–2030. Excluding the workplace charging from the projected charging needs, for example, to make the results more comparable with other studies that have been done without workplace charging, would greatly reduce the amount of new charging infrastructure needed for 2025 and 2030. As indicated in Figure 5, workplace accounts for more than half the chargers.

Table 7. UK charging infrastructure needed for increasing electric car sales share to 50% or 70% of new vehicles by 2030.

	Year	Scenario 1: 50% electric share in 2030			Scenario 2: 70% electric share in 2030		
		Metropolitan areas	Non-metropolitan areas	UK overall	Metropolitan areas	Non-metropolitan areas	UK overall
Total chargers (public, workplace, fast)	2019	16,836	5,777	22,613	16,836	5,777	22,613
	2025	97,453	36,751	134,204	110,108	41,573	151,681
	2030	243,310	95,112	338,421	306,276	119,722	425,998
Electric vehicle stock	2025	1,205,266	487,158	1,692,424	1,388,461	560,282	1,948,743
	2030	3,681,655	1,515,393	5,197,047	4,750,768	1,950,806	6,701,574
Projected future charging compared to 2019	2025	5.8	6.4	5.9	6.5	7.2	6.7
	2030	14.5	16.5	15.0	18.2	20.7	18.8
2019 as percentage of future chargers needed	2025	17%	16%	17%	15%	14%	15%
	2030	7%	6%	7%	5%	5%	5%
Annual increase in chargers from 2019 to meet 2025 and 2030 needs	2025	34%	36%	35%	37%	39%	37%
	2030	27%	29%	28%	30%	32%	31%

Table 7 allows some limited comparisons with other UK-related charging infrastructure studies. Systra³¹ estimates that more than 29,000 chargers will be needed in Great Britain by 2030, which is far fewer chargers than indicated in our analysis. However, the Systra study excludes workplace charging, which is the largest charger type in this study, and assumes that 85% of the 2030 chargers are fast charging; the fast charging share is far less in this study. Another point of reference is the UK's Vision for Rapid Charging,³² which plans for 2,500 charge points ranging from 150 to 350 kW across England's motorways by 2030 and 6,000 by 2035. This analysis finds that 15,000 to 19,000 fast chargers will be needed by 2030, of which 2,700 to 3,500 are highway fast chargers for scenarios 1 and 2, respectively.

The London Electric Vehicle Infrastructure Delivery plan³³ calculates that for Greater London in 2025, for non-ride-hail vehicles, between 500 and 1,100 fast chargers and between 300 and 3,100 normal chargers are needed. This analysis projects the

³¹ Systra, "Plugging the Gap" (see note 5).

³² "Government vision for the rapid chargepoint network in England," (14 May, 2020) [UK Government policy paper]. Retrieved from <https://www.gov.uk/government/publications/government-vision-for-the-rapid-chargepoint-network-in-england/government-vision-for-the-rapid-chargepoint-network-in-england>

³³ The Mayor's Electric Vehicle Infrastructure Taskforce, "London Electric Vehicle Infrastructure Delivery Plan" (see note 10).

London metropolitan area will need at least 1,200 fast chargers and 29,000 normal chargers, of which 10,000 are public access (see Appendix). However, the metropolitan area analyzed here has almost twice the number of people as Greater London, due to differing boundaries, and this analysis includes many workplace and semipublic chargers. Accounting for the different size and population, there are likely more fast chargers and fewer normal chargers in London's plan than in this assessment. In reality, normal and fast chargers are, to an extent, interchangeable in proportion to their power difference. Based on an approximate equivalency of six to 10 normal chargers to one fast charger, our results could be quite comparable to London's plan.

Another comparison point is with the pan-European study by Transport & Environment.³⁴ The scenarios for the number of electric vehicles are similar, but the charger estimates differ slightly. Transport & Environment indicates approximately 500,000 public charge points will be needed in the UK by 2030, whereas our relatively comparable scenario 2 charging infrastructure results are 15% lower. Comparing the findings in a different way, our scenario 2 indicates about 15.7 electric vehicles per charger in 2030, while Transport & Environment specifies 13.8 electric vehicles per charger.

Conclusions

Electric vehicle market growth in the UK through early 2020 has provided great promise for meeting the UK's much more ambitious vehicle electric vehicle transition goals for 2030 and beyond. This research indicates that charging infrastructure will simultaneously be a great challenge and a great opportunity in the upcoming years. The UK has indicated an interest in accelerating its goals to fully phase out combustion vehicles to 2035 and in May 2020 committed £500 million toward building out its charging infrastructure network.³⁵

The findings in this research help inform such planning by quantifying the amount and types of charging infrastructure needed to support the UK's electric vehicle transition. Although this research is focused on how much publicly accessible and workplace electric vehicle charging infrastructure is needed, it must be emphasized that home charging accounts for more than 90% of the number of chargers and 60% of all the charging energy needed, and this remains the case through 2030. Beyond the at-home charging, increased public and workplace charging is critical for a comprehensive and convenient charging ecosystem for a growing electric vehicle fleet. We offer three main conclusions.

The UK's ambitious electric vehicle goals will need equally ambitious charging goals.

To support 5.2 to 6.7 million cumulative electric vehicles and a 50%–70% electric share of new passenger cars by 2030, an increasingly comprehensive charging network will be needed. We estimate that 341,000 to 430,000 workplace, public, and fast chargers and an approximate 30% annual growth rate in the UK's charging infrastructure will be needed to keep pace with the UK's 2019–2030 electric vehicle growth goals. The London area, in England, and Scotland generally have had relatively strong charger deployment through 2019, putting each on a path toward their 2030 charging needs.

Fast charging deployment has shown strong growth. Our findings indicate that fast charging installed at the end of 2019 represented at least 40% of the UK's 2025 needs and about 20% of its 2030 needs. Scotland has built an especially robust fast charging network through 2019 and sets a leading example for other regions. These developments

34 Transport & Environment, "Recharge EU: How Many Charge Points Will Europe and Its Member States Need in the 2020s," 2020, <https://www.transportenvironment.org/publications/recharge-eu-how-many-charge-points-will-eu-countries-need-2030>

35 "Government vision for the rapid chargepoint network in England" (see note 32); Department for Transport, "Open consultation: Consulting on ending the sale of new petrol, diesel and hybrid cars and vans" (see note 3).

suggest fast charging infrastructure will need steady deployment of about 18% per year through 2030, which is not as accelerated as the annual growth needed in normal and workplace charging.

More vehicles can be supported per publicly accessible charger in future years. The ratio of electric vehicles (including all-electric and plug-in hybrid) per normal speed charger rises from 10 in 2019 to 16 in 2030. All-electric battery electric vehicles per fast charger increase from 66 to 300. This is the result of the move to more longer-range electric vehicles, faster charging speeds, and higher utilization rates of chargers. These trends can be expected to provide increasing opportunities for improved business cases for charging providers.

This charging infrastructure study points to several areas that are rich for further analysis. Our analysis underscores the need for greater use of normal-speed chargers, which take advantage of where vehicles are naturally parked most often. Further analysis would be warranted on trade-offs between more normal and more rapid charging, specifically related to equipment cost, electricity charging rates for drivers, and driver convenience. This UK analysis provides details on the greatly varying charging needs by region and charger type, but any specific city or region will need to tailor its own charging needs assessments to its own market conditions, electric vehicle transition goals, and broader electric power sector goals, such as enabling more renewable power. Further work could assess how EU- and UK-level stimulus funds and supporting policy could further support the infrastructure growth, as well as how best to allocate charging across disadvantaged communities to support the broader electric mobility transition.

Although charging infrastructure to support the UK's goal to accelerate the transition to zero-emission vehicles is critical, the challenge is broader. Beyond building out the supporting infrastructure, as analyzed here, other actions will also be needed to overcome other barriers. Stronger vehicle emission standards and direct electric vehicle regulations are necessary to ensure industry electric vehicle investment scales up fast enough and an adequate and diverse supply of electric vehicle models is available to the market. Sustained city-level vehicle policies send clear signals to car buyers and the developers of the charging infrastructure network. Sufficient charging infrastructure deployment, with other such reinforcing policies, comprise a comprehensive approach to spur the transition to electric transport.

Appendix

This Appendix provides normal (public and workplace) and fast charging infrastructure results for individual metropolitan areas and nonmetropolitan areas for scenarios 1 and 2.

Table A1. Charging infrastructure needs for electric vehicle scenario 1 (50% electric sales by 2030)

Metropolitan area (and region or country in <i>italics</i>)	2019 Normal chargers	2019 Fast chargers	2025 Electric vehicles	2025 Normal chargers	2025 Fast chargers	2030 Electric vehicles	2030 Normal chargers	2030 Fast chargers
London	7,882	501	370,901	29,281	1,239	995,511	64,365	2,501
Manchester	615	91	83,880	6,320	270	298,093	18,350	665
West Midlands urban area	319	57	91,309	6,638	236	250,699	14,181	538
Liverpool	219	47	31,551	2,602	118	112,827	8,121	270
Glasgow	653	116	55,208	4,158	177	176,622	10,404	421
Leeds	314	69	60,965	4,329	162	178,293	9,465	376
Leicester	413	28	45,051	2,919	128	158,354	8,704	316
Newcastle upon Tyne	393	63	20,714	1,638	76	71,895	4,983	171
Bristol	307	49	42,691	2,792	121	138,347	7,369	300
Cardiff	121	15	18,586	1,596	68	64,131	5,148	152
Stoke-on-Trent	164	43	22,303	1,779	69	76,717	5,361	160
Coventry	228	63	26,719	2,110	82	85,427	5,355	186
Edinburgh	408	46	16,710	1,561	64	53,347	3,997	135
Doncaster	67	44	14,158	929	44	41,829	2,483	95
Southampton	199	44	13,426	1,417	44	41,303	3,439	90
Exeter	177	39	29,195	1,878	73	95,144	4,807	188
Belfast	140	12	20,443	1,687	57	67,521	4,797	137
Ipswich	137	27	12,179	1,097	40	40,076	3,133	85
Oxford	249	42	25,875	1,849	70	82,400	4,708	166
Blackburn - Blackpool - Preston	98	23	12,517	1,073	43	40,983	2,996	94
Portsmouth	94	27	20,539	1,676	68	60,222	4,040	153
Cambridge	161	13	13,523	1,168	40	41,564	2,869	86
Kirklees	66	19	8,663	829	33	29,567	2,429	71
Cheshire West and Chester	87	10	11,050	895	35	37,617	2,651	80
Kingston upon Hull	58	7	22,401	1,638	60	72,494	3,773	152
Sheffield	65	10	9,345	768	33	28,710	1,827	72
Middlesbrough	120	15	8,577	723	31	30,832	2,356	70
Bradford	55	15	10,021	830	34	32,274	2,255	76
Swansea	62	14	13,144	963	41	42,942	2,747	93
Aberdeen	215	36	9,808	817	36	32,621	2,282	72
Colchester	61	12	8,291	690	27	27,169	1,981	59
Northampton	53	22	9,968	819	29	31,705	2,057	66
Norwich	84	11	6,570	533	21	21,697	1,613	47
Bournemouth	53	13	5,960	564	19	19,111	1,576	41
Nottingham	186	29	5,049	508	29	15,350	1,330	37
Brighton and Hove	75	-	3,026	378	13	9,770	1,093	25
Medway	16	4	5,051	415	17	14,665	1,210	35
Sunderland	109	20	3,644	321	20	13,017	1,046	31
Dundee	195	56	4,023	438	56	12,356	1,026	56
Plymouth	72	4	3,792	347	15	13,328	1,124	33
Derby	82	8	8,440	617	22	25,124	1,401	52
<i>South East England</i>	960	209	124,406	8,330	471	382,448	21,304	1,086
<i>South West England</i>	730	124	111,540	7,655	379	336,494	17,930	917
<i>Scotland</i>	965	278	39,567	3,241	278	124,835	8,577	371
<i>East Midlands</i>	397	71	37,043	3,009	141	118,525	8,114	329
<i>East of England</i>	335	39	60,849	3,705	197	166,802	8,205	450
<i>North West England</i>	283	85	21,842	1,899	99	74,077	5,583	224
<i>West Midlands</i>	217	71	38,052	2,549	144	128,038	7,467	347
<i>Wales</i>	344	39	18,084	1,530	79	59,131	4,736	168
<i>Northern Ireland</i>	310	16	13,935	1,141	63	49,503	3,651	141
<i>North East England</i>	152	22	10,786	877	52	37,296	2,724	117
<i>Yorkshire and the Humber</i>	109	21	11,055	863	47	38,245	2,557	113
All metropolitan areas	15,072	1,764	1,205,266	93,592	3,861	3,681,655	234,853	8,456
All nonmetropolitan areas	4,802	975	487,158	34,800	1,951	1,515,393	90,848	4,264
United Kingdom total	19,874	2,739	1,692,424	128,392	5,812	5,197,047	325,701	12,720

Table A2. Charging infrastructure needs for electric vehicle scenario 2 (70% electric sales by 2030)

Metropolitan area <i>(and region or country in italics)</i>	2019 Normal chargers	2019 Fast chargers	2025 Electric vehicles	2025 Normal chargers	2025 Fast chargers	2030 Electric vehicles	2030 Normal chargers	2030 Fast chargers
London	7,882	501	424,817	32,978	1,381	1,289,308	81,478	3,113
Manchester	615	91	97,468	7,216	303	384,521	23,139	828
West Midlands urban area	319	57	102,958	7,452	263	320,068	17,943	667
Liverpool	219	47	37,178	2,966	133	146,333	10,151	337
Glasgow	653	116	63,740	4,716	199	227,430	13,165	524
Leeds	314	69	69,352	4,878	181	228,229	12,008	466
Leicester	413	28	52,928	3,358	145	205,254	11,032	396
Newcastle upon Tyne	393	63	24,280	1,866	86	93,132	6,239	213
Bristol	307	49	49,429	3,191	137	178,468	9,381	374
Cardiff	121	15	21,773	1,811	77	83,108	6,398	189
Stoke-on-Trent	164	43	26,098	2,020	78	99,315	6,693	200
Coventry	228	63	30,851	2,385	92	110,029	6,731	232
Edinburgh	408	46	19,290	1,754	71	68,709	4,982	167
Doncaster	67	44	16,161	1,053	49	53,758	3,133	117
Southampton	199	44	15,404	1,579	47	53,081	4,251	111
Exeter	177	39	33,822	2,144	83	122,690	6,123	236
Belfast	140	12	23,749	1,907	65	87,209	5,986	172
Ipswich	137	27	14,140	1,234	44	51,754	3,886	106
Oxford	249	42	29,875	2,099	78	106,220	5,952	207
Blackburn - Blackpool - Preston	98	23	14,521	1,212	48	52,916	3,736	117
Portsmouth	94	27	23,400	1,888	76	77,257	5,084	190
Cambridge	161	13	15,515	1,310	44	53,428	3,579	107
Kirklees	66	19	10,119	933	37	38,240	3,012	88
Cheshire West and Chester	87	10	12,905	1,014	40	48,666	3,307	99
Kingston upon Hull	58	7	25,897	1,857	68	93,311	4,797	190
Sheffield	65	10	10,719	864	37	36,894	2,295	88
Middlesbrough	120	15	10,117	823	35	40,007	2,931	88
Bradford	55	15	11,594	938	38	41,644	2,822	95
Swansea	62	14	15,253	1,096	46	55,496	3,452	116
Aberdeen	215	36	11,405	924	36	42,132	2,851	90
Colchester	61	12	9,624	780	30	35,102	2,468	74
Northampton	53	22	11,500	923	32	40,825	2,577	83
Norwich	84	11	7,639	604	24	28,063	2,008	58
Bournemouth	53	13	6,890	633	21	24,650	1,951	51
Nottingham	186	29	5,790	567	29	19,759	1,645	45
Brighton and Hove	75	-	3,503	421	14	12,610	1,339	32
Medway	16	4	5,762	468	19	18,899	1,505	44
Sunderland	109	20	4,294	365	20	16,887	1,299	39
Dundee	195	56	4,614	487	56	15,875	1,268	56
Plymouth	72	4	4,456	393	17	17,282	1,394	41
Derby	82	8	9,629	695	25	32,207	1,772	65
<i>South East England</i>	960	209	142,803	9,462	527	491,989	26,974	1,353
<i>South West England</i>	730	124	127,557	8,656	427	431,869	22,732	1,144
<i>Scotland</i>	965	278	45,621	3,655	278	160,880	10,719	461
<i>East Midlands</i>	397	71	42,804	3,394	159	152,831	10,130	411
<i>East of England</i>	335	39	68,643	4,187	219	213,210	10,471	561
<i>North West England</i>	283	85	25,493	2,147	111	95,816	6,946	280
<i>West Midlands</i>	217	71	44,376	2,916	163	165,692	9,423	435
<i>Wales</i>	344	39	20,997	1,727	88	76,476	5,870	210
<i>Northern Ireland</i>	310	16	16,403	1,295	71	64,203	4,538	176
<i>North East England</i>	152	22	12,638	997	59	48,323	3,398	146
<i>Yorkshire and the Humber</i>	109	21	12,948	981	53	49,517	3,202	141
All metropolitan areas	15,072	1,764	1,388,461	105,802	4,306	4,750,768	295,763	10,513
All nonmetropolitan areas	4,802	975	560,282	39,417	2,156	1,950,806	114,405	5,317
United Kingdom total	19,874	2,739	1,948,743	145,220	6,462	6,701,574	410,168	15,830

Appendix B: Sequential Test

FREETHS

Appendix B – Sequential Test

1. Policy 4: Approach to Flood Risk of the adopted South East Lincolnshire Local Plan (“SELLP”) 2019 states that development will be permitted within an area of area of risk of flooding (Flood Zones 2 and 3) where *“It can be demonstrated that there are no other sites available at a lower risk of flooding (i.e. that the sequential test is passed). The sequential test will be based on a Borough or District wide search area of alternative sites within the defined settlement boundaries, unless local circumstances relating to the catchment area for the development justify a reduced search area, i.e. there is a specific need for the development in that location.”*
2. The proposed development comprises a roadside services and recharge centre, together with a HGV ‘lorry park’. The development’s purpose and characteristics mean that it is required to be located adjacent or nearby a strategic highway route (ie the A16). The scheme is also proposed on the basis of meeting a need for roadside services and in particular provision for HGV facilities. Its location therefore seeks to meet a geographical deficiency in the provision of such facilities.
3. The Applicant entered into pre-application discussions with the LPA and it was agreed through this process that the sequential test exercise would be limited to Crowland (and its immediate surrounding area) and the A16 corridor. The pre-app response stated *“Due to the nature of the proposal, I would suggest that the search area for alternative sites would need to be along the A16 as well as within the village.”*
4. **Appendix 1** shows the position of existing roadside services along the A16 corridor. Given the position of the Applegreen Fuel Station, to the south of Spalding this marks the northern point of the search area. The search area extends south to the junction of the A16 and B1443, east of Newborough within the administrative boundary of Peterborough. **Appendix 2** shows the extent of the search area.
5. The Flood Risk Assessment identifies that the site is within Flood Zone 3 and ‘Danger for Most’. It is understood that the flood depths fall within the category of 1.0-2.0m.
6. The Sequential Test can be split into two main distinct parts. Firstly, potential sites in and around the settlement of Crowland and secondly sites on the A16 corridor.
7. In identifying potential sites the Applicant has reviewed the LPA’s Strategic Housing Land Availability Assessment (“SHLAA”) July 2018 and the Strategic Employment Land Availability Assessment (“SELAA”) (March 2017). Whilst it is recognised these documents are for alternative forms

of development they nevertheless identify land that has been put forward for development and is a reasonable scope for assessing sites in and around Crowland. In practice both the road services element of the proposal and the lorry park require convenient access to the main strategic highway and consequently this rules out a significant number of sites both within the SHLAA and the SELAA. However for completeness, and as part of the wider justification for the development, the exercise has listed and discounted each of the sites put forward in the SHLAA and SELAA and this is summarised in Table 1. The hazard and depth ratings set out in the SHLAA and SELAA have been used in drawing comparisons to the site.

8. **Appendix 3** contains extracts of the SHLAA and SELAA maps which identify the location of the sites listed in Table 1, with the exception of the additional A16 corridor sites which are identified on the map provided as **Appendix 4**.
9. The results as set out Table 1 demonstrate that there is not a reasonably available site, that is suitable to accommodate the proposed development at a lower level of flood risk. Consequently the scheme passes the sequential test.

Table 1: Sequential Test Summary

Reference	Site Address	Site Area (Ha)	Within Settlement	Within Primary Shopping Area	Flood Risk Zone	Hazard	Depth	Reasons for Discounting
Sites within the SHLAA (2018)								
Cro002	Land to the east of Peterborough Road, Crowland	1.86	Yes	No	Zone 3a	Danger for Most	1.0-2.0m	• Directly adjacent to housing; • Site has insufficient depth; • No material difference in flooding terms
Cro004	Land adjacent to Crowland Caravans, off Postland Road, Crowland	1.7	No	No	Zone 3a	Danger for All	1.0-2m	• Poorly positioned to strategic network/main highway • Poor accessibility • Sequentially worse in flooding terms

Cro005	Allotments, off Thorney Road, Crowland	1.64	Yes	No	Zone 3a	Danger for Most	0.50m-1m	• Open Space. Site not suitable in SHLAA. This equally applies to proposed development. • Site is not easily accessible from the A16.
Cro006	Land to the west of Crease Drove, Crowland	0.88	No	No	Zone 3a	Danger for Most	0.50-1m	• Poorly positioned to strategic network/main highway • Poor accessibility • Site not suitable in SHLAA. This equally applies to proposed development
Cro007	Land to the north of Normanton Road, Crowland	3.99	No	No	Zone 3a	Danger for All	1.0-2.0m	• Poorly positioned to strategic network/main highway • Directly adjacent to housing • Poor accessibility • Sequentially worse in flooding terms
Cro008	Land to the east of Crease Drove, Crowland	1.66	No	No	Zone 3a	Danger for All	1.0.-2.0m	• No access • Sequentially worse in flooding terms
Cro009	Land to the south of Low Road, Crowland	1.16	No	No	Zone 1	Danger for All	1.0-2.0m	• Poorly positioned to strategic network/main highway • Relates poorly to settlement • Inappropriate shape to accommodate development
Cro010	Land to the west of Peterborough Road, Crowland	1.82	Yes	No	Zone 3a	Danger for All	1.0-2.0m	• Site has permission for housing. Built out
Cro011	Land to the north of Barbers Drove North, Crowland	1.54	Yes	No	Zone 3a	Danger for Most	0.5-1.0m	• Directly adjacent to housing; • Site has insufficient depth; • Housing Allocation

Cro012	Land to the east of Crease Drove, Crowland	1.69	No	No	Zone 3a	Danger for Most	0.5-1.0m	- Poorly positioned to strategic network/main highway - No access
Cro013	Land to the west of Barbers Drove South, Crowland	0.11	No	No	Zone 3a	Danger for Most	1.0 - 2.0m	Site too small.
Cro014	Land to the west of Harvester Way, Crowland	3.43	No	No	Zone 3a	Danger for All	1.0 - 2.0m	- Poorly positioned to strategic network/main highway - Sequentially worse in flooding terms
Cro015	Land to the north-east of The Chase, Crowland	12.82	No	No	Zone 3a	Danger for Most	0.50m-1.0m	- Site is too large - Poorly related to settlement
Cro016	Land to the west of Cloot Drove, Crowland	1.56	No	No	Zone 3a	Danger for All	1.0m-2.0m	- Poorly positioned to strategic network/main highway - Sequentially worse in flooding terms
Cro017	Land to the west of James Road, Crowland	1.76	No	No	Zone 3a	Danger for All	1.0-2.0m	- Directly adjacent to housing - Sequentially worse in flooding terms
Cro018	Land to the west of Crease Drove, Crowland	2.22	No	No	Zone 2	Danger for Most	0.25m-0.50m	- Directly adjacent to housing - Poorly positioned to strategic network/main highway
Cro019	Land to the west of Cloot Drove, Crowland	0.74	No	No	Zone 3a	Danger for All	1.0m-2.0m	- Sequentially worse in flooding terms - Poorly positioned to strategic network
Cro020	Land to the east of Peterborough Road, Crowland	0.27	Yes	No	Zone 2	Danger for Some	0.25-0.5m	Site is too small.

Cro023	65 Peterborough Road, Crowland	0.19	Yes	No	Zone 3a	Danger for Most	0.50-1.0m	Site is too small.
Cro024	Land to the rear of 60 North Street, Crowland	0.35	Yes	No	Zone 1	Danger for Most	0.50m-1.0m	Site is too small.
Cro025	Land at Alderlands Close, Crowland	0.21	Yes	No	Zone 2	Danger for Most	0.25-0.50m	Site is too small.
Cro027	Land adjacent to 27A Chapel Street, Crowland	0.1	Yes	No	Zone 3a	Danger for Most	0.50m-1.0m	Site is too small.
Cro028	Former PO Sorting Office, 6 Reform Street, Crowland	0.2	Yes	No	Zone 1	Low Hazard	0-0.25m	Site is too small.
Cro030	Land to the rear of 2-6 West Street, Crowland	0.13	Yes	Yes	Zone 1	Low Hazard	0-0.25m	Site is too small.
Cro031	Land off Cloot Drove, Crowland	8.41	No	No	Zone 3a	Danger for All	1.0-2.0m	- Poorly positioned to strategic network/main highway - Directly adjacent to housing - Poor accessibility - Sequentially worse in flooding terms
Cro032	Land at Barbers Drove & Carrington Drove, Crowland	5.8	No	No	Zone 3a	Danger for Most	1.0m-2.0m	- Site too large - No material difference in flooding terms
Cro033	Land off Barbers Drove, Crowland	2.11	No	No	Zone 3a	Danger for Most	1.0-2.0m	No material difference in flooding terms
Cro034	Land off Barbers Drove, Crowland	0.45	No	No	Zone 3a	Danger for Most	1.0-2.0m	Site is too small.

Cro036	Land at 18 Low Road, Crowland	1.48	Yes	No	Zone 2	Danger for Most	0.5m-1.0m	- Poorly positioned to strategic network/main highway - Housing Allocation
Cro038	Crowland Garden Centre, Postland Road, Crowland	3.92	No	No	Zone 3a	Danger for All	1.0-2.0m	- Site too large - Sequentially worse in flooding terms
Cro041	Land to the north of Postland Road, Crowland	4.19	No	No	Zone 3a	Danger for Most	1.0m-2.0m	- Poorly positioned to strategic network/main highway - No material difference in flooding terms
Cro043	Land to the east of Crease Drove, Crowland	1.54	Yes	No	Zone 2	Danger for Most	0.25m-0.50m	- Poorly positioned to strategic network/main highway - Housing Allocation
Cro044	Land to the rear of 11 Barbers Drove, North Crowland	1.47	Yes	No	Zone 2	Danger for Most	0.50-1.0m	- Poorly positioned to strategic network/main highway - Housing Allocation
Cro045	Land west of Clout Drive, Crowland	5.12	No	No	Zone 3a	Danger for All	1.0-2.0m	- Site too large - Sequentially worse in flooding terms
Cro046	South View Community School, Broadway, Crowland	0.68	Yes	No	Zone 1	Danger for Most	0.25m-0.50m	Housing Allocation
Cro047	Playing Field, East of Chapel Street, Crowland	0.58	Yes	No	Zone 1	Danger for Most	0.50-1m	- Site too small - Loss of open space - Poorly positioned to strategic network/main highway

Cro048	Land to the east of Crease Drove, Crowland	3.55	No	No	Zone 3a	Danger for All	1.0-2.0m	• Site too large • Poorly positioned to strategic network/main highway • Sequentially worse in flooding terms
Cro049	Land to the West of Crease Drove, Crowland	3.35	No	No	Zone 2	Danger for Most	0.50-1.0m	• Site too large • Poorly positioned to strategic network/main highway
Cro050	Land to the east of Normanton Road and Jubilee Way, Crowland	3.48	Yes	No	Zone 3a	Danger for Most	0.50-1.0m	• Housing Allocation • Poorly positioned to strategic network/main highway
Sites within the SELAA (2017)								
CR001	Crease Drive Business Park, Crowland	6.09	No	No	Zone 3a	Danger for All	0.5-1m	• Site too large • Existing Employment Area
CR002	Harvester Way, Crowland	5.1	No	No	Zone 3a	Danger for All	1.0-2.0m	• Site too large • Sequentially worse in flooding terms • Part of site also Cro014
CR003	Horseshoe Yard, Crowland	0.2	Yes	No	Zone 3a	Danger for All	0.5m-1m	• ExistingEstablished Employment site • Too small
CR004	Land North of Postland Road, Crowland	4.53	No	No	Zone 3a	Danger for All	1-2m	• Poorly positioned to strategic network/main highway • No material difference in flooding terms • Same site as Cro41
CR005	Land to the East of Crease Drove, Crowland	1.55	Yes	No	Zone 3a	Danger for Most	0.25-0.5m	• Permission for residential use/Housing Allocation • Poorly positioned to strategic network/main highway • Same site as Cro043

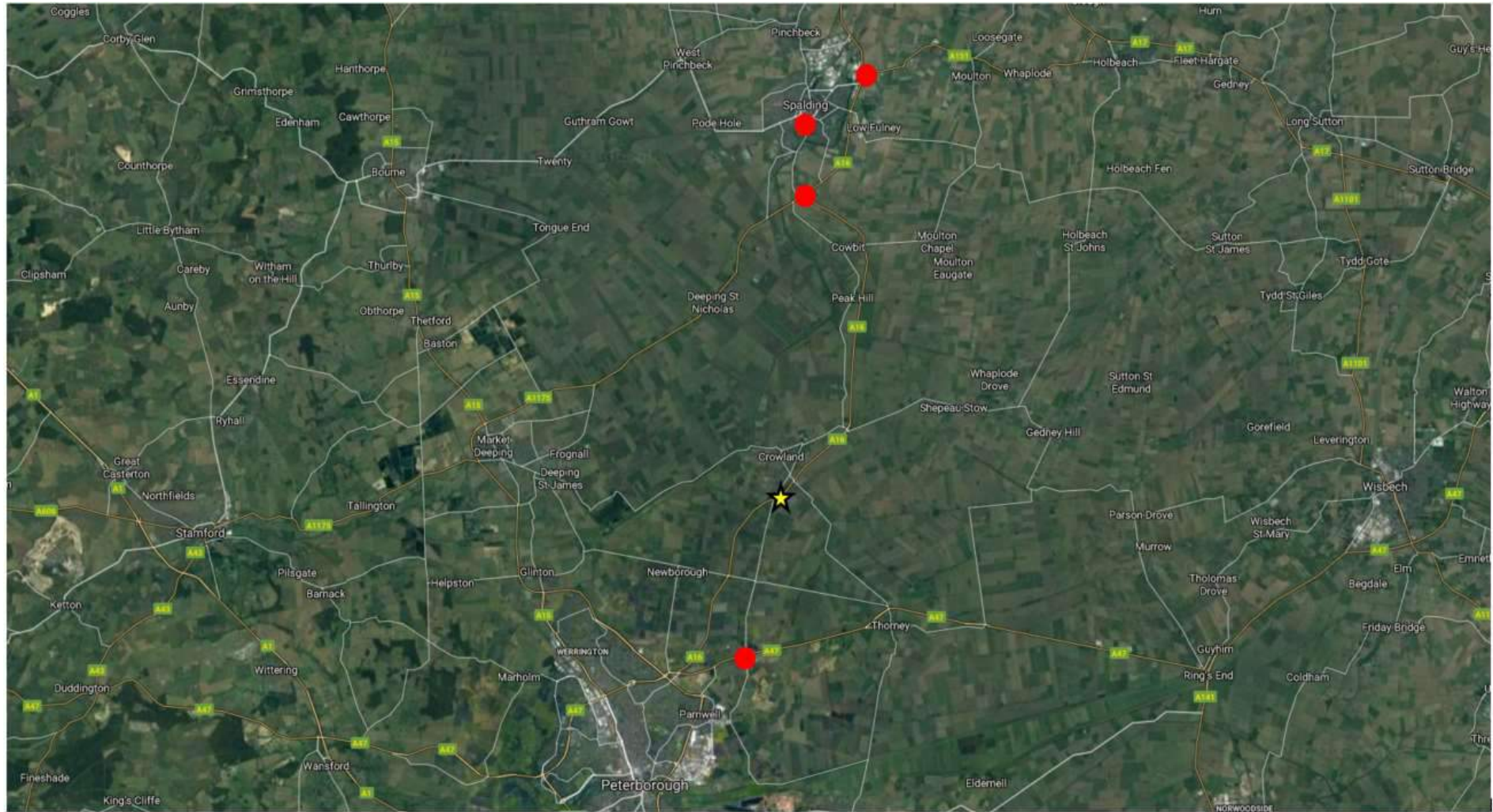
CR006	Crowland Garden Centre, Postlan Rd, Crowland	4.08	No	No	Zone 3a	Danger for Most	1.0-2.0m	- Site too large - Sequentially worse in flooding terms - Same site as Cro038
CR007	Land at Thorney Road, Crowland	1.7	No	No	Zone 3a	Danger for Most	0.5m-1m	Site allocated for Employment.
CR008	Land to the West of Crease Drove, Crowland	0.89	No	No	Zone 3a	Danger for Most	0.5m-1m	- Poorly positioned to strategic network/main highway - Poor accessibility - Same as Cro006
CR009	Tourmaster Coaches, James Road, Crowland	0.36	No	No	Zone 3a	Danger for All	1.0-2.0m	Too small
CR010	Land to the North of Carrington's Grove, Crowland	6.37			Zone 3a	Danger for All	1.0-2.0m	- Too large - Sequentially worse in flooding terms

Other Sites Identified along the A16 Corridor (data on Hazard taken from Residual Flood Hazard Present Day (February 2017))

Site A	Land to south east of A16/B1357 roundbaout, nr Cowbit	1.7	No	No	Zone 1	SFRA map does not identify	SFRA map does not identify	Site too close to Appledore Services.
Site B	Land to south of the junction of the A16 and Queens Bank	Undefined	No	No	Zone 3a	Danger for Most	1.25-2.0m	- Lack of suitable access/Vehicles would be required to turn across A16. - No material difference in flooding terms

Site C	Site to west of A16/James Road	3.6ha	No	No	Zone 3a	Danger for Most	1.25m-2.0m	- Lack of suitable access/Vehicles would be required to turn across A16. - No material difference in flooding terms
Site D	NW quadrant of A16/James Road/P'borough Road roundabout	Undefined	No	No	Zone 3a	Danger for All	Greater than 2m	Sequentially worse in flooding terms
Site E	SW quadrant of A16/James Road/P'borough Road roundabout	Undefined	No	No	Zone 3a	Danger for All	Greater than 2m	Sequentially worse in flooding terms
Site F	SE quadrant of A16/James Road/P'borough roundabout	Undefined	No	No	Zone 3a	Danger for Most	1.25m-2.0m	No material difference in flooding terms
Site G Search Area south of site within Peterborough City Council boundaries	Land between A16/James Road/ Peterborough Road roundabout and A16/B1443 west of Newborough	Undefined	No	No	Zone 3a			- Development contrary to Policy LP2 of the adopted Peterborough City Council Local Plan. - Lack of suitable access/Vehicles would be required to turn across A16.

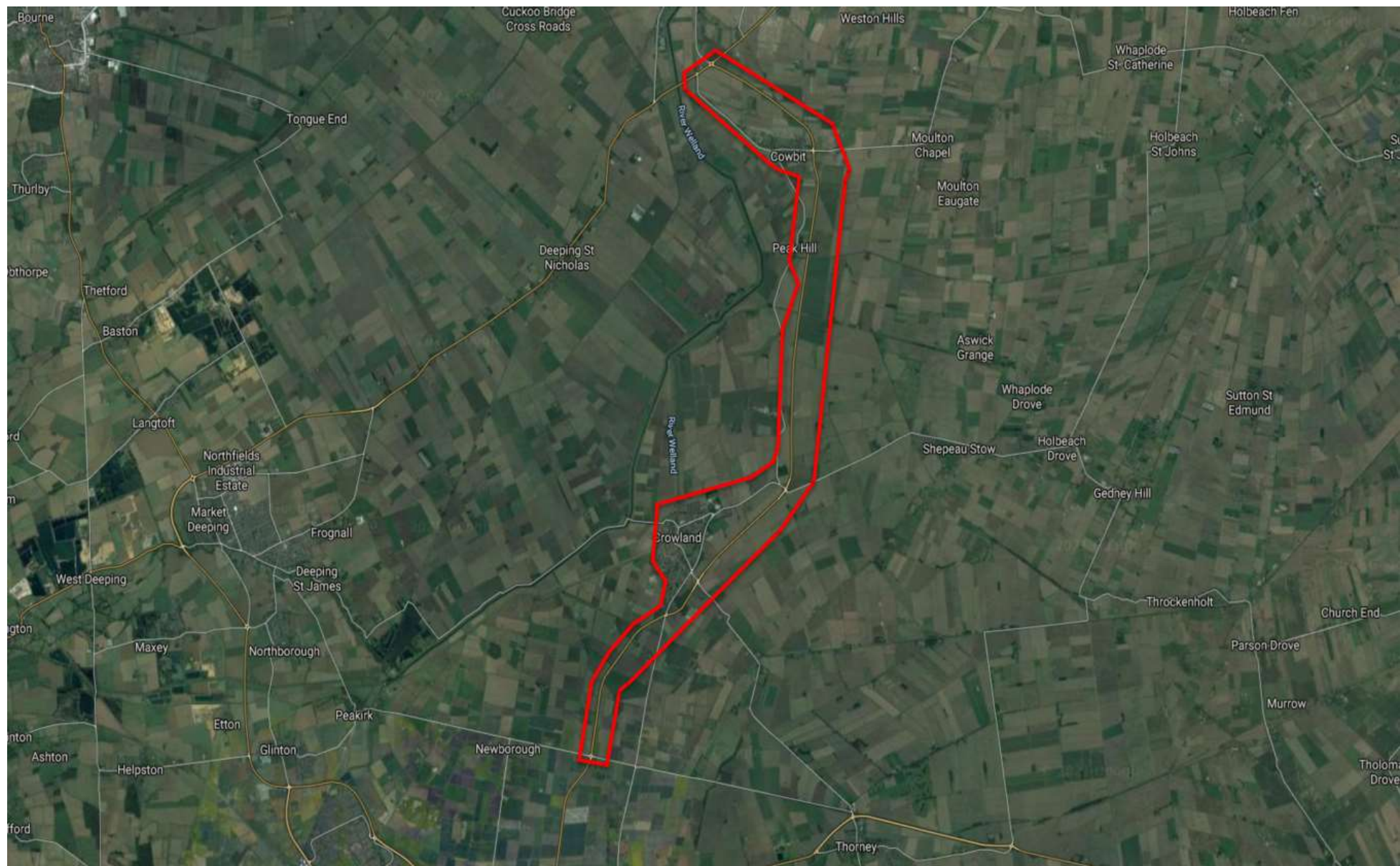
Appendix 1: Existing Roadside Services



KEY

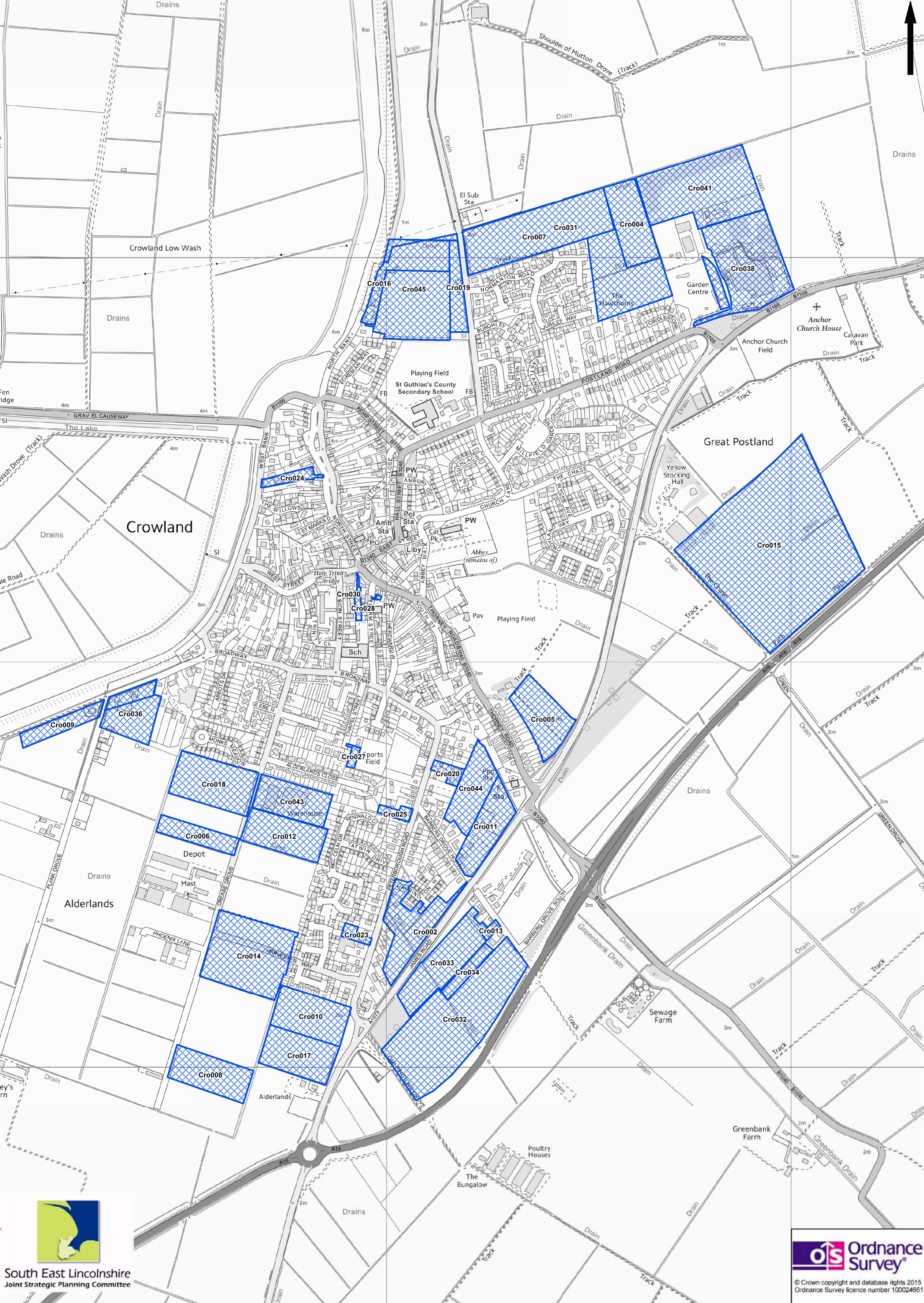
● Petrol Stations ★ The Site

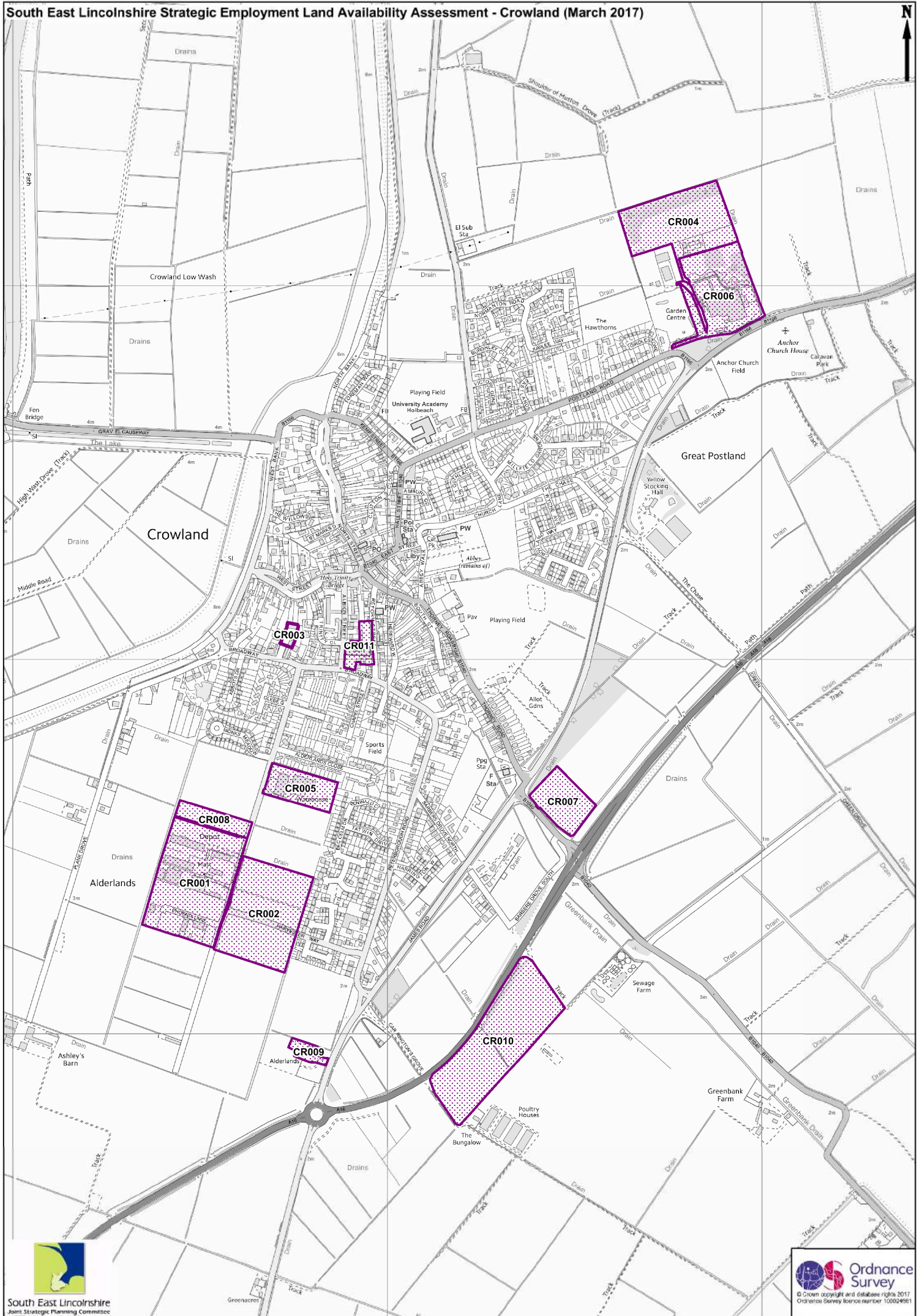
Appendix 2: Extent of Sequential Test Area



Appendix 3: SHLAA & SELAA

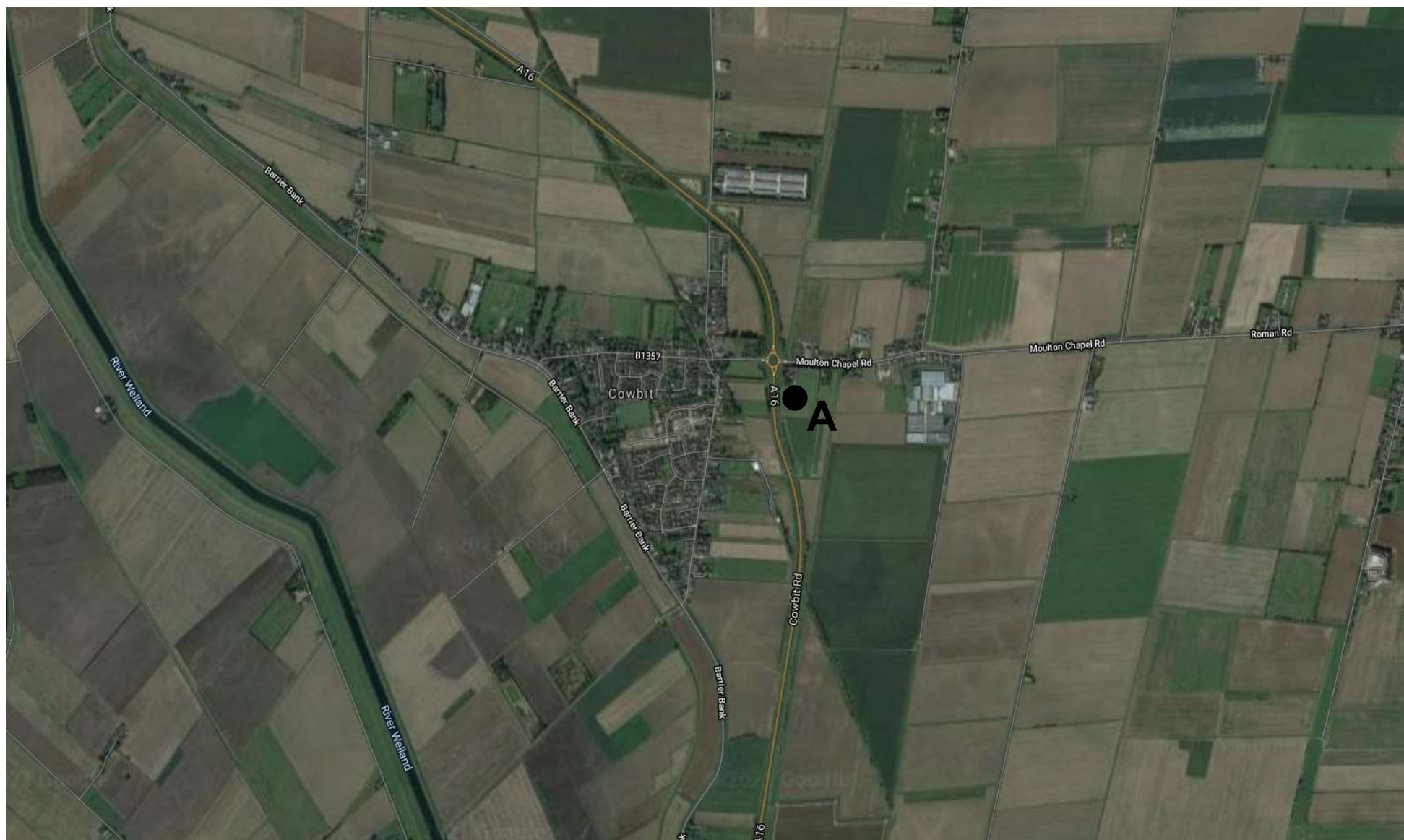
South East Lincolnshire Strategic Housing Land Availability Assessment - Crowland (January 2016)

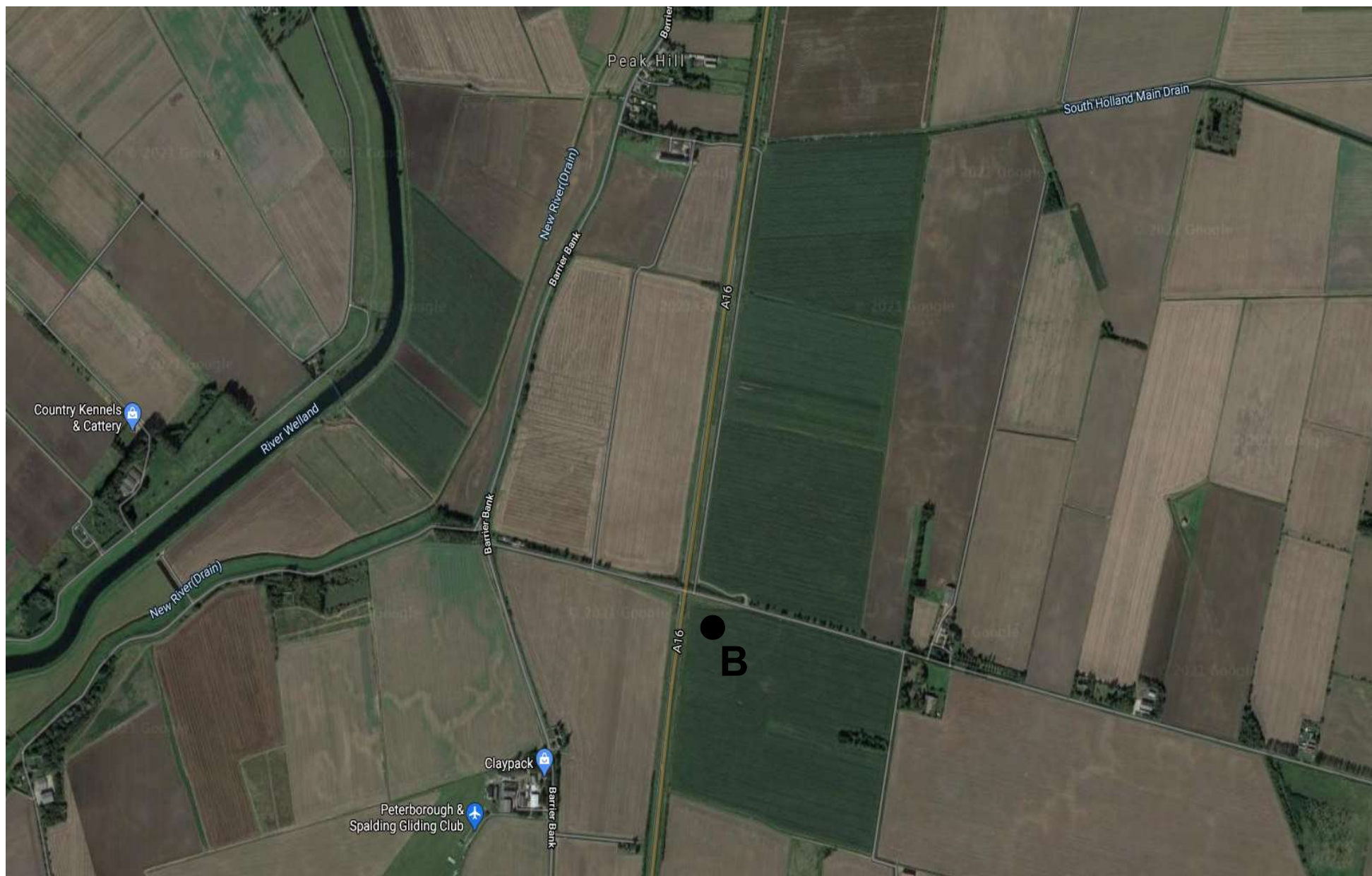


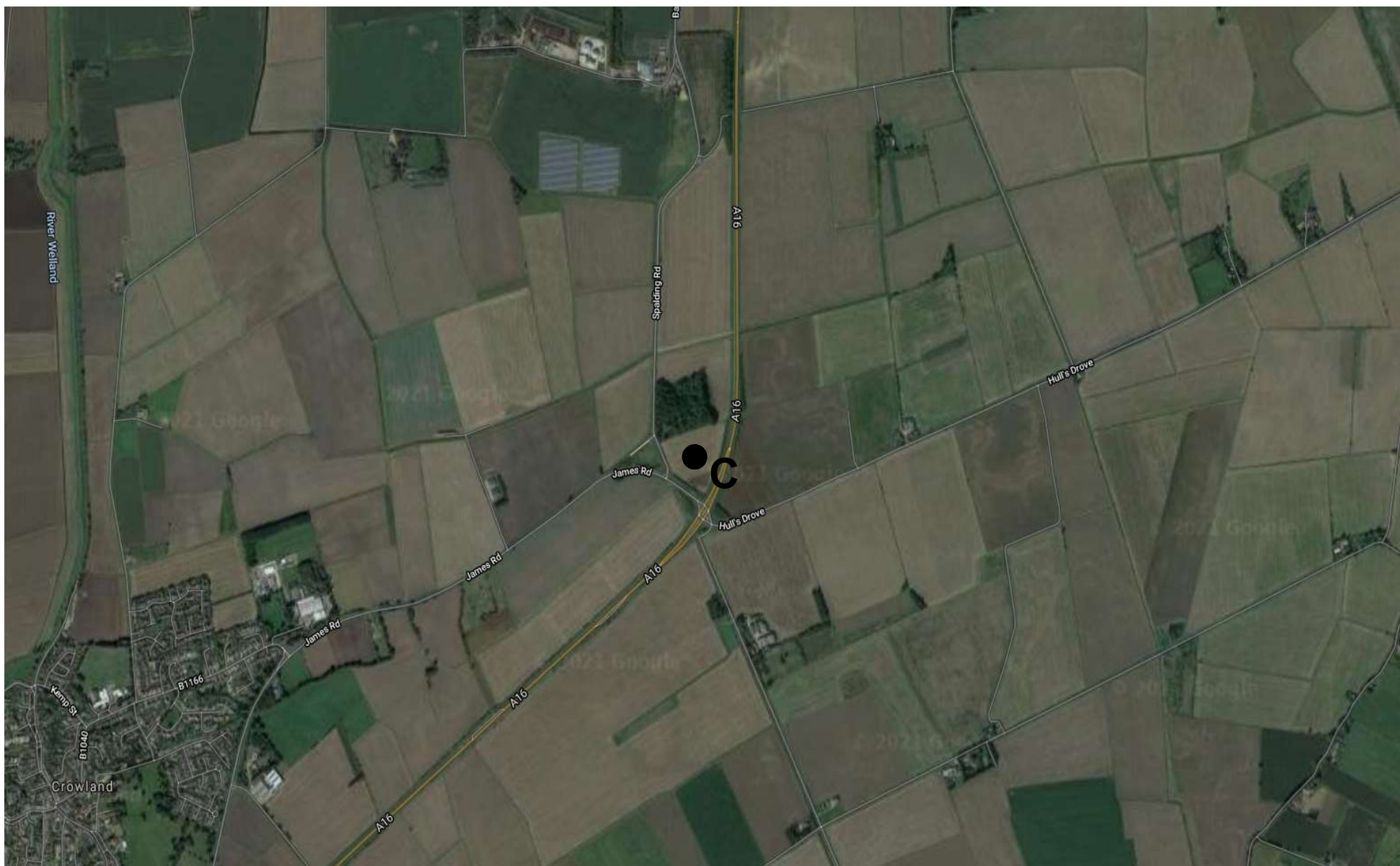


Appendix 4: Sequential Sites Outside of Crowland











Appendix C: DfT National Survey of Lorry Parking

National Survey of Lorry Parking



Quality information

Prepared by	Checked by	Approved by
Nomsa Masamvi , Consultant Patrick Reardon , Consultant	James Nankivell Senior Consultant	Geoff Clarke Regional Director

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Prepared for:

Department of Transport (DfT) and Highways England (HE)

Prepared by:

Nomsa Masamvi,

AECOM Limited
AECOM House
179 Moss Lane
Altrincham
WA15 8FH
UK

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Executive Summary

Introduction

The aim of this study is to provide information on the current capacity and demand for overnight lorry parking across England. To do so, a thorough analysis has been conducted across the entire Strategic Road Network (SRN), as well as all lorry parking sites within 5km of the network.

During the month long survey:

- A total of 4509 parking sites were visited, these were made up as follows:
 - 311 lorry parks including Motorway Service Areas (MSAs) (on-site);
 - 801 Industrial / Retail Estates (off-site);
 - 3397 Laybys (off-site).
- 18,670 vehicles were found to be parked overnight across England. The total capacity of on-site spaces was found to be 15,012, hence leaving a theoretical excess of 3,658 vehicles that could not park in an on-site space **Figure E1**.
 - 39% of all vehicles counted were recorded as parking off-site;
 - 25% of vehicles counted making overnight stops were foreign registered in contrast to the 3.3%¹ of total UK HGV vehicle kilometres that is made up of foreign vehicles.

The following regions have parking that exceeds or is close to exceeding capacity: East Midlands, East of England, North East, South East, West Midlands and South West.

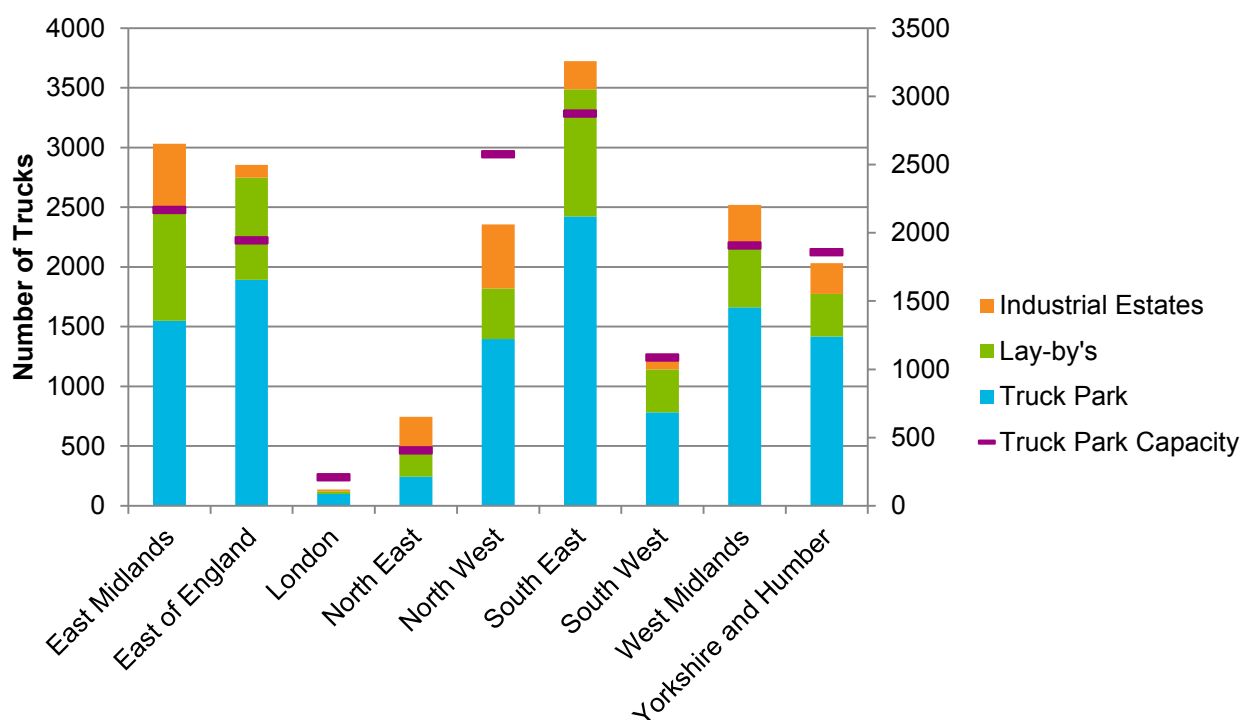


Figure E1: Summary of Parking Demand against Capacity

¹ Department for Transport, 2015 - Road Traffic Estimates: Great Britain 2014 (R)

On-Site Parking

Utilisation

The utilisation of on-site lorry parking facilities compares the number of vehicles parked against current capacity - it is a useful indicator for areas where capacity is struggling to meet demand.

A categorisation system has been created to identify when high utilisation becomes problematic:

- At utilisation $\geq 85\%$ it is difficult for drivers to find parking spaces due to the size of vehicles and the way they are positioned, hence at this point the lorry park is considered to be full in a practical sense.
- As with previous studies we have specified $\geq 70\%$ utilisation as reaching an increasingly serious level where drivers have to search carefully for spaces.

Table E1: Utilisation Categorisation

Description	Utilisation (%)
Critical	≥ 85
Serious	70-84
Acceptable	< 69

Six out of nine regions are categorised as having serious or above levels of utilisation, whilst two of these, the East of England and West Midlands are categorised as critical. The average for the whole country is 76%.

Notably the South East is just 1% off being categorised as serious.

Table E2: Regional Utilisation

Region	Lorry Park Utilisation	
	2010	2017
East of England	80%	97%
West Midlands	71%	87%
South East	71%	84%
Yorkshire and Humber	47%	76%
East Midlands	56%	72%
South West	46%	72%
North East	50%	60%
North West	55%	54%
London	45%	48%
England	58%	76%

Utilisation has increased across England by 18% from 58% to 76% in the last seven years (2.6% per year) since the previous survey. If this trend continues then six regions will be categorised as critical by 2024. According to DfT registration figures², 493,600 HGVs were registered in Great Britain in 2016. This represents a fourth consecutive year of increase after five years of decline following the market peak in 2007. In 2016 the number of HGVs on the roads in the UK increased by 2% compared to the previous year³. When the previous survey was conducted the freight sector was experiencing some lag from the economic downturn and this may have affected the 2010 results.

In some cases the utilisation for a particular site has been recorded as $>100\%$ with the highest being recorded at 305%. Instances where the number of lorries parked is higher than the capacity are due to lorries parking in spaces that are not designed / suitable for lorry parking. This was observed in the form of parking across car/coach parking spaces, on slip roads leading to off-site parking locations and on kerb sides.

Comparison against previous study

The number of HGVs counted making overnight stops on a typical mid-week night has risen from 13,708 (2010) to 18,670 (2017). This represents a 36% increase (4,962 vehicles). In comparison, the total capacity of on-site spaces available in lorry parks or motorway service areas (MSAs) has increased by just 14% to 15,012.

² DfT, 2017 - Vehicle Licensing Statistics: Annual 2016. Pg10

³ DfT, 2017 - Road Freight Statistics (June 2015 - June 2016.) Pg1

On average each lorry park has a capacity of 48 vehicles and the lorry parking facilities that have been added since 2010 have an average of 59 spaces per site.

Table E3: Comparison against previous study

	2010 Data	2017 Data	Difference
Vehicles parked overnight	13,708	18,670	4,962 (36% increase)
On-site spaces	13,173	15,012	1,839 (14% increase)
Number of lorry parks surveyed	280	311	31 (11% increase)
Regions with greater than 70% utilisation	South East West Midlands East of England	East of England 97% West Midlands 87% South East 84% Yorkshire and Humber 76% East Midlands 72% South West 72%	A greater number of regions have high utilisation as Yorkshire and Humber, the East Midlands & South West now also have utilisation over 70%
% of vehicles parking off-site	41	39	2

Facilities and Price

A system was devised to rate all on-site lorry parking facilities as described in the **Table E4** below. This rating was based on a five point scale which is broadly in line with LABEL, the European Truck Park Area Certification system. As the system devised does not include all of the LABEL criteria, the results should be used indicatively. Nevertheless, it provides a useful overview of the types of facilities available at lorry parks on a regional basis.

Table E4: Lorry Park rating basis

Truck Stop Rating	Truck Stop Facilities	Description
1	Toilets	Basic rest area offering truck drivers a place to park and access to toilets.
2	Toilets & Café	Basic/medium rest area offering truck drivers a place to park and access basic amenities.
3	Toilets, Shower & Café	Medium level facility that offers truck drivers a place to park with basic amenities including wash facilities.
4	Toilets, Lighting, Shower, Café, & Security Fence	Medium/high level facility that offers a degree of secure and safe truck parking whilst also offering reasonable facilities for truck drivers.
5	Toilets, Lighting, Shower, Café, Security Fence Accommodation & CCTV	High end truck parking facility offering truck drivers a place to park securely and safely whilst also enjoying extensive facilities.

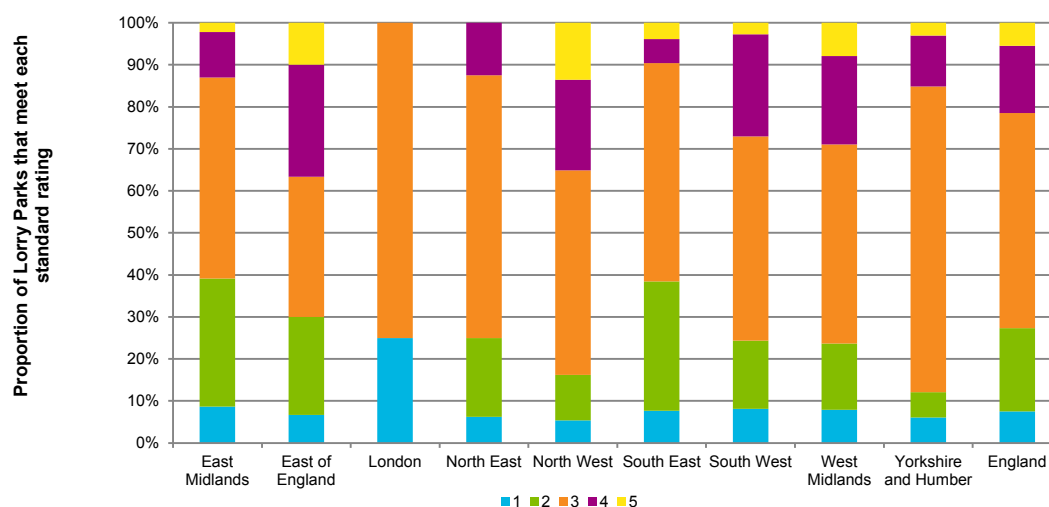
According to the labelling system outlined in **Table E4** the facilities ranked $\geq$ level 4 have security provision. **Table E5** indicates that just 5% are rated at level 5 and only 21% of facilities across England are rated $\geq$ level 4 and hence provide security features.

It is important to note that CCTV was recorded through visual auditing, yet stakeholder consultation has indicated that a number of cameras in place are used for Automatic Number Plate Recognition (ANPR) based parking fees enforcement rather than security.

Table E5: Lorry Park Ranking – Regional Summary

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
London	25%	0%	75%	0%	0%	£21.70
East of England	7%	23%	33%	27%	10%	£18.70
South East	8%	31%	52%	6%	4%	£18.60
North West	5%	11%	49%	22%	14%	£18.00
Yorkshire and Humber	6%	6%	73%	12%	3%	£17.20
West Midlands	8%	16%	47%	21%	8%	£16.30
South West	8%	16%	49%	24%	3%	£15.50
North East	6%	19%	63%	13%	0%	£13.50
East Midlands	9%	30%	48%	11%	2%	£13.20
England	8%	20%	51%	16%	5%	£16.60

Figure E2: Lorry Park Ranking – Regional Summary



The average price for overnight parking across England is £16.60⁴. As expected London, the East of England and the South East have higher than average parking prices due to the high land value in these regions. The North West and Yorkshire and Humber also have higher average prices than the national average which aligns with the level of facilities available in the regions:

- In the North West 36% of facilities are ranked level 4 or 5 in comparison to the national average of 21%;
- 88% of facilities are ranked higher than level 3 in Yorkshire and Humber in comparison to the national average of 72%.

⁴ Based on this figure the annual cost of paying for overnight parking in on-site facilities is approximately £3,187

Off-Site Parking (e.g. parking in laybys and industrial / retail parks)

Appropriate Parking

Whether off-site parking is to be considered as inappropriate for overnight parking is undetermined. However, there is a shortage of HGV drivers and one reason for this is the negative public perception of the industry as well as drivers feeling underpaid and undervalued. Providing drivers with suitable wash and food facilities, to enable them to have a pleasant overnight rest, is important for improving driver morale, perception and road safety. If this is the standard set for what can be defined as 'appropriate' parking then most laybys and industrial/retail parks would then be considered 'inappropriate.' A total of 39% of vehicles were found to be parking off-site. The breakdown of this is as follows:

- 14% of all vehicles counted parking overnight were found to be in industrial estates or retail parks, of these 6% have cafes and 42% are lit.
- 25% of all vehicles counted parking overnight were found to be in laybys, of these: 6% were found to be lit, 1% have toilets and 2% have a café – the cafés observed were usually a portable trailer which closed in the evenings.

With lorry parking averaging at £16.60/night many drivers would prefer to supplement their salary with a tax-free "night-out" payment from their employer and spend the night parked off-site for 'free'. One solution to this problem could be to adapt these locations into 'enhanced' off-site parking facilities having basic amenities for drivers at a modest price.

Hotspots

The East Midlands was found to have the greatest number of vehicles parking off-site (42% - 1254 vehicles seen). This is shown in **Table E6** where all three indicative factors are high; the M1 corridor has an extremely high off-site parking density as well as the A1 corridor - this can be seen in **Figure E3**.

The SRN surrounding the three ports in the South East and East of England is under a lot of pressure for additional lorry parking. The heat map (**Figure E3**), shows high off-site parking on the M20, A2, A14, A12 and A120 leaving the ports and also in and around the counties of Essex and Kent. Almost all lorry parks within the counties of Essex and Kent are at critical levels of utilisation.

There is high off-site parking density around the Port of Liverpool and no lorry parking facilities close by. A number of those on routes close to the port are at critical utilisation.

The A34 in the South East leading north from the ports of Southampton and Portsmouth has high levels of offsite parking and a high number of serious and critically utilised lorry parks.

Table E6: Off-Site and Excess Vehicles

Region	Total Parked Vehicles	Total Vehicles Parked offsite	Percentage of vehicles parked offsite	Excess vehicles
East of England	2,854	731	26%	911
East Midlands	3,032	1,264	42%	865
South East	3,723	890	24%	852
West Midlands	2,519	740	29%	613
North East	745	468	63%	340
South West	1,272	424	33%	188
Yorkshire and Humber	2,032	563	28%	179
London	136	31	23%	-71
North West	2,357	883	37%	-216
England	18,670	7,201	39%	3,658

Off-Site Parking Map

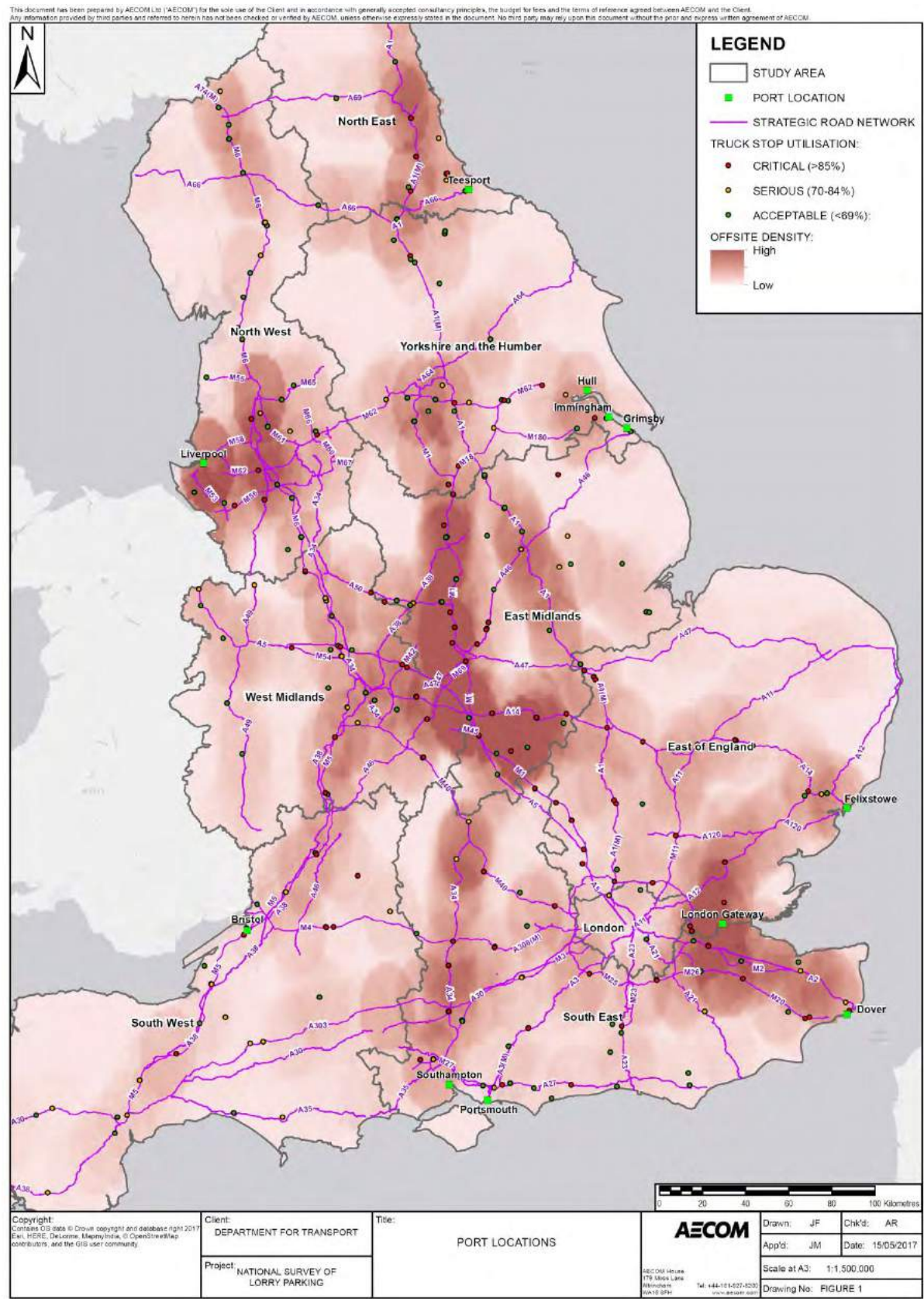


Figure E3: Map to show off-site parking density

Foreign registered vehicles

Table E7: Foreign registered vehicles compared to UK registered vehicles

All Parking	UK vehicles	Foreign vehicles	All Vehicles	Foreign / Total
South East	2,203	1,520	3,723	41%
London	96	40	136	29%
East of England	2,098	756	2,854	26%
East Midlands	2,341	691	3,032	23%
West Midlands	1,955	564	2,519	22%
Yorkshire and Humber	1,678	354	2,032	17%
North East	619	126	745	17%
North West	1,951	406	2,357	17%
South West	1,074	198	1,272	16%
England	14,015	4,655	18,670	25%

Across England, 25% of vehicles counted taking overnight stops were found to be foreign registered in contrast to the 3.3% of total UK HGV vehicle kilometres that is made up of foreign vehicles⁵. A high of 41% of the total vehicle traffic (3,723) was recorded in the South East. A number of journeys made by UK vehicles can be completed within the day and do not require an overnight stop.

The percentage of foreign vehicles parked on-site is 1% lower than those parked off-site. In both cases on and off-site parking has the highest proportion of foreign vehicles in the South East. As the majority of international road movements move across the Dover Straits and Channel Tunnel, this is an expected outcome.

London has a notable difference between the numbers of foreign vehicles found on and off-site. One of many reasons for this may be concern over congestion charging.

Crime

Crime data was collected from NaVCIS for the whole of 2016. NaVCIS highlighted that not every police force reports crime to them and as such there are significant differences in crime statistics from region to region. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worthy of further examination.

The key areas of freight crime have been captured in detail in the regional analysis.

The areas found to have the biggest freight crime problems from data and stakeholder interviews are:

- Northampton (East Midlands),
- Essex (East of England),
- Leicester (East Midlands) and;
- Nottinghamshire (East Midlands).

Unsurprisingly, the area with the highest crime rate is the East Midlands where the number of vehicles counted parking off-site is the highest across the country, making up 17.5% of all off-site parking. The East of England has the highest utilisation and number of excess vehicles - when considering remaining on-site spaces.

⁵ Department for Transport, 2015 - Road Traffic Estimates: Great Britain 2014 (R)

Estimation of additional parking required

We have developed immediate and long term responses which could be used to progress developments in increasing lorry parking capacity. The immediate response is focused on specific lorry parking locations that currently are at critical capacity of over 85%. Whereas the long-term estimations are based on all overnight parking compared with current capacity, this considers a situation where all overnight parking occurs on-site.

Immediate response

The following **Table E8** has been created to aid response decisions, the terminology can be defined as:

- Theoretical: the total number of spaces required if there is an on-site parking space provision for every single lorry counted overnight;
- Practical: the total number of spaces required for every lorry to be able to park in a space overnight considering that a lorry park is, in practice, full at 85% capacity.

To deliver an immediate response, only lorry parks recorded as critical ($\geq 85\%$) were considered, as such London is excluded from the table. Theoretically six regions require additional spaces; yet practically eight regions have been identified as needing increased parking facilities, with the most urgent need found to be in the South East.

Table E8: Immediate response estimation of additional parking requirements from considering lorry parks currently equal to or above $\geq 85\%$ capacity

Region	Theoretical Spaces needed	Practical total spaces needed	Practical number of additional spaces needed	Practical additional spaces needed (%)
South East	210	1,731	470	37%
North East	8	153	31	25%
South West	17	351	70	25%
East of England	58	1,848	335	22%
West Midlands	27	1,262	216	21%
Yorkshire and Humber	15	844	142	20%
North West	-10	472	61	15%
East Midlands	-43	866	87	11%
England	282	7,526	1,411	19%

Taking just the critical areas $>85\%$ utilisation, there is an immediate need for 1,411 more spaces across the country (19%), with the most urgent need found to be in the South East where 37% more overnight parking spaces are required.

1. Introduction

1.1 Introduction

AECOM was commissioned by the Department for Transport (DfT) to undertake research on lorry parking demand in England. DfT wanted to gain a clear picture of the demand for lorry parking and facilities that can be easily updated in the future and require a comprehensive survey, which reviewed the lorry park locations, their capacity and utilisation, as well as other indicators of demands such as lorry parking in laybys and on industrial / retail estates.

The previous national lorry parking survey undertaken by AECOM in 2010 found there was nearly enough parking capacity to meet demand but on average, it was only 61% occupied. 41% of HGVs were parked in lay-bys and industrial estates. Recent publicity suggests the number parked other than in lorry parks and Motorway Service Areas (MSAs) may have increased, with repeated complaints about laybys being full of foreign-registered vehicles. There have also been instances of HGVs parking illegally on motorway hard shoulders.

This survey provides a clear and up to date picture of the amount of inappropriate parking and identifies where there is a shortage of parking facilities.

1.2 Aims and Objectives

The overall objective of the work package is to *“undertake a comprehensive review of lorry park locations, including their capacity and utilisation, as well as other indicators of demand, in order to gain a clear picture of the demand for lorry parking and facilities that can be easily updated in the future.”*

There were four specific requirements completed to achieve this objective:

- Determine and map the number, type and capacity of lorry parks
- Determine and record the type of facilities at each lorry parking facility
- Determine and map the utilisation of lorry parks
- Determine and map the extent of other indicators of demand

The primary outcome of this project was to provide DfT with comprehensive data, evidence and mapping of current lorry parking demand that will be used to assess current needs and forecast future demand for lorry parking easily accessible from the SRN in England.

1.3 Structure of Report

This report has been structured as follows:

Chapter 1 - Introduction

Chapter 2 - Methodology

Chapter 3 - Desk based research

Chapter 4 - Consultation

Chapter 5 - Lorry parking audit findings

Chapter 6 - Summary findings

1.4 Background

This study focuses on the SRN in England. This network consists of over 7081 KM (4,400 miles)⁶ of motorways and trunk roads that are managed by Highways England as well as the M6 Toll. These are highlighted in **Figure 1.1**. One third of all road traffic and over half of all road freight is carried by the SRN.

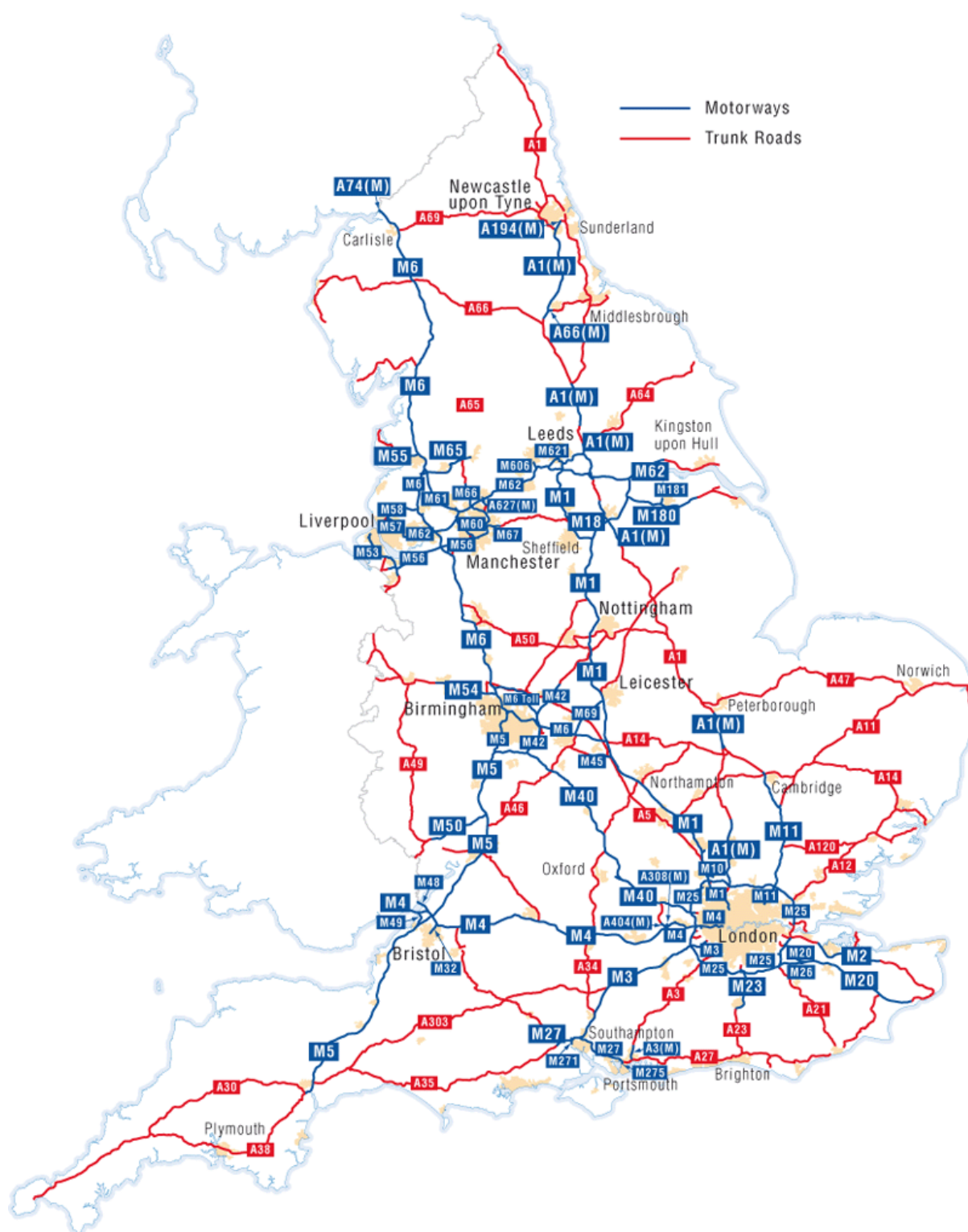


Figure 1.1: The Strategic Road Network

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/448276/strategic-road-network-statistics.pdf

Whilst sea, air and rail play an important role in the movements of goods in England, the UK economy is very much reliant upon the movement of road freight. Latest Eurostat statistics (2014)⁷, detail that road freight in the UK is by far the most dominant mode of inland freight transport accounting for 87%. Rail accounts for 12.9% and inland waterways 0.1%. According to DfT registration figures⁸, 493,600 HGVs were registered in Great Britain in 2016. This represents a fourth consecutive year of increase after five years of decline following the market peak in 2007. The majority of freight movements start or end with a journey by lorry and it would appear that the needs of the driver and his employer often go unseen.

There is increasing concern that the shortage of lorry drivers experienced in some parts of Europe will get worse as more drivers leave the industry than joining, a problem exacerbated by an aging workforce approaching retirement. One of the issues is that drivers are less willing to sleep in their cab without the ability to take a shower, freshen up and have something good to eat. Also, most employers insist that drivers should not drink alcohol during an intensive driving week and so the traditional picture of trucks parking up overnight near a pub or similar hostelry may be reducing in number.

Rest areas are a vital means of supporting EU Drivers' Hours legislation, which requires regular breaks (at least 45 minutes after no more than 4 hours 30 minutes driving) and a minimum number of rest hours per day. Appropriate facilities ensure that drivers have locations where they can park their vehicles and rest.

It is important therefore to consider the needs of modern logistics drivers and cater for this. Provision can come in several forms, from motorway service stations, lorry parking facilities, lay-bys or private company facilities. However, many private organisations do not want HGVs parked on their premises unless they are specifically being unloaded at the time. There are many issues that lorry drivers encounter during the working week and the need to find somewhere suitable to park each night is just one of them.

This study covers all types of lorry parks (Independent and Local Authority owned lorry parks and Motorway and Trunk Road Service Areas within 5km of the SRN. A common theme is that drivers who are not willing or able to pay for high quality facilities will seek more basic and lower cost options. In order to meet such practical needs and prevent inappropriate parking there are different types of facilities available which will be discussed in this report.

In addition, recent project work conducted on behalf of Highways England by AECOM has involved the collection and analysis of data relating to instances where HGVs have been parked on the hard shoulder. Findings from this analysis have indicated that some drivers are using the hard shoulder illegally to park up and take their 45 minute driving time break.

Theft from HGVs, either the consignment they are carrying or the diesel from their tanks costs the European economy €11.6 billion per annum⁹ as well as putting driver welfare at risk. A lack of secure parking areas for HGVs can lead to a greater risk of theft occurring, increasing the costs associated with the supply chain.

DfT has disclosed "repeated complaints about laybys being full of foreign-registered vehicles." A report published by Texaco¹⁰ highlights that over the past decade, the share of UK-registered HGVs travelling out of the UK has shrunk from 15.4% in 2005 to 10.8% in 2014. Foreign-registered HGVs' share of the overall market has risen by 11.7% to 65.7% in that time. The number of HGVs travelling from the UK to mainland Europe (excluding the Republic of Ireland) in 2014 is at the second-highest in the past 10 years at 2.89 million journeys, compared to 2.9 million in 2007.

Many drivers arrive at their delivery points in the evening ready to tip / reload in the morning. Often the companies they are delivering to do not provide them with onsite parking overnight

⁷ Eurostat, 2014 - Freight transport statistics – modal split. http://ec.europa.eu/eurostat/statistics-explained/index.php/Freight_transport_statistics_-_modal_split

⁸ DfT, 2017 - Vehicle Licensing Statistics: Annual 2016. Pg10

⁹ Freight watch, 2013. <http://www.freightwatchintl.com/intelligencecenter/securitynews/how-much-really-stolen-every-year-europe>

¹⁰ Texaco in partnership with Motor Transport and Commercial Motor, 2016 - Overview of the UK commercial vehicle industry. pg43

or toilets and facilities and so they must park in a lorry park nearby (if there is one) or in a layby or on the industrial park with many choosing the latter because they are free. Due to laybys and industrial estates not having any facilities for drivers. Complaints arise where litter is left by the drivers or the grass verges are damaged by lorry tyres. Many examples were observed first hand by our roving auditors travelling around the country. All of these issues are discussed in more detail later in this report.

2. Methodology

2.1 Introduction

This section sets out our overall methodology and approach taken to complete the various stages of this study

The methodology is split into a number of key areas from identifying the base information through desk based research and stakeholder consultation to conducting the lorry parking surveys and analysing the results. The following sub-sections below provide the full background details of how we undertook the full range of tasks set out in the scope.

2.2 Overview of methodology

Figure 2.1 below outlines the individual work activities of the methodology.

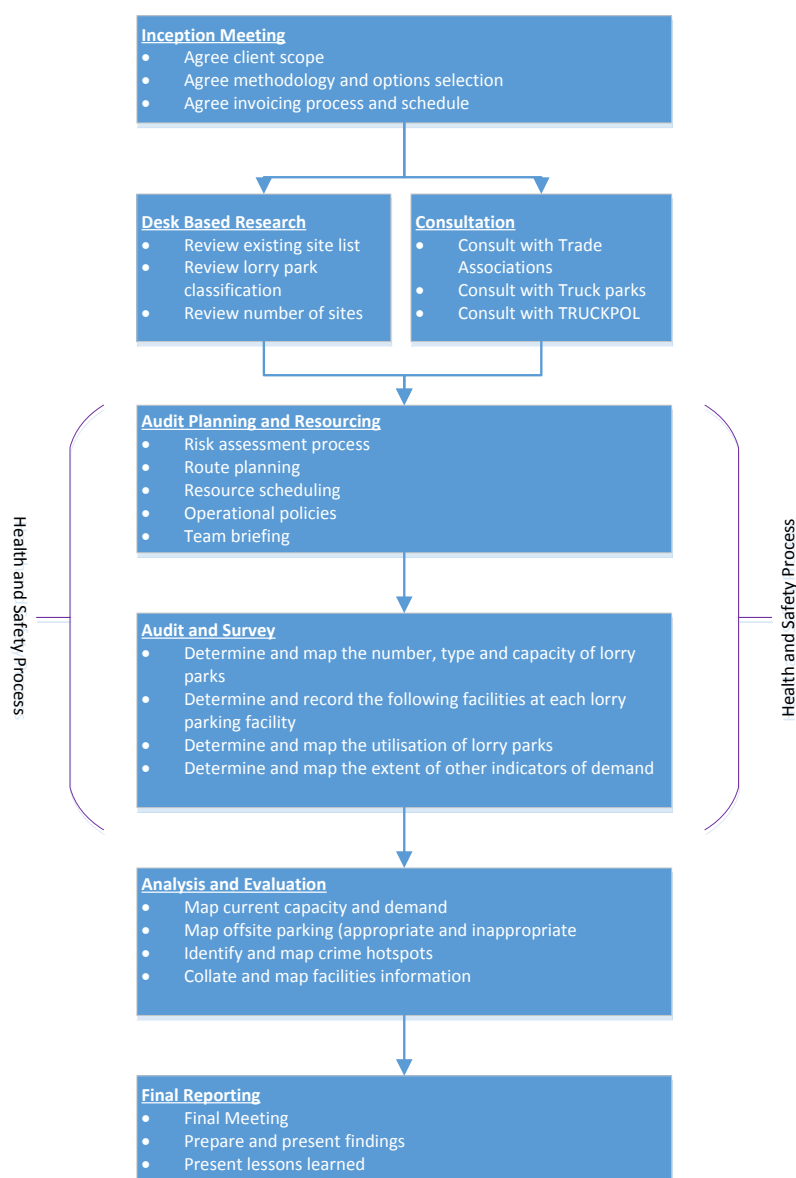


Figure 2.1: Methodology Process

2.3 Identifying the base information

2.3.1 Desk Based Research

Extensive desk top research was conducted which took into account existing data including the preceding 'Lorry Parking Study (2010)'. This research helped create the platform from which to launch the practical site audits and survey work and ensured that the most efficient and effective approach was used.

DfT's lorry parking database which included details of existing lorry parking locations, facilities, GPS coordinates, capacity and main point of contact, were reviewed by our team and populated with secondary data collected from desk based research. This included verifying whether the facilities were still active, if there had been any expansions and whether there had been any changes in management. If any changes were identified the database was updated accordingly.

In addition, a detailed search for new parking facilities was conducted using online sources such as:

- www.highways.gov.uk/publications/truckstops-in-England
- www.transportcafe.co.uk
- www.truckanddriver.co.uk
- www.hgvparking.com
- www.truckparkingeurope.com

Any new facilities that were discovered within a 5km radius of the SRN were added to the database.

A key element of this study was to also identify laybys and industrial estates which were within the 5km radius. To assist, a pre-drive assessment utilising Google Maps was undertaken to identify the roads within 5km of the SRN with parking facilities.

Consideration was also given to vehicle and load theft, and a detailed review of crime statistics across England was undertaken by the project team. To support the desk based research, engagement with stakeholders was undertaken to gather their perspective on crime when parking overnight, the findings of the engagement are presented in **Chapter 4**.

2.3.2 Policy review

This study has been guided by a number of policies at European, National and Regional level to ensure it is consistent and any policy changes identified can be incorporated into the study where appropriate. A summary of findings from the policy review can be found in **subsection 3.2**

2.3.3 Consultation

This study has been developed following a comprehensive stakeholder consultation process. Engagement with stakeholders was conducted via email and telephone interviews. Stakeholders engaged with included:

- **Industry trade associations;** such as the Road Haulage Association (RHA), Freight Transport Association (FTA), CILT, Unite Union, Transport Focus, Highways England (HE), Food Storage and Distribution Federation (FSDF) and Snap Account.
- **Lorry parking managers;** and
- **National Vehicle Crime Intelligence Service (NaVCIS)**

Stakeholder consultation helped to fill gaps found during the desktop research phase and provided valuable and detailed insights into the demand/crime hotspots and stakeholder

views on issues relating to lorry parking. The results from the consultation can be found in **Chapter 4**.

2.4 Audit Planning and Resourcing

2.4.1 Routing and scheduling of audits

As in 2010 the country was split into nine separate regions and each region was assigned an area manager. The regions were as follows:

- North East
- North West
- Yorkshire and Humber
- East Midlands
- West Midlands
- East of England
- South East of England
- South West of England
- Greater London

Each area manager was responsible for planning the nightly workloads of the audit team working in their region. This was done by using a combination of the Esri Collector Application (**See Section 2.5**) and route optimisation software to produce route maps containing multiple destinations for each team to visit each survey night. This approach meant that the amount of time, distance, environmental and financial cost of undertaking the lorry parking audits could be minimised as much as possible.

2.4.2 Resource Planning

This study required the mobilisation of a large number of staff resources. Nine survey teams were allocated to different regions across England. In order to give maximum value and provide local knowledge, some auditors were sourced from offices in or close to the region being surveyed. In the event that an auditor was unavailable due to sickness or other project work commitments, there were reserves on standby ready to step in.

2.4.3 Risk Mitigation

A formal risk assessment process was checked and approved by AECOM's Health and Safety Lead and was signed by all members of the project team. All staff read the risk assessment to make sure that they fully understood it and were fully aware of the risks and how to mitigate them prior to conducting the surveys.

The risk assessment covered 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. It also took into account each member of staff's emergency contact details. In addition first aid kits were included in the rental vehicles, use of torches whilst on site, appropriate and high visibility clothing whilst on site, regular communication with other members of the audit team and other risks associated with travelling to and from site.

To further reduce risk to staff, each audit team was tracked using 'find my friends' and this enabled the project manager to track teams in real time and locate teams instantly in the event of an emergency.

As well as 'find my friends', a 'WhatsApp Group' was created for project communication. The group included all members of the audit team and was used for communicating any issues relating to the project. Audit team members were also required to check-in with the project coordinator (who monitored the group) at two hour intervals from the moment they started their shift until they returned back to their overnight accommodation.

2.4.4 Briefing Sessions

Before the utilisation surveys were undertaken, the project team was briefed by the project manager and project director. The briefing was presented in two separate sessions as follows:

- **Briefing session one:** covered what the working week would entail, an overview of the project, the roles of the auditors and regional managers, information to be collected whilst surveying, regions to be covered, the number of people per team, scheduling of audits, resource planning, emergency and breakdown procedures, the risk assessment and a list of frequently asked questions from team members.
- **Briefing session two:** covered route planning and optimisation, instructions on using the data collection mobile application, contact details for regional managers and also provided the opportunity for the auditing team to ask questions on anything they did not understand or were unsure of.

In addition, separate briefing sessions were delivered to regional managers to clarify and rectify any issues they were experiencing prior to the commencement of full utilisation surveys. Further briefing sessions were held with regional managers after the first week of surveying to discuss the working week and any issues experienced (whether collecting data or route planning) which could be solved to make the following week's data collection more productive.

2.4.5 Letter of Authority

Audit teams were required to carry hardcopies of a letter of authority (**see Figure 2.2**) which demonstrated the authenticity of the study and provided details of project objectives and activities being undertaken during the site visit. It was signed by a DfT representative and it included the project manager's contact details in the event that audit teams were stopped by security at a site or the police whilst surveying offsite locations.



Department
for Transport

Department for Transport
Great Minster House
33 Horseferry Rd
Westminster
London
SW1P 4DR

RE: Letter of Authority (National Survey of Lorry Parking)

The Department for Transport (DfT) are keen to get a better understanding of the demand for HGV parking and driver facilities in England so that it can forecast lorry parking demand over the next decade and inform and progress a number of planned lorry parking initiatives.

In order to complete this objective DfT have commissioned AECOM to undertake a comprehensive review of lorry park locations, including their capacity and utilisation, as well as other indicators of demand. As such, AECOM staff will be visiting facilities across England and assessing the following:

- Type of facility (e.g. Independent Lorry Park, Local Authority Lorry Park, Motorway / Trunk Road Service Area, Industrial Estates and Laybys)
- Parking charge
- Facilities available (e.g. Toilets, Showers, Café / Restaurant, Security Fence, CCTV, Lighting, Accommodation and any other security features)
- Capacity (e.g. number of parking spaces available)
- Utilisation (e.g. number of parking spaces used)
- Breakdown of UK registered vehicles vs foreign registered vehicles

In order to make an accurate assessment of utilisation, these audits will be conducted after 18:00 hours on Tuesdays, Wednesdays and Thursdays, when the majority of freight traffic will have parked for the night. The audits will cover all facilities within 5km of the Strategic Road Network (SRN).

Audits will begin on 21st February 2017 and are planned for completion by 30th March 2017.

DfT would like you to support the delivery of this project by allowing AECOM staff to access to lorry parking facilities to assess the factors outlined above. Any information and data collected shall only be used for the purposes of this study and shall not be further processed or disclosed without permission.

Signed

Print name: Philip Martin

Position: Head of Freight Policy (Department for Transport)

Should you require further information regarding this project, please contact:

James Nankivell (AECOM Project Manager)

Tel: 0161 927 8331 Email: james.nankivell@aecom.com

Figure 2.2: Signed letter of authority

2.5 Audit and Surveys

2.5.1 Primary Data Collection

The site surveys were used to gather information on each of the lorry parking locations. These details were categorised under the following headings:

- Type, capacity and cost of lorry park
- Facilities available
- Utilisation of lorry park (by UK and foreign registered vehicles)
- Additional comments

Data on the lorry parking sites was collected using a mobile application 'Collector for ArcGIS'. This is a cloud based mapping platform designed by Esri. This 'App' allowed audit teams to digitally record site visit observations using a mobile phone, tablet or iPad.

The revised database formed during the desk based research phase was imported into the 'App' and the GPS coordinates were used to pinpoint each of the lorry parking sites on a map (see **Figures 2.3 and 2.6** below). Each site was allocated an icon depending on what type of lorry parking facility it was. These icons were as follows:

	=	Truck Stop
	=	Industrial Estate
	=	Layby

Audit teams were able to collect data using the live atlas mode or offline by downloading area maps to their devices beforehand and uploading collected data to the cloud at the end of their shift when they had access to the internet. The use of the mobile application reduced the time required to process data and made it simpler to update information if required.



Figure 2.3: Full Map View of Facilities

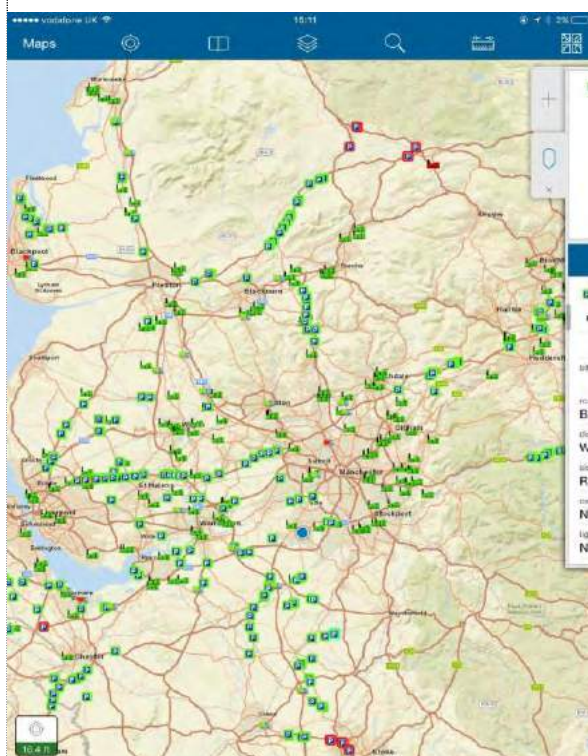


Figure 2.4: Sub Regional View

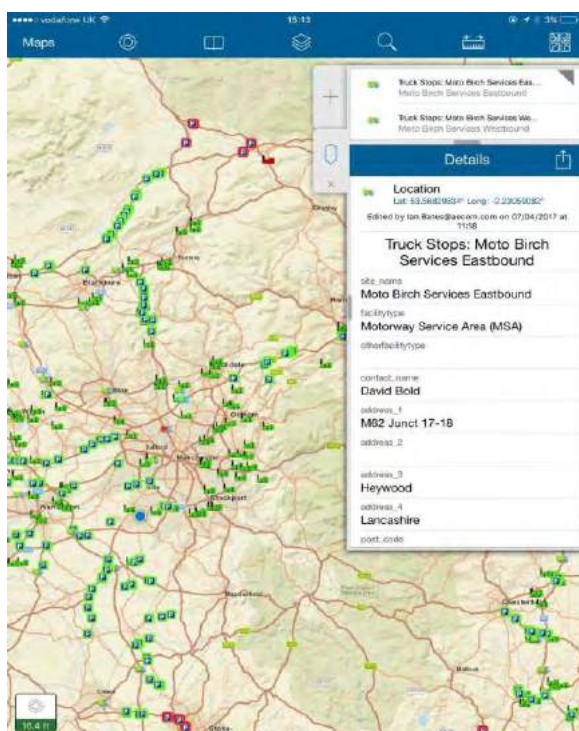


Figure 2.5: Selected Truck Stop

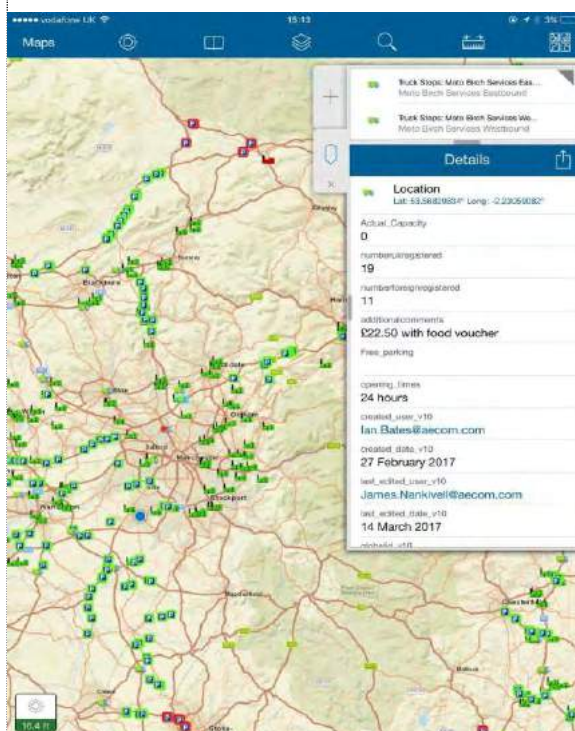


Figure 2.6: Edit information of selected truck stop

In addition to the mobile application, audit teams were required to carry hard copies of the data collection form (as shown in **Figure 2.7**) as back up in the event that technology failed

and it did not operate as planned or if it was difficult to enter new lorry parking locations using the mobile application..

Figure 2.7: Manual data collection form

2.5.2 Pilot utilisation survey

To fully calibrate the mobile application and ensure everything was working as it should, it was necessary to undertake a pilot survey prior to the full utilisation survey. The pilot survey was undertaken by the project manager and project coordinator in the North West region where a total of 35 sites were visited.

The pilot survey provided the opportunity to get a better understanding of how the audits should be conducted during the full utilisation survey. It aided the process of offering advice to regional managers on how to plan their audit schedules more effectively, what to avoid whilst conducting the surveys and provided an indication of how many sites could realistically be visited by the audit teams each night.

2.5.3 Full utilisation survey

The full utilisation surveys were undertaken during the evenings between the hours of 6pm and 2am on Tuesdays, Wednesday and Thursdays throughout the month of March 2017. There was a team assigned to each of the nine regions and each team consisted of two team members. All of the truck stops, industrial estates and laybys were visited in England within 5km of the SRN. The total number of lorry park locations visited is presented in **Table 2.1**.

Table 2.1: Total number of lorry park locations visited by type

Lorry Park Type	Number visited
Truck Stops including MSAs	311
Industrial Estate	801
Layby	3,397

The results of the utilisation survey are presented in **Chapter 5**.

A number of key truck stops were visited a second time in early April 2017 to verify that the data collected was broadly correct and the utilisation of the lorry parks had not been skewed by an unknown event. The results of the second visits are presented in **Chapter 5**, but in essence our finding is that there is little overall variation in vehicle numbers using facilities on a midweek working day from one week to the next. Hence the 'snapshot' approach used by this and previous studies provides a robust set of data.

2.6 Analysis and evaluation

2.6.1 Analysis and evaluation

Chapter 5, and 6 present the headline information from the surveys along with conclusions from a variety of factors considered.

3. Desk Based Research

3.1 Introduction

In this chapter we present key findings from materials found online and of those provided or referenced during stakeholder engagement. **Table 3.1** outlines the documents reviewed and their sources.

Table 3.1: Documents Reviewed

Document Title	Author(s)	Theme
Directive 2010/40/EU	European Commission	EU Directive
Directive 2008/96/EC	European Commission	EU Directive
Road Investment Strategy(RIS): for the 2015/16 to 2019/20 Road Period	DfT	Policy/Strategy
Secure European Truck Park Operational Services (SETPOS) Project Handbook	European Commission	Policy/Strategy
Security and Service at Truck Parking Areas Along the Trans-European Road Network – Handbook for Labelling	European Commission/ DG Move	Policy/Strategy
The Future of Transport: A Network for 2030 (2004)	DfT	Policy/Strategy
The National Planning Policy Framework (2012)	Department for Communities and Local Government	Policy/Strategy
The Strategic Road Network and The Delivery of Sustainable Development (2013)	DfT and Highways Agency	Policy/Strategy

3.2 Policy Review

In this section, we have reviewed a number of European and National policy and strategy documents that relate to or are closely linked to the provision and standards of lorry parking facilities on the SRN.

3.2.1 EU Directives and Regulations

Directive 2010/40/EU

Regulation (EU) No 885/2013 supplements ITS Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of information services for safe and secure parking places for trucks and commercial vehicles.

The Directive requests the Commission to define specifications for the provision of information and reservation services for safe and secure parking places for trucks and commercial vehicles (Intelligent Truck Parking).

Directive 2008/96/EC

This Directive relates to on-road infrastructure safety management and recognises that a sufficient number of safe rest areas are important for crime prevention and road safety. This legislation also ensures through road safety impact assessments and audits, that when new road sections are built, adequate and safe parking areas are foreseen.

Regulation EC No 561/2006

This regulation provides a common set of EU rules for maximum daily and fortnightly driving times, as well as daily and weekly minimum rest periods for all drivers of road haulage and passenger transport vehicles.

3.2.2 LABEL

LABEL is a certification system for lorry parking facilities in Europe. The scheme consists of five categories of security and service quality requirements for lorry parking areas. The five categories range from 1 to 5, of which level 1 is the basic level whereby basic facilities and security measures are in place and 5 is the highest level whereby there are a variety of high quality facilities and high security measures in place.

LABEL describes the security measures at a truck parking area as the steps that have been taken to create conditions for better security. Some examples of security measures include fencing, CCTV, prevention of unauthorised entry/exit, lighting, records of all incoming and exiting vehicles, alarm procedures and the availability of pre-booking of parking. The criterion for security at a truck parking area is shown in **Figure 3.1** below:

Security Level 1 	Providing the Basics Level 1 Truck Parking Areas (TPAs) offer some basic security features. A requirement is that the site is recognisable as a parking area. Driving and pedestrian areas are well-lit. Elementary security checks take place.
Security Level 2 	Technical Measures to Improve Security Security level 2 adds to the level 1 requirement that the TPA is either surrounded by a continuous fence or that there is a CCTV system that monitors the perimeter. The parking is well-lit. Vehicles that are allowed to park are indicated by a sign. A CCTV monitors entrances/exits. Security checks take place by TPA staff or a professional organisation. CCTV images are clear and stored safely.
Security Level 3 	Security Measures are Combined, Access of Persons Restricted Security level 3 adds to the level 2 requirement that both a fence and a CCTV system monitoring the perimeter need to be in place. The site is set up for good visibility. Constant measures are taken to keep the fence in a good condition. Only truck parking users or staff are allowed access. Criminal incidents are reported.
Security Level 4 	Real Time Monitoring of Vehicles and Persons by Professional Staff Security level 4 adds to the level 3 requirement that on-site or remote staff monitor vehicles and pedestrians real time. Registration of vehicles and drivers takes place. Guards and staff are trained professionals, their references are checked. They are equipped to be able to react quickly to an alarm situation. Pre-booking is possible. Gates are closed.
Security Level 5 	Verification of Vehicles and Persons by Professional Staff, Site Manned Around the Clock Security level 5 adds to level 4 that the site is manned around the clock. The identity of all vehicles or persons that enter is verified and logged. The fence is equipped with an anti-intrusion system and protected against a truck intentionally driving through. CCTV covers the entire area of the TPA.

Figure 3.1: LABEL Security Standards

The service level is measured by the amount of characteristics that are considered service-enhancing. The service is divided into a number of categories, including comfort and dignity, food and shopping, safety and other services such as a fuel station, cash machine, internet, truck wash/repairs and laundry. The higher the service level criteria the better the service will be at a selected truck parking area.

3.2.3 SETPOS

SETPOS was a pilot project initiated by the European Commission — Directorate General for Energy and Transport (€5.28m co-funded) in June 2007. The project responded to the growing concerns about attacks on high value cargo and vehicles, coupled with the lack of adequate rest facilities for drivers¹¹.

LABEL is closely linked to the SETPOS project and builds on the information and findings from that project.

Label takes into consideration a number of factors including:

- Security – are drivers, goods and vehicles in a secured environment?
- Comfort and dignity – for example can drivers take a shower?
- Food and shopping – for example are warm meals provided?
- Services – for example can basic repairs be undertaken?
- Safety – for example traffic safety at the truck parking area

We developed a system to rate all on-site lorry parking facilities and the rating was based on a five point scale which is broadly in line with LABEL the European Truck Park Area Certification system (this rating system is illustrated in **Chapter 6**). As the system devised does not include all of the LABEL criteria, the results should be used indicatively. Nevertheless, it provides a useful overview of the types of facilities available at lorry parks on a regional basis.

3.2.4 The National Planning Policy Framework (2013)

This policy requests local authorities work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development. This includes facilities such as rail freight interchanges, roadside facilities for motorists or transport investment necessary to support strategies for the growth of ports, airports or other major generators of travel demand in their areas. The primary function of roadside facilities for motorists should be to support the safety and welfare of the road user.

The policy states that local planning authorities should work with other authorities and providers to:

- Assess the quality and capacity of infrastructure for transport, water supply, wastewater and its treatment, energy (including heat), telecommunications, utilities, waste, health, social care, education, flood risk and coastal change management, and its ability to meet forecast demands; and
- Take account of the need for strategic infrastructure including nationally significant infrastructure within their areas.

The National Planning Policy Framework does not change the statutory status of the development plan as the starting point for decision making. Proposed development that accords with an up-to-date local plan should be approved and, proposed development that

¹¹ https://ec.europa.eu/transport/sites/transport/files/modes/road/parking/doc/2010_04_28_setpos_project_handbook.pdf

conflicts should be refused unless other material considerations indicate otherwise. It is highly desirable that local planning authorities should have an up-to-date plan in place.

3.2.5 Road Investment Strategy (RIS): for the 2015/16 – 2019/20 Road Period

The RIS sets out an ambitious vision for the future of the network – ‘by 2040, the network will be smoother, smarter and more sustainable.’ In the RIS the Government highlights many of the key challenges faced by the network namely:

- The network is struggling to cope in the face of increasing demand and the volume of high speed traffic
- Delays to journeys deter investment and constrain the ability of business to compete
- Stop-start funding available for roads investment has made it difficult to plan for the long term
- Vehicle emissions and noise significantly impact local communities
- Our customers need better and more up to date information to manage their journeys

3.2.6 The Strategic Road Network and the Delivery of Sustainable Development (2013)

This document sets out the way in which Highways England will engage with communities and the development industry to deliver sustainable development and economic growth, whilst safeguarding the primary function and purpose of the strategic road network.

It replaces the policy set out in Department for Transport (DfT) Circular 02/2007 Planning and the Strategic Road Network and DfT Circular 01/2008 Policy on Service Areas and other Roadside Facilities on Motorways and All-purpose Trunk Roads in England. Annex B of the document provides policy for facilities on the SRN. The policy applies to all existing signed roadside facilities and proposed signed facilities.

Statutory Rest Breaks

The policy recognises the need for commercial vehicle drivers to take statutory rest breaks and that roadside facilities assist drivers and operators in compliance with these requirements.

Spacing of Facilities

The policy provides that the network of SRN service areas has been developed on the premise that opportunities to stop should be provided at intervals of approximately half an hour. However recognising congestion and other factors, the policy states the following.

“Highways England therefore recommends that the maximum distance between motorway service areas should be no more than 28 miles”.

The distance between services can be shorter, but must comply with the requirements of the Design Manual for Roads and Bridges.

Local Planning Authorities Role

The local planning authorities are responsible for assessing applications for new or existing facilities in line with relevant planning legislation and regulation.

In relation to the role of the local planning authorities, the policy says that local planning authorities should not consider the merits of sites beyond conformity with the spacing criteria. Further to this, the policy says that the planning authority should not seek to prevent competition between operators; rather they should determine applications based on their specific planning merits.

Highways England Role

Highways England is a statutory consultee within the planning system and encourages local authorities and developers to engage with Highways England regarding any roadside developments at the earliest opportunity.

Highways England only supports proposals for or within service areas if it can be shown that there will be no overall increase in trip mileage or adverse impact on safety or operation of the network.

Private Sector Role

The policy recognises that it is the role of the private sector to promote and operate service areas that meet the needs of the travelling public.

Parking Charges

The policy states that where facilities charge for parking over the mandatory two hour free parking period, the charges for parking must clearly be displayed in the parking area and amenities building. Further to this, cash payments for parking must be accepted.

SRN Facilities Signing

The policy provides minimum requirements that roadside facilities must satisfy in order to be eligible for signing from the SRN. These requirements are shown in **Table 3.2** overleaf.

Table 3.2: Minimum Requirement for Signage of Facilities

Minimum Requirements to be eligible for signing M = Mandatory P = Permitted	Motorways		APTR Service Area*	Truckstops on Motorways	Truckstops Signed from SRN	Truckstops on All-purpose trunk roads
	Service Area	Rest Area				
Open 24 hrs a day 365 days a year	M	M	N/A	M	N/A	N/A
Open minimum 12 hours per day between 8am and 8pm every day except Christmas Day, Boxing Day and New Years Day	N/A	N/A	M	N/A	M	M
Free parking for up to 2 hours minimum for all vehicles permitted to use the road served by the facility (see schedule 1)	M	M	M	M	M	M
Free toilets / hand washing facilities with no need to make a purchase	M	M	M	M	M	M
Shower and washing facilities for HGV drivers including secure lockers in shower / washing area	M	P	P	M	M	M
Fuel	M	P	M	M	P	P
Hot drinks and hot food available at all opening hours for consumption on premises	M	P	P	M	P	P
Hot drinks and hot food available 8am to 8pm for consumption on premises	N/A	P	M	N/A	M	M
Access to a cash operated telephone	M	M	M	M	M	M
Use as an operating centre for the purposes of Goods Vehicles (Licensing Operators) Act 1995 or Public Passenger Vehicles Act 1981	Prohibited	Prohibited	Prohibited	Prohibited	P	P

* Limited to a single or exceptionally 2 adjoining interconnected premises, accessed directly from the trunk road or directly from a junction on the trunk road.

The policy provides an exception for the roadside signing of truckstops if they are within two miles of the SRN and otherwise meet requirements for signing, as long as vehicles would not have to pass through residential areas.

Parking Requirements

The policy provides a method for calculating parking requirements for different types of vehicles in Schedule 1. In the case of HGV parking at MSAs, the parking requirement is 0.5% of the average daily flow of goods vehicles for the peak month and should be based on the most recent complete years' worth of data.

The policy prescribes that at trunk road service areas; there must be a minimum of two standards of HGV parking spaces.

A self-help tool known as HATRIS is available to use for completing these calculations¹².

3.2.7 The Future of Transport: A Network for 2030 (2004)

The White Paper on the Future of Transport sets out the approach the Government will take in developing infrastructure and services to safeguard the country's economic, social and environmental wellbeing.

Within this context the policy chapter makes reference to freight and states:

“Local and regional regulation – we will encourage local authorities to consider how their various regulatory powers that relate to freight transport (traffic and parking regulations, night-time bans, planning powers and the use of planning

¹² <https://data.gov.uk/dataset/highways-england-network-journey-time-and-traffic-flow-data>

conditions) can be co-ordinated to make life easier for businesses while protecting the interests of local people.”

3.3 Logistics Hubs

There are a number of locations in England where logistics activity is most concentrated and are considered prime locations. Traditionally, the Midlands area bounded by the M1, M6 and M42 known as the ‘Golden Triangle’ (see **Figure 3.2**) has been seen as a key hub for logistics activity in the UK.

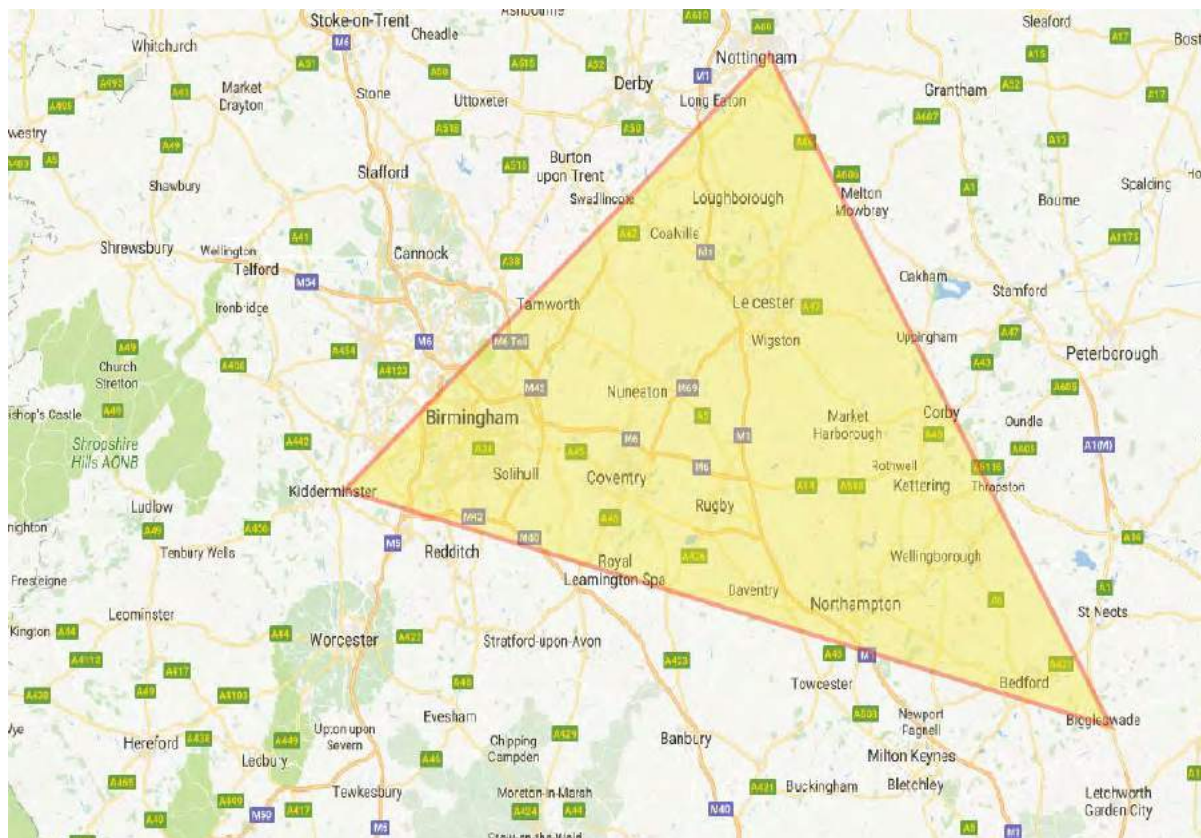


Figure 3.2: UK Golden Triangle of Logistics

The region benefits from its proximity to the motorway network and the fact that the majority of locations in England, Scotland and Wales can be reached within 4.5 hours driving. This means that goods vehicles can return to base for reloading within driving time regulations (maximum of 9 -10 hours driving per day). Some of the largest logistics hubs in the UK such as Magna Park are located in the Golden Triangle.

In the North of England and Scotland, Warrington and Manchester have the highest rents per M² and land values per acre, which are comparable to the rates in the ‘Golden Triangle’¹³.

Within London, the cost of logistics sites is much greater than elsewhere in the UK. The highest rents in the capital are seen close to Heathrow, which is also the UK's number one air freight hub, handling 65% of all air freight. **Table 3.3** outlines the UK's major logistics hubs.

¹³ <http://www.colliers.com/en-gb/uk/insights/industrial-rents-map>

Table 3.3: Major UK Logistics Hubs

Regions	Sub-regions
London	• Heathrow • Barking/ London Gateway
Midlands	• Northampton • Daventry • Lutterworth • Hams Hall • Kegworth
North of England	• Warrington • Manchester • Wakefield

3.4 Freight Crime

Freight Watch International (FWI) estimates that freight crime costs European Union (EU) Member States €11.6 billion in the loss of goods each year. In reality, the figure could be much higher as other factors such as repair costs, replacement goods, contractual penalties, hire vehicle/equipment costs, insurance premium increases and administration/investigative costs are difficult to assess.

At present, the UK is the third worst country in the EU for cargo thefts. Only Germany and the Netherlands have higher rates of such crimes¹⁴.

High-value consumer goods are the preferred cargo for thieves as they can quickly and easily be sold on. Recent high-profile thefts from laybys on the A14 reported thieves taking £62,000 worth of TV's on one occasion and £66,000 worth of fashion clothing on another.

The CART Report recognises the issue of freight crime reporting throughout Europe. The report cites an EU study conducted in 2007 that includes the following statement¹⁵:

“There is no simple way to provide a clear picture of the extent and nature of the theft of goods and commercial vehicles in Europe. In most countries vehicle and goods theft is not seen as a priority and few resources are given to collecting and analysing data on it.”

TruckPol was the body responsible for compiling freight crime data however; it was disbanded in 2012. In 2016, the National Vehicle Crime Intelligence Service (NaVCIS) established a ‘freight desk’ following industry support and now collates UK freight crimes from roughly half of police forces, industry and open sources.

We engaged with NaVCIS as part of the stakeholder consultation element of this project. The results of this consultation are displayed in **Chapter 4** of the report.

3.5 Driver and Operator Opinion

Transport Focus published a report detailing road users’ views of roadside facilities in July 2016. In this sub-section, we have provided some of the key findings from the report from engagement with lorry drivers and transport operators.

Lorry drivers have more complex needs than other users of roadside facilities. Drivers must comply with driving time regulations and may face prosecution for non-compliance. As such, roadside facilities are of a greater significance to lorry drivers compared with other road users.

Lorry drivers tend to compare MSAs with truck stops and in general, they prefer to use truck parks. Some of the reasons for this include:

¹⁴ <https://NaVCIS.police.uk/portfolio-item/NaVCIS-freight-2/>

¹⁵ European Parliament, 2007 – Organised Theft of Commercial Vehicles and their Loads in the EU (2007)

- Truck stops address more than just functional needs
- They feel more welcome than at MSAs
- Truck stops tend to have 'sit-down' restaurants with 'home cooked' food
- Parking is perceived to be better value and more secure at truck stops

Some lorry drivers use laybys frequently for either short breaks or overnight stops. Due to the absence of facilities, many drivers are forced to relieve themselves outside. While many drivers are now used to this, they do not think it is acceptable.

As well as the absence of facilities, drivers were of the opinion that stopping at laybys was unsafe due to the proximity to fast moving traffic and short slip roads.

In some cases, laybys are being removed due to safety concerns. While drivers do not object to this, they feel that the capacity needs to be replaced elsewhere.

Transport operators suggested that the requirement to take regular breaks, monitored by tachograph combined with the lack of parking capacity is contributing to driver recruitment and retention problems.

Operators agree with drivers that truck stops are better than MSAs overall, however they are too few in number and often require significant detours to reach them.

Operators were of the opinion that obtaining planning permission and funding is a major barrier to developing more lorry parking facilities.

In relation to lorry parking, one of the main conclusions of the report is as follows:

"Highways England should develop a strategy to ensure there is sufficient capacity for lorries to park in the right places and with facilities that meet drivers' needs. It will need to work with the freight industry, government, local authorities and others to do this."

3.6 Overnight Subsistence

When a driver has to spend a night away from home a tax free payment may be made to cover essential personal expenses. Where drivers have a sleeper cab a reduced rate of 75% of the allowance may be paid.

The tax-free amount or "scale rate" is the maximum amount that can be paid to lorry drivers. The changes in scale rate, calculated in January each year are shown in **Table 3.4**.

Table 3.4: Driver Subsistence Payments

Year ended	Payment per Night	Payment for sleeper cabs (75%)
31 December 2013	£34.90	£26.20
31 December 2012	£33.85	£25.39
31 December 2011	£32.20	£24.15
31 December 2010	£30.75	£23.06

From 2010 to 2013, payment per night increased by 13.5%. The rate of inflation has averaged 2.7% per year between 2010 and 2016 and therefore £34.90 in 2010 would be worth £36.19, showing that the increase in payment per night has fallen behind inflation¹⁶.

Between 2013 and 2017 there has been no increase in the maximum tax-free subsistence payment that can be paid to drivers.

HMRC does not make the payments mandatory but does set maximum rates that can be paid without tax and national insurance. As such, some operators may choose to pay less than the maximum rates depending on individual company policy.

An employer paying above the tax free allowance will have to pay tax on the excess amount. However there are some exceptions of claims over the allowance. For example if a HGV

¹⁶ <http://www.bankofengland.co.uk/education/Pages/resources/inflationtools/calculator/default.aspx>

broke down or temperatures dropped to a point where it was not possible to stay in the lorry. The outcome is case specific but any claim that is a personal choice and not in the interest of the business would be rejected and tax would have to be paid.

From April 2017, new requirements have been brought in, changing the agreement that has stood for the past 26 years. There are no changes in the amount of tax-free allowance but the operator is now required to do more in order to claim. The new rules are as follows:

- In order to pay the overnight allowance free of tax and National Insurance up to the agreed rate, currently £26.20, the operator must have a bespoke allowance agreement with HMRC. Operators request a five-year agreement showing that drivers were genuinely away and in a subsistence position and showing that a random sampling of drivers' receipts in line with HMRC guidance.
- A checking system must be in place to ensure that drivers are genuinely away and in a subsistence position. This is the same as has been required for the past 26 years.
- A system for random checking drivers' receipts, to check they are incurring costs, must be in place. HMRC states that 10% of drivers must have their receipts checked each month.

The £2 mid-day meal allowance is unaffected by any of these changes. The allowance can be paid free of tax and without reference to HMRC.

Evidence of an overnight stay can include¹⁷:

- Receipts
- Drivers' log sheet
- Drivers' expenses claims
- Receipts obtained on payment for lodging (for example hotel bills)
- Parking receipts and itinerary records kept by the employer in the pay records, or separately, as evidence of nights away from home and permanent workplace

HMRC has confirmed that the costs of buying specialist bedding, fridge, microwave etc., where these are bought by the driver, are not recognised. Further to this, parking costs are not recognised.

The system has been described as a "very grey area" within HMRCs rules and regulations by an accountancy firm¹⁸.

The RHA have been opposed to the changes that came into place in April 2017 for several years since they believe that the system has worked well and that the change is unenforceable in practice and will disadvantage compliant hauliers in terms of cost and recruitment. They are also strongly critical of the way HMRC approached the issue, since wrong dates were released and not resolved quickly¹⁹.

¹⁷ <https://www.gov.uk/hmrc-internal-manuals/employment-income-manual/eim66120>

¹⁸ <http://www.caseron.co.uk/travel-subsistence-overnight-expenses/>

¹⁹ https://www.rha.uk.net/getmedia/781f25d3-3144-4e13-8b24-0b366d1a4197/overnight-allowance-update-revision_1.pdf.aspx

3.7 Types of Lorry Parking

There are a number of different types of lorry parking facilities, which for the purpose of this project have been considered under the titles 'on-site' and 'off-site' parking. Examples of on-site parking include motorway and roadside facilities as well as independent truck parks with dedicated spaces for goods vehicles.



Figure 3.3: On-Site Lorry Parking Example

There is an existing network of lorry parking facilities in England which as identified in **Section 4.2.6** have been developed on the premise that opportunities to stop should be provided at intervals of approximately half an hour (or no more than 28 miles) on the SRN.

Figure 3.4 shows extracts from the Highways Agency (now Highways England) Truckstop guide which was last updated in 2009.

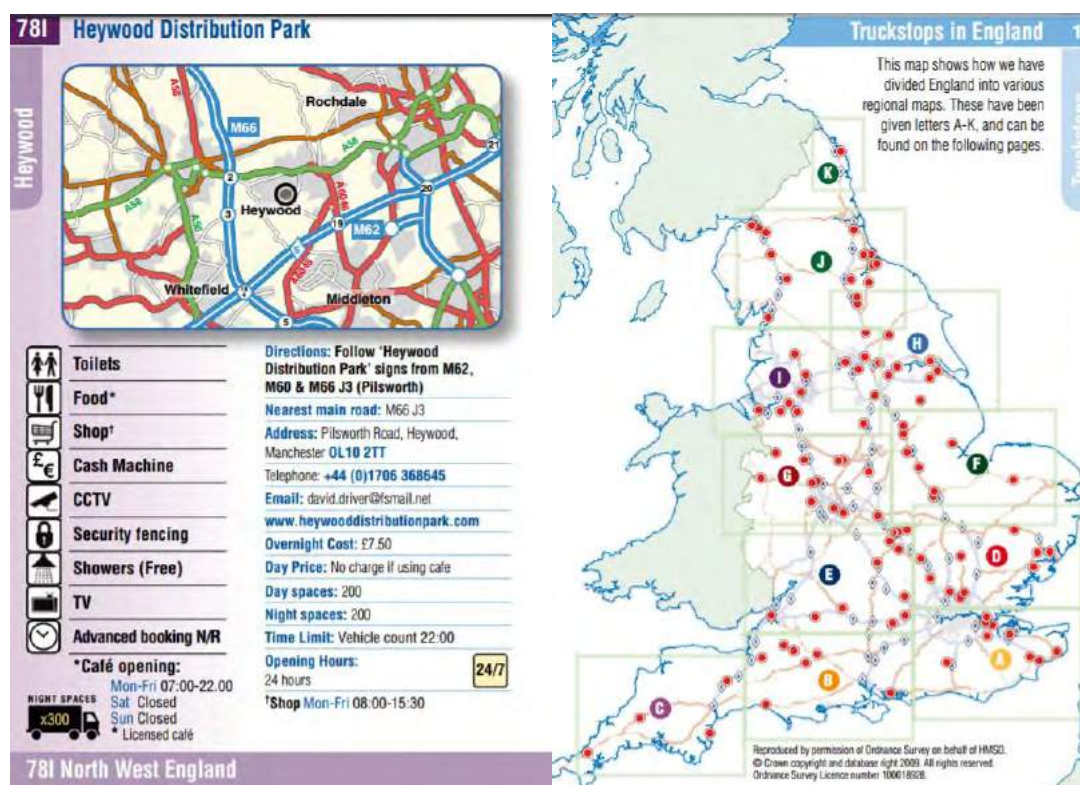


Figure 3.4: Highways Agency Truckstop Guide Extract (2009)²⁰

²⁰ <http://www.highways.gov.uk/publications/truckstops-in-England>

Off-site parking has been considered as locations that are not suitable for goods vehicles to park overnight. This includes roadside laybys and industrial estates, which although commonly used and in many cases legal, are considered inappropriate for overnight parking due to a lack of welfare facilities for drivers. The image below illustrates off-site parking in an industrial estate.



Figure 3.5: Example of Off-Site Lorry Parking²¹

²¹ <http://www.rugbyadvertiser.co.uk/news/safety-fear-over-lorries-parked-in-somers-road-industrial-estate-in-rugby-1-4041776>

4. Consultation

4.1 Introduction

This chapter of the report details the consultation undertaken with a range of stakeholders with an interest in lorry parking. This includes trade associations, trade unions, infrastructure operators, enforcement agencies and other relevant organisations.

The project team conducted a number of telephone interviews with stakeholders in order to garner their thoughts and organisational stance on a range of issues such as lorry parking shortage hotspots, planning conditions, crime and pricing.

In addition to direct consultation, we have conducted desktop research for information on stakeholders' stance with regard to lorry parking. **Table 4.1** outlines the organisations that we have engaged with during this element of the project.

Table 4.1: Stakeholder Consultation

Organisation	Date(s) of Consultation
Chartered Institute of Logistics and Transport (CILT)	27/03/2017 & 23/03/2017
Road Haulage Association (RHA)	23/03/2017
Unite the Union	23/03/2017
Freight Transport Association (FTA)	28/03/2017
Highways England	21/04/2017 & 28/04/2017
Food Storage & Distribution Federation (FSDF)	24/04/2017
National Vehicle Crime Intelligence Service (NaVCIS)	24/04/2017
Kent Police	21/04/2017
SNAP	25/04/2017
Extra Services	21/04/2017
Welcome Break	28/04/2017

The consultation findings have been grouped under themes rather than according to the opinions of particular individuals or organisations. The theme groupings are as follows:

- Parking Shortage Hotspots
- Parking Policy
- Parking Pricing & Overnight Allowances
- Planning Policy
- Best Practice
- Crime

4.2 Parking Shortage 'Hotspots'

This subsection outlines the areas of the country where stakeholders felt that the shortage of lorry parking facilities is the most pronounced. Generally, there was agreement that the level of provision is insufficient in terms of capacity and inconsistent in terms of standards and facilities. A number of stakeholders held the view that the level of provision at logistics hubs and distribution centres is a particular issue.

Service area operators are aware of the lack of capacity at some of their sites. One such operator is in the process of adding over 200 additional spaces across three of their most well utilised sites in the South of England and recently gained planning permission for additional spaces at one site. Another operator also has expansion plans.

In some areas, laybys are being closed due to repeated problems with the negative aspects of overnight lorry parking e.g. litter, anti-social behaviour, prostitution and crime. While this addresses the immediate issue of HGVs parking in laybys, it only displaces the lorries. Thurrock, Grantham and Kent were identified as locations where layby closures have occurred recently.

Locations

Stakeholders highlighted the following areas as having particular HGV parking shortage issues:

- South Leicester (Magna Park), Milton Keynes, Northampton Arc
- Around Daventry Intermodal Rail Freight Terminal (DIRFT)
- Hams Hall to Dordon (around Birch Coppice)
- North West - Liverpool to Salford Corridor
- South Surrey/Hampshire Border
- M25 Periphery (Cobham in particular)
- Humber Region

Figure 4.1 shows the areas of the country identified by stakeholders as having a shortfall in lorry parking provision, excluding Kent, which is covered separately in the following subsection.

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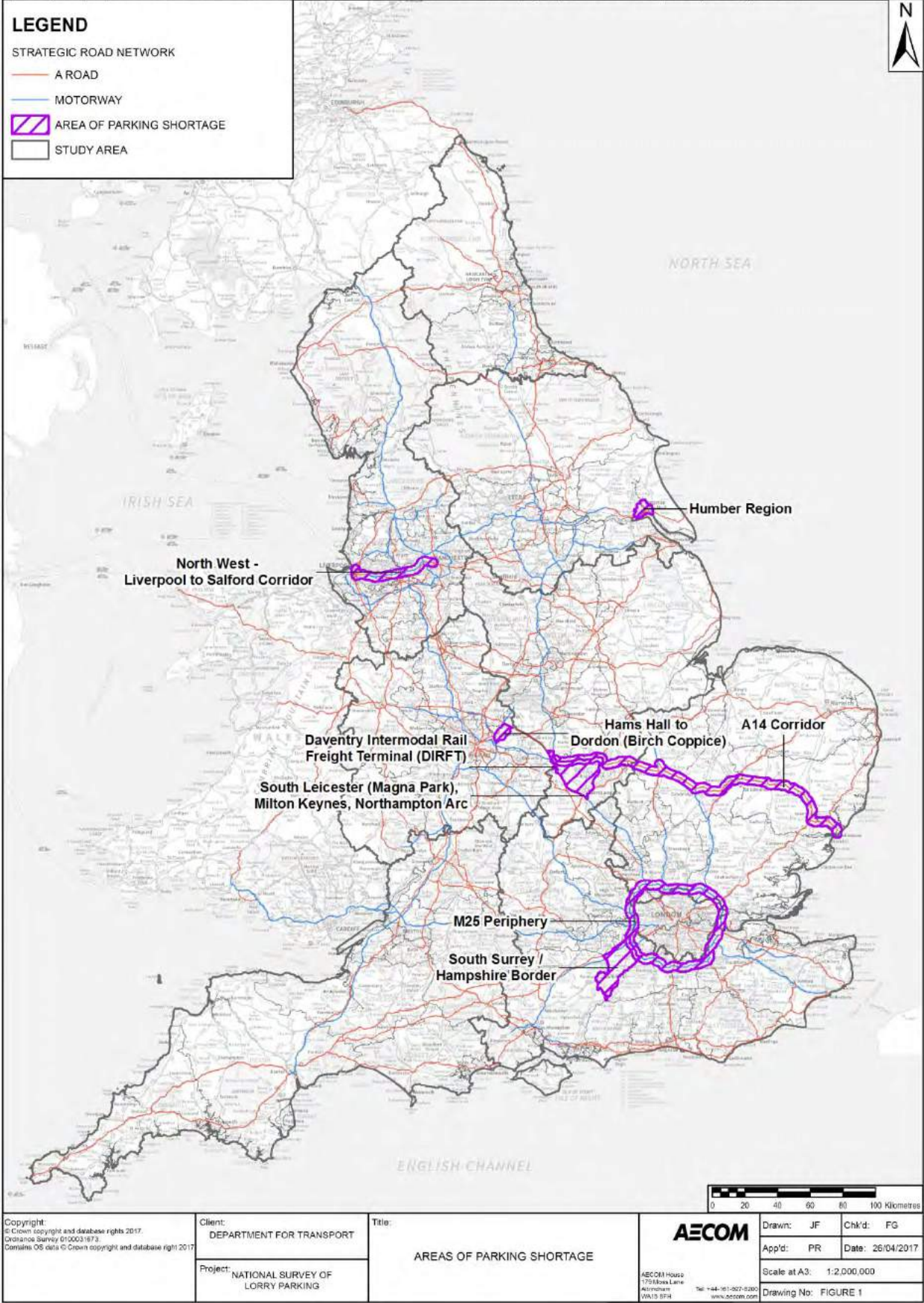


Figure 4.1: National Parking Shortage 'Hotspots'

Kent

Kent was discussed repeatedly during consultation. Issues relating to lorry parking in Kent have been well publicised in recent years particularly in relation to Operation Stack. In terms of numbers, the CILT and Kent Police agreed that there is a shortage of between 1,000 and 1,200 HGV parking spaces in Kent.

Parking issues are more pronounced in Kent due to the Port of Dover and the Channel Tunnel (Folkestone). It was suggested that issues are exacerbated by the fact that the Eurotunnel shuttle journey, which takes 35 minutes, may not be long enough to count as a full 45-minute driving break. However, the 45 minute break can be taken in smaller cumulative portions of 30 and 15 minutes. It was suggested that drivers are arriving in the country and needing to take driving breaks within a relatively concentrated area.

Another contributory factor is that other Western European countries do not permit weekend rest to be taken in the cab and actively enforce against it. Fines were described as being significant (>€1,000) and drivers are made to get out of their vehicles. Also several European countries do not allow the movement of HGVs during certain times of the weekend. This may prompt patterns of vehicle movement to factor this in.

Some operators are involved in cabotage and a recent report on the Kent lorry parking situation suggests that drivers are 'touting' for work in the area. The HGV Road Levy was introduced with the intention of using funds to enforce cabotage and in some regions; it is used for such purposes. Some stakeholders reported seeing foreign articulated vehicles offloading to smaller foreign vans in public areas such as car parks and this practice is fairly common.

Between February and April 2016, Kent Police fined or 'moved-on' 494 trucks that were illegally parked on hard-shoulders or slip roads of the M20, A20 and A2. The RHA has been calling for improved enforcement against illegal parking on motorways across the country, reflecting the concern of its members.

Stakeholders suggested that additional parking capacity is required in the following areas or at existing facilities within Kent:

- Gravesend/Cobham
- Lydden
- Northeast Maidstone
- Sevenoaks (M25/M26)
- Ashford
- Stop 24 Folkestone

Figure 4.2 shows the areas within Kent where stakeholders suggested there is a need for additional parking provision.

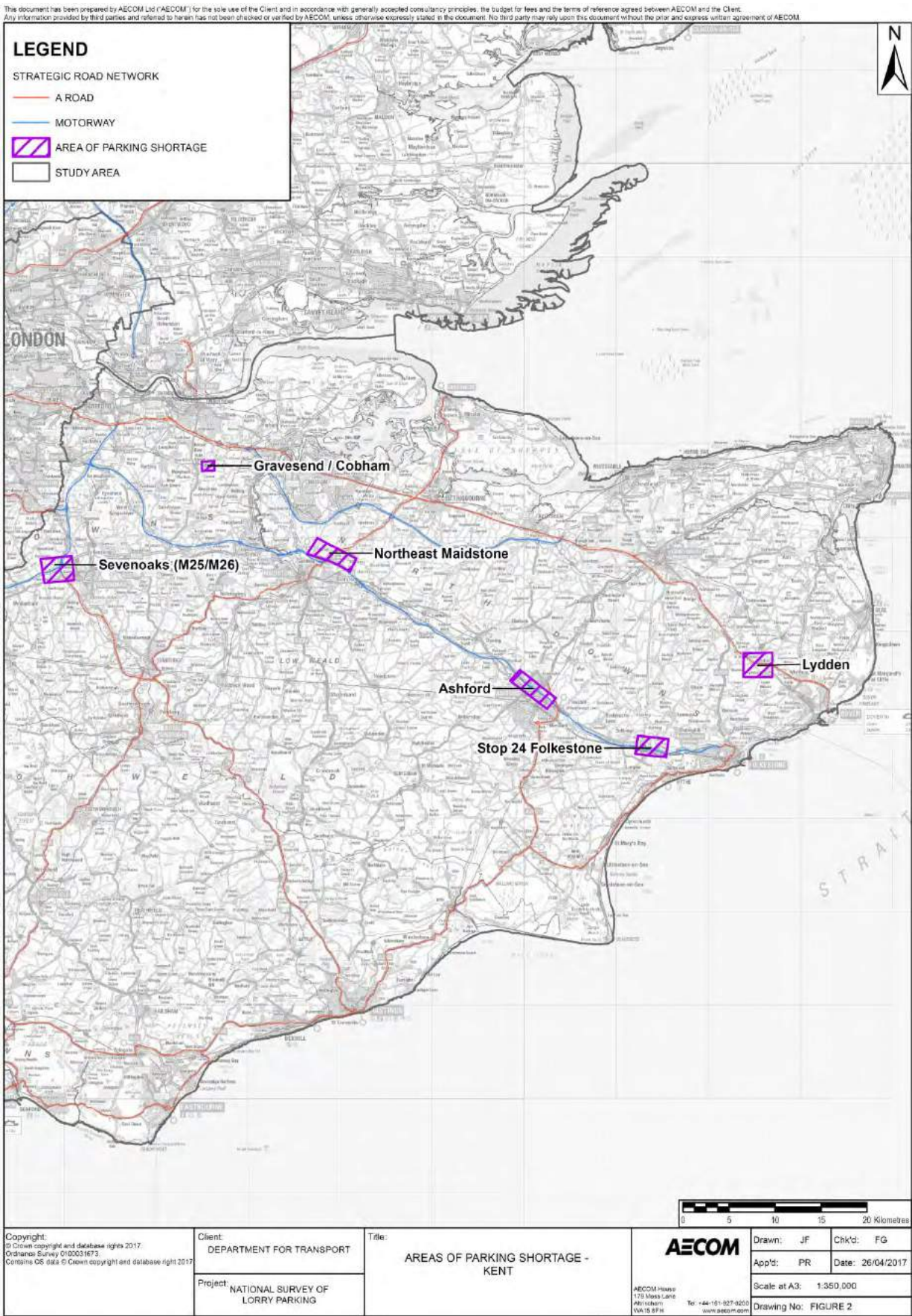


Figure 4.2: Kent Parking Shortage ‘Hotspots’

4.3 Parking Policy

Trade Associations

The CILT National Policy Committee conducted an investigation into the driver shortage in 2014/15 and suggested that there is a national shortage of 50,000 HGV drivers in the UK. Unite the Union suggested that although people generally do not want more lorries and drivers, consumer attitudes and the introduction of free returns is leading to an increased need for them.

Suggested reasons for the driver shortage and the failure to attract young people to the industry include:

- Inadequate driver welfare and insufficient parking
- Poor perception of the road haulage sector
- Young people's parents also have a poor perception of the industry
- Perception of low pay and unsociable hours

It was suggested that EU co-workers are plugging much of the driver shortage. The CILT estimates that there are 140,000 EU co-workers filling gaps in UK supply chain when forklift truck and van drivers are included.

Some European lorry drivers are working for less than £1,000 per month, which is approximately 40% less than the average monthly wage for UK based drivers (£1,650). While this has a cost benefit to the supply chain and end-users, it has many negatives including exacerbating lorry parking issues.

It was suggested that retailers are happy that large logistics companies are undercutting each other as it makes their supply chain overheads cheaper.

The FTA is in the process of developing the Commercial Vehicle Operators Facilities Charter, which will set out the associations' position with regard to lorry parking facilities. This will consider the following areas:

- New roads programme
- Provision of services (surface, bay dimensions, facilities and cleaning, catering value for money, fuel including gas and bio-diesel, security of vehicle, load and driver, fee consistency and payment systems)
- Welfare facilities at Distribution Centres (DCs)
- Parking provision requirements at or near to DCs

The RHA welcomes the government's commitment to tackling illegal lorry parking but suggests that the issue can only be solved by better legal parks to help drivers who are often desperate to find parking for their legal breaks²².

The RHA supports measures that require industry to use appropriate, secure parking where provided and sensibly priced.

Standards

There was agreement between different stakeholders that there are too many different standards for lorry parking facilities such as Park Mark, LABEL/SETPOS and British Parking Association. It was suggested that there is a need for a single standard and a means of ensuring it is put in place.

²² <https://www.rha.uk.net/news/press-releases/2016-11-november/rha-welcomes-government-commitment-to-tackle-illeg#sthash.I746uSmD.dpuf>

4.4 Parking Pricing & Overnight Allowances

It was suggested that there should be more clarity on lorry parking charges. Laybys should have signage stating that they are only to be used for emergencies or for short stay. If laybys are being used for more than two hours of parking, there should be a fee and enforcement.

The majority of facilities do not charge for the first two hours of parking so drivers can usually take their shorter mid-shift rest breaks without incurring any parking charges.

Overnight parking can cost up to £30 per night for 'good quality and secure' parking at motorway services areas. Many companies will not pay or reimburse drivers for secure parking and those that do may only pay up to £26.50.

The reason for this limit is that it is equal to the maximum tax-free allowance from HMRC of £26.50 per day for 'in-cab' rest. This means drivers make no profit from their allowance or they have to pass parking facilities to get to one that their company will cover.

Many drivers are able to keep their allowance if they do not use it on parking. This can be a considerable increase to their pay and this can be the reason why laybys are sometimes preferred.

There is inconsistency particularly among foreign operators in the level of payment for overnight rest. Some European operators pay up to €55.00 per night (approximately £47.00) whereas others may pay nothing.

4.5 Planning Policy

Stakeholders made a range of comments relating to the planning process and requirements. These related to large-scale logistics developments such as warehousing, new highways and highways upgrades.

One stakeholder suggested that at present, there is gap in DfT lorry parking policy, which the DfT consider a local planning issue but in their opinion, local authorities are not addressing issues. In some cases, local authorities are looking for developers to invest in lorry parking facilities while in other regions, facilities have been allowed to close down.

All stakeholders agreed that there is a need to consider lorry parking facilities during the planning process. This is part of the process for other developments e.g. a new block of flats might not be approved if insufficient parking is provided, so it was felt that this model exists.

Some industry associations informed us that they have supported planning applications for additional secure lorry parking facilities across the UK.

4.5.1 Highways

Some stakeholders suggested that in the case of new roads, developers are not considering the need for lorry parking facilities. One stakeholder suggested that the A1 in North Yorkshire is a case of such oversight, where until recently there has been a lack of rest areas.

In cases where trunk roads have become motorways, parking facilities have been lost. Planning policy provides that motorways must have rest areas every 28 miles or 30 minutes; however stakeholders suggested that when a trunk road becomes a motorway, there is no such planning requirement.

4.5.2 Class B8 Developments

Class B8 developments (storage and distribution) are inevitably going to attract large numbers of goods vehicles. If drivers visiting a site run out of driving hours or need to take a break then there should be an area for them to do this. Often drivers are forced to park inappropriately, in the surrounding area.

The CILT and FTA both suggested that planning policy should include a requirement for proportional levels of parking provision at Class B8 developments.

4.5.3 Section 106 Condition

It was suggested that Section 106 planning conditions could be used to mitigate the effects of inappropriate parking associated with distribution centres. If this was applied, local authorities would be able to get developers to fund the inclusion of parking facilities at new developments. At present, it was felt that large developers and site occupiers do not take responsibility for vehicles after they leave the gates.

4.6 Driver Welfare

Stakeholders agree that access to toilets during the course of a drivers' working day is a serious issue. In some cases, drivers are not allowed to use facilities at DCs and this exacerbates problems on the network. The reasons given for this have previously related to security concerns and health and safety. However, the HSE - Workplace Health, Safety and Welfare Regulations 20 & 21 provide that drivers should be able to use such facilities.

Truckers Toilets UK (TTUK) is a campaign group which seeks to improve access to and quality of facilities for drivers on the network and at distribution centres. The group's angle is that not allowing drivers to use facilities is damaging to their health and may encourage them to drink less to reduce the number of times they must use toilets.

Drivers may stop at motorway service areas during the course of their working day to use the facilities. In some instances, the parking area is full and they are forced to park inappropriately and may be issued with a penalty charge notice (PCN). Trade associations did not disagree with penalties for inappropriate parking however; there are some places where the next service area could be 30 miles away. This is a particular issue in the South East as facilities are often full but also across the network e.g. from Wetherby Services heading north.

4.7 Best Practice

Some British and European operators have agreements in place with lorry parking facilities. These include reserving parking bays and permission to complete trailer swaps on site. Although some operators have this agreement in place, it was suggested that others use laybys for trailer swaps.

Stakeholders said that some good quality facilities have been opened on the network in recent times and cited Road King Holyhead (North Wales) and Exelby Services (Yorkshire) as examples.

Some operators have arrangements with third parties, which allow drivers to pay for parking and other tolls on their fuel card or another dedicated card. This means that drivers do not have to worry about cash payment and operators get one itemised invoice. Some lorry parking facilities accept such payment schemes but do not offer meal vouchers if drivers use this system as they do for cash or card payments.

The Police suggested that around 85% of drivers are on regular runs and as such, should have reasonable knowledge of infrastructure and the ability to better plan their parking.

Some DCs do provide good facilities for visiting drivers as highlighted by the following comment:

"Dachser in Northampton has excellent facilities for drivers visiting their premises." – Trade Association Member.

4.8 Crime & Enforcement

Stakeholders expressed that the levels of Police for the enforcement of lorry parking and related issues are 'massively under-resourced'. Some stakeholders felt that the situation was getting worse.

4.8.1 Layby Usage

Parking in laybys is not an offence unless there is a byelaw or Traffic Regulation Order (TRO) in place; or vehicles are parked in a dangerous manner. As an example, many laybys in Kent have no byelaws/TRO in place. As such, the Police approach to 'moving on' vehicles is risk based. Vehicles protruding into the carriageway or damaging verges will be moved but those that are parked within the layby are often not.

The police are aware that 'moving on' trucks only displaces the problem so before carrying out enforcement, they tend to visit nearby truck parking facilities so that they know whether there is capacity for the vehicles which they move on. Some stakeholders believe that lorry parking on industrial estates is not a particular issue, as long as littering and kerb damage does not happen.

In some regions, police work with Highways England Traffic Officers to move on vehicles as it allows them to cover a greater area. If the Highways England officers are ignored, then police will support them.

Police are able to issue a £30 parking fine to vehicles in areas where parking is not permitted or where vehicles are parked in manner that is deemed to be dangerous. The police suggested that there needs to be a regulatory review of the current fines as they are roughly the same as one nights HGV parking. It was also suggested that 'blanket TROs' should be considered in some areas, if and when there is sufficient parking provision.

4.8.2 Load Theft

In terms of load thefts, vehicles carrying high-value easily transferable goods such as cigarettes and alcohol were described as 'prime targets' for criminals. Unite the Union said that although load thefts were an issue in the UK, they do not tend to get that many complaints relating to it.

Curtain slashing is a particular problem at MSAs, where criminals cut open curtains inside trailers to see what goods are on-board. It was suggested that organised gangs are operating in certain areas with Yorkshire and the Northamptonshire-Bedfordshire border identified as particular crime hotspots. Such gangs are aware of where vehicles will be parked and use stolen vehicles to steal loads.

Such thefts are the reason why many trucks can be seen with the rear trailer doors open if parked for the night. The cost of a replacement curtain is in the region of £1,000 however; in some cases it is possible to 'patch' the damaged curtains.

Although still considered an issue by trade associations, some police forces suggested that load theft crime is much less prevalent than it has been in the past, at least in their region. This notion was also supported by some service area operators who suggested that issues with curtain slashing had become less prevalent in recent times.

4.8.3 National Vehicle Crime Intelligence Service (NaVCIS)

NaVCIS gathers vehicle crime intelligence from UK police forces, industry, open sources and European law enforcement agencies. This intelligence can then be used to spot emerging trends and help put resource in place to stop them. Following private funding support, NaVCIS has established a 'freight desk' targeting freight transport crime in the UK.

NaVCIS produce a Freight Bulletin that details instances of theft across various regions. From reviewing these documents, there are a number of suggested load theft 'hotspots'²³:

- A45 - Flore, Northamptonshire
- Leigh Delamere Services - M4 J17-18, Wiltshire
- Swift Valley Industrial Estate - Rugby, Warwickshire
- Forum Drive – Rugby, Warwickshire
- Leicester Forest East Motorway Services - M1 J21a-J21, Leicestershire
- Purfleet and Grays, Essex
- A12 – Wiltham, Essex
- A66 – Penrith, Cumbria
- A1 – North Muskham, Nottingham

4.8.3.1 Crime Data

In this section, we have provided a high-level analysis of freight crimes reported to NaVCIS in 2016. The total stolen value of all freight crimes reported to NaVCIS, including those at operating depots and those in Scotland and Wales is estimated to be £51.7 million.

It must be stressed that not all freight crime is reported to NaVCIS, while the data is useful, it does not provide a full picture of the national situation. NaVCIS believe that around half of forces are reporting to them. They would like all forces to report to them and stressed that there is a need for national reporting into a central database.

The database includes crimes recorded in 37 out of 43 police areas as it includes data from direct reporting, the industry and open sources. **Table 4.2** shows the worst ten regions by police force for crimes reported at laybys or industrial estates, MSAs and truckstops.

Table 4.2: Freight Crime Ten Worst Regions by Number of Reported Incidents

Rank	Police Force	Crime Count	Value Stolen (£ millions)
1	Northamptonshire	231	£9.9m
2	Essex	185	£8.6m
3	Leicestershire	105	£3.4m
4	Nottinghamshire	75	£3.3m
5	Thames Valley	71	£1.5m
6	Cambridgeshire	57	£1.2m
7	South Wales	51	£1.0m
8	Hertfordshire	47	£1.8m
9	Derbyshire	44	£1.2m
10	Bedfordshire	37	£1.9m

Table 4.2 shows that Northamptonshire is the worst region for freight crime. Further analysis shows that crimes in Northamptonshire equated to £9.9 million, which is almost one quarter (24%) of the total for England.

Northamptonshire up to Leicestershire marks the centre point of the so called 'Golden Triangle' of national distribution centres for the whole UK. Hence, the density of warehousing and distribution movements attracts the highest levels of criminal activities.

Kent, although highly publicised for its parking issues, is not in the worst regions in terms of freight crime. Kent is ranked 11th with 30 recorded crimes.

There were 1029 reported freight crimes in England, which occurred at laybys or industrial estates, MSAs or dedicated truckstops. The total 'value' of goods stolen from these crimes

²³ <http://www.bifa.org/information/national-vehicle-crime-NaVCIS>

exceeds £42 million but this would be greater if other factors such as damage, downtime and insurance were considered.

Figure 4.3 provides a breakdown of reported crimes in England by location type and the sum of their reported 'stolen value'.

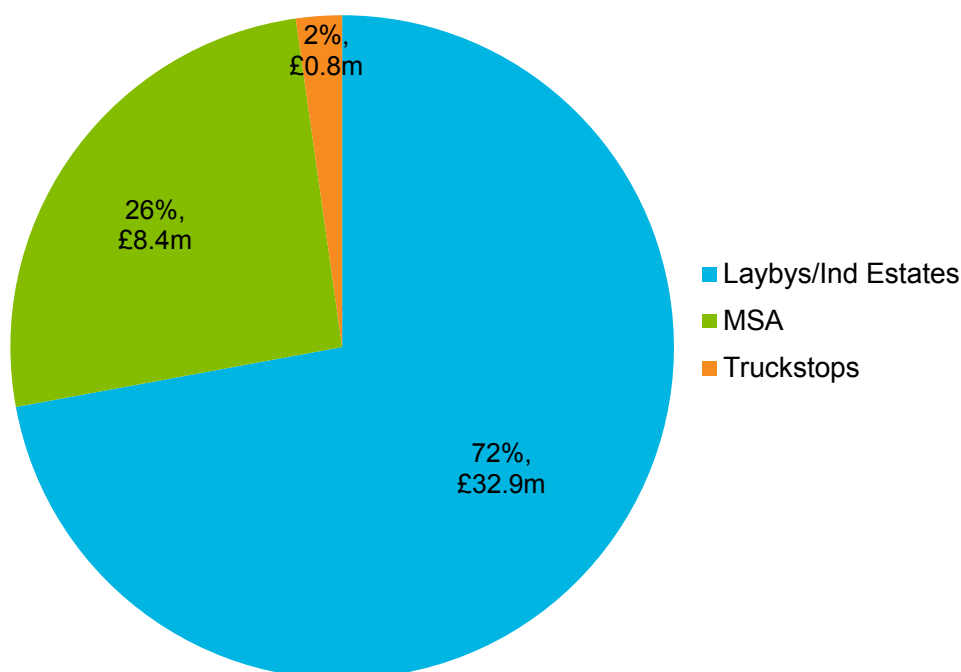


Figure 4.3: Freight Crimes by Location Type and Cost

Almost three quarters of crimes reported took place at laybys or industrial estates. In terms of value, crimes at laybys/industrial estates account for over three quarters (77%) of the total stolen value during the year.

It is also notable that over one quarter (26%) of these crimes took place at MSAs. This is concerning as these facilities are seen as 'secure parking' by many in the industry and cost between £20-30 per night to park.

Some stakeholders suggested that security at MSAs is insufficient. Further to this, there is a belief that CCTV is not used for crime prevention but for ensuring parking fees are levied to those staying over the free parking period (typically 2-3 hours) and the data appears to support this.

4.9 Summary

This section summarises the key points raised by stakeholders during the consultation phase, particularly those where there was agreement by multiple parties on a particular topic or issue:

- The provision of lorry parking is a national issue in terms of capacity and quality.
- There are a number of areas where stakeholders feel the issues are most pronounced (**Figures 4.1 and 4.2**).
- Stakeholders agreed that the issue is most pronounced in Kent and suggested that there is a need for 1000+ additional lorry parking spaces.
- The shortage and quality of driver facilities contributes to the sectors negative public perceptions and compounds recruitment issues.
- There is a driver shortage in the UK and it is 'plugged' by EU workers.
- Trade associations support measures requiring operators to use appropriate secure parking facilities but stressed that there is a need to increase overall capacity and improve quality at some facilities.
- There should be more clarity on lorry parking charges.
- Stakeholders suggested that there is a need for better communication between DfT and local authorities in relation to lorry parking, as issues, which DfT considers the local planning authority's responsibility, are not being managed.
- Lorry parking facilities should be considered during the planning process, particularly for class B8 developments.
- In some areas laybys are being closed without additional parking provision elsewhere. Local Authority planners need to understand that lorry parking is a national issue and that drivers must legally stop after set period to take rest.
- There were mixed responses relating to load theft. Some stakeholders felt that the situation was improving at their site or region however data suggests it is a serious issue.

5. Lorry Parking Audit Findings

5.1 Introduction

This chapter presents the detailed results from the data analysis of the lorry parking audits, including both national and regional results. A shorter summary of the findings appears in **Chapter 6**.

5.1.1 Audit Highlights

- During the month long survey, 18,670 vehicles were counted parked overnight across England in off-site and on-site locations. Each site was counted for a single weekday night.
- The total capacity of on-site spaces available in lorry parks or motorway service areas (MSAs) was found to be 15,012.
- Therefore, when compared with the total number of vehicles counted, there was an excess of 3,658 vehicles that could not be parked even if every parking space could be filled.
- 311 on-site lorry parking facilities were surveyed across England. Lorry parking facilities include:
 - Motorway service areas (MSAs) with overnight lorry parking options
 - Independently owned/managed truck stops
 - Trunk road service areas
 - Local authority truck park
- 801 industrial estates and 3397 laybys were also surveyed.
- Regions with $\geq 70\%$ utilisation of lorry parks include:
 - East of England 97%
 - West Midlands 87%
 - South East 84%
 - Yorkshire and Humber 76%
 - East Midlands 72%
 - South West 72%
- 39% of all vehicles recorded were parked off-site in laybys or Industrial Estates.

5.2 National Findings

5.2.1 Introduction

This section provides a national overview of the study results. It aims to inform stakeholders of the broad trends and highlight the key findings at the national level. It discusses the factors influencing demand, including:

- Number of facilities and spaces available;
- The level of on-site parking (utilisation);
- The level of off-site parking (lay-by and industrial estates);
- A comparison of the number of Foreign and UK drivers, and;
- An overview of the types of facilities available to drivers on-site.

5.2.2 Locations of all lorry parking facilities

A map showing the locations of all truck stops (311), laybys (3397) and industrial estates (801) that were visited can be seen in **Figure 5.1** as expected the laybys display a structure mirroring the strategic road network, and most industrial estates and lorry parks are close by.

To achieve the brief every stretch of the SRN was visited and through desk based research lorry parks and industrial estates within 5km of the SRN were identified and also visited, the routes leading to these sites were also included in the survey.

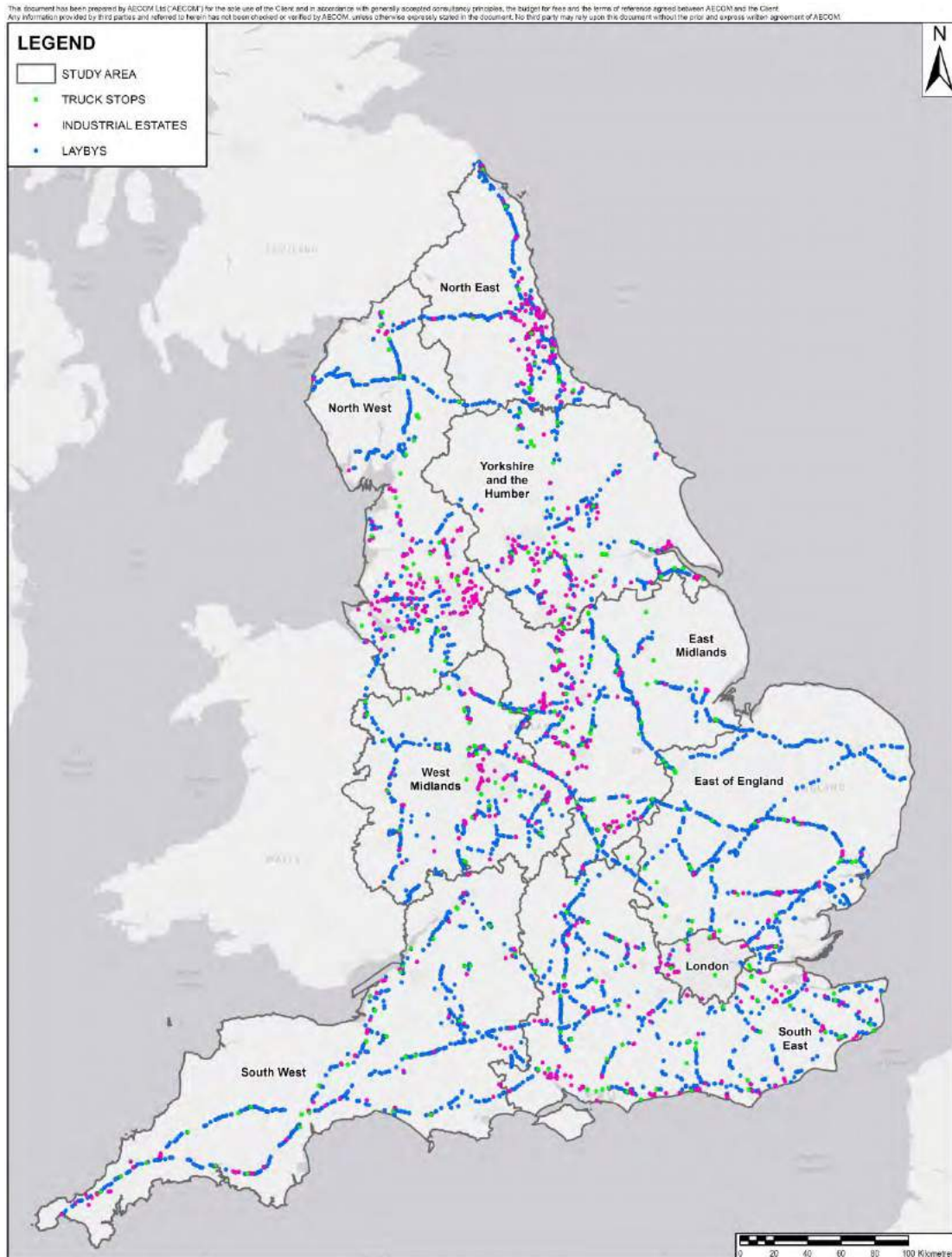


Figure 5.1: All locations visited

5.2.3 Utilisation of on-site lorry parking facilities

This section shows the total number and type of facilities in England, and how these are split across regions. This includes the number of spaces provided by each type of facility.

The study recorded 311 sites across England allowing overnight parking. These sites had a total capacity of 15,012 parking spaces. The on-site utilisation of these sites varied across regions, from 48% to 97%, with the national average being 76%.

Two thirds of all regions have serious lorry park utilisation (above 70%) and five out of nine regions have parking which exceeds or is close to exceeding capacity as seen in **Figure 5.2** – this indicates that there is insufficient capacity to meet demand in many places.

Table 5.1: Utilisation by Region

Region	Sum of capacity	Total Number of Vehicles	Utilisation
East of England	1,943	1,892	97%
West Midlands	1,906	1,663	87%
South East	2,871	2,423	84%
Yorkshire and Humber	1,856	1,418	76%
East Midlands	2,167	1,550	72%
South West	1,084	783	72%
North East	405	244	60%
North West	2,573	1,397	54%
London	207	99	48%
England	15,012	11,469	76%

A system has been used to categorise lorry park utilisation – see **Table 5.2**. This is similar to the categories used in the previous studies in 2010.

As with previous studies we have taken 70% full as reaching a seriously full status where drivers have to search carefully for spaces. At utilisation of 85% or more it becomes critical and very difficult for additional drivers to find parking spaces depending on the size of vehicles and the way they are positioned. So in practice drivers may say a lorry park which is utilised at greater than 85% may in fact be full.

Table 5.2: Utilisation Categorisation

Description	Utilisation (%)
Critical	≥ 85
Serious	70-84
Acceptable	<69

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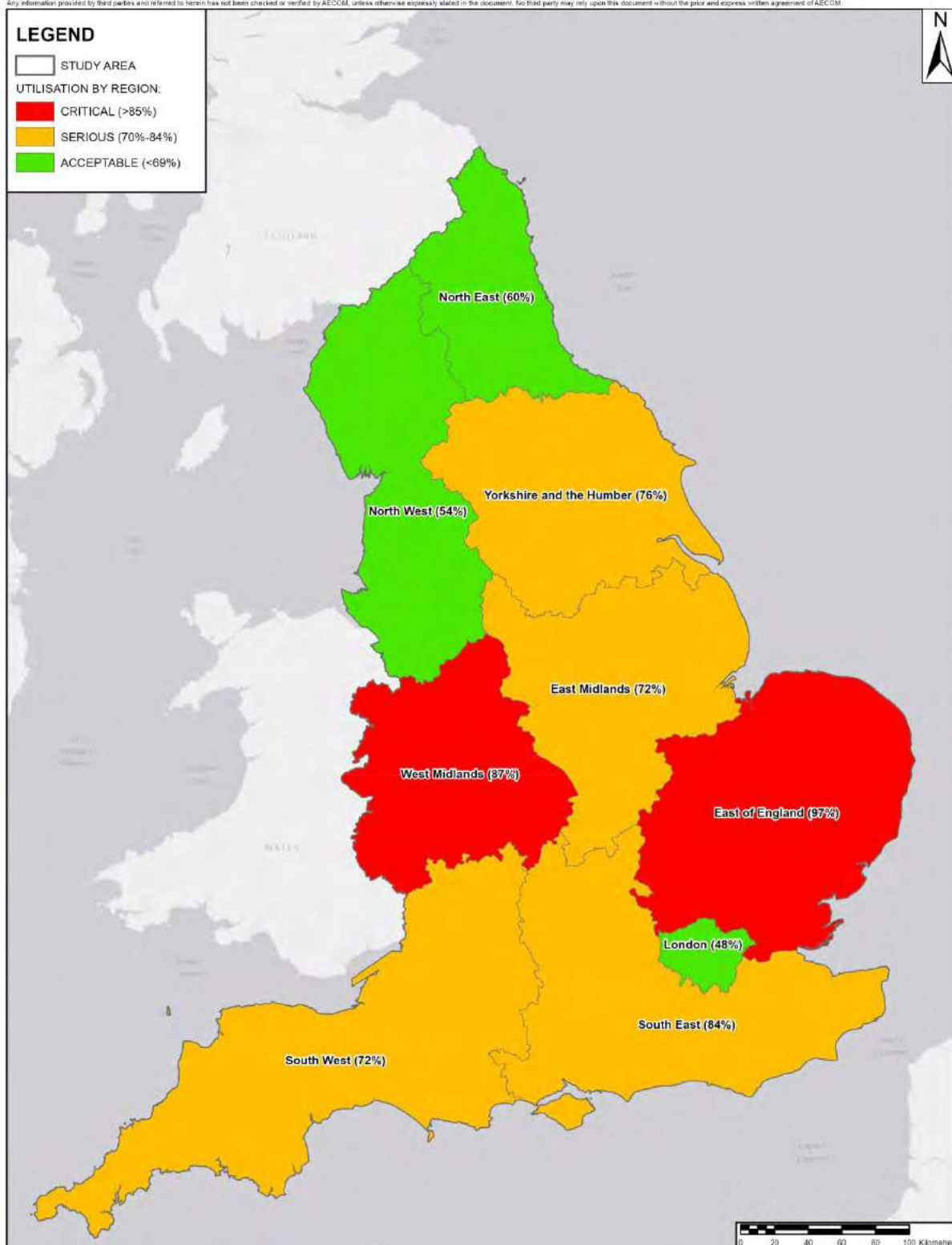


Figure 5.2: Utilisation by region

The East of England and West Midlands have critical utilisation of over 85%, closely followed by the South East where the utilisation is 84% - **Figure 5.2**.

5.2.3.1 Excess Demand

The level of excess demand shows the relationship between the total capacity of a region and the total number of vehicles parking in that region. A large excess indicates that at a regional level there is a problem with a lack of spaces – **See Table 5.3**. Only the North West

and London appear to have sufficient lorry parking capacity as they are the ones with a negative figure in the excess column.

Table 5.3: National overview of result

Region	Lorry Park Capacity	Total Parked Vehicles	Excess Vehicles
East Midlands	2,167	3,032	865
East of England	1,943	2,854	911
London	207	136	-71
North East	405	745	340
North West	2,573	2,357	-216
South East	2,871	3,723	852
South West	1,084	1,272	188
West Midlands	1,906	2,519	613
Yorkshire and Humber	1,856	2,032	176
England	15,012	18,670	3,658

Figure 5.3 shows a breakdown of the number of vehicles parked in lorry parking facilities, industrial estates and lay-bys. The bar (maroon line) indicates the total capacity of lorry parking facilities surveyed in that region.

This demonstrates that the East Midlands, East of England and North East had more vehicles parking than there was space, additionally the South East and West Midland regions are also close to exceeding capacity. This survey was conducted in a representative month, March. However there are seasonal fluctuations in some types of freight goods transport traffic that mean it is possible that these regions could be over capacity during busy times of the year.

There is evidence to suggest that some drivers choose to park off-site in lay-bys or industrial estates even when spaces are available on-site – for example the North East has a lower capacity than total trucks parked yet overall utilisation is only 60% - see **Figure 5.2**.

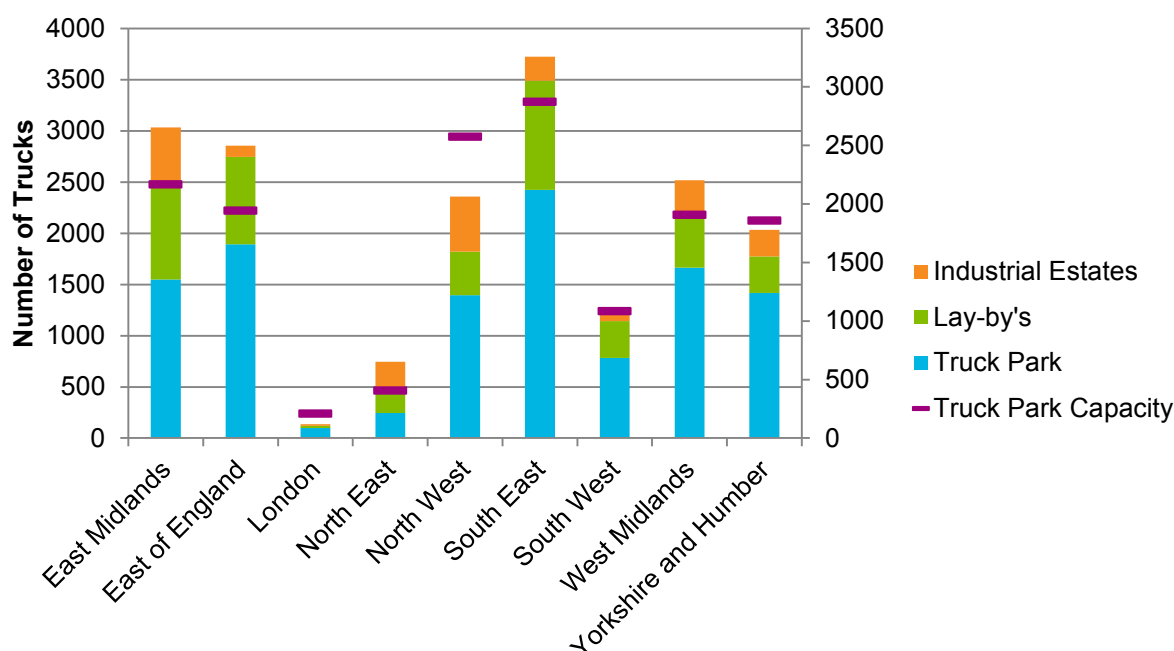


Figure 5.3: Number of vehicles parked by region and parking type

5.2.3.2 Overview of facilities available to drivers

A system was devised to rate all on-site lorry parking facilities as described in **Table 5.4** below. This rating was based on a five point scale which is broadly in line with LABEL the European Truck Park Area Certification system. As the system devised does not include all of the LABEL criteria, the results should be used indicatively. Nevertheless, it provides a useful overview of the types of facilities available at lorry parks on a regional basis. Standard 4 and 5 have security features.

Table 5.4: Facility rating basis

Truck Stop Standard Level	Truck Stop Facilities	Description
1	Toilets	Basic rest area offering truck drivers a place to park and access to toilets.
2	Toilets & Café	Basic/medium rest area offering truck drivers a place to park and access basic amenities, including toilets and a cafe.
3	Toilets, Shower & Café	Medium level facility that offers truck drivers a place to park with shower facilities as well as toilets and a cafe.
4	Toilets, Lighting, Shower, Café, & Security Fence	Medium/High level facility that offers a degree of secure and safe truck parking whilst also offering a decent level of facilities for truck drivers.
5	Toilets, Lighting, Shower, Café, Security Fence Accommodation & CCTV	High end truck parking facility offering truck drivers a place to park securely and safely whilst also enjoying extensive facilities.

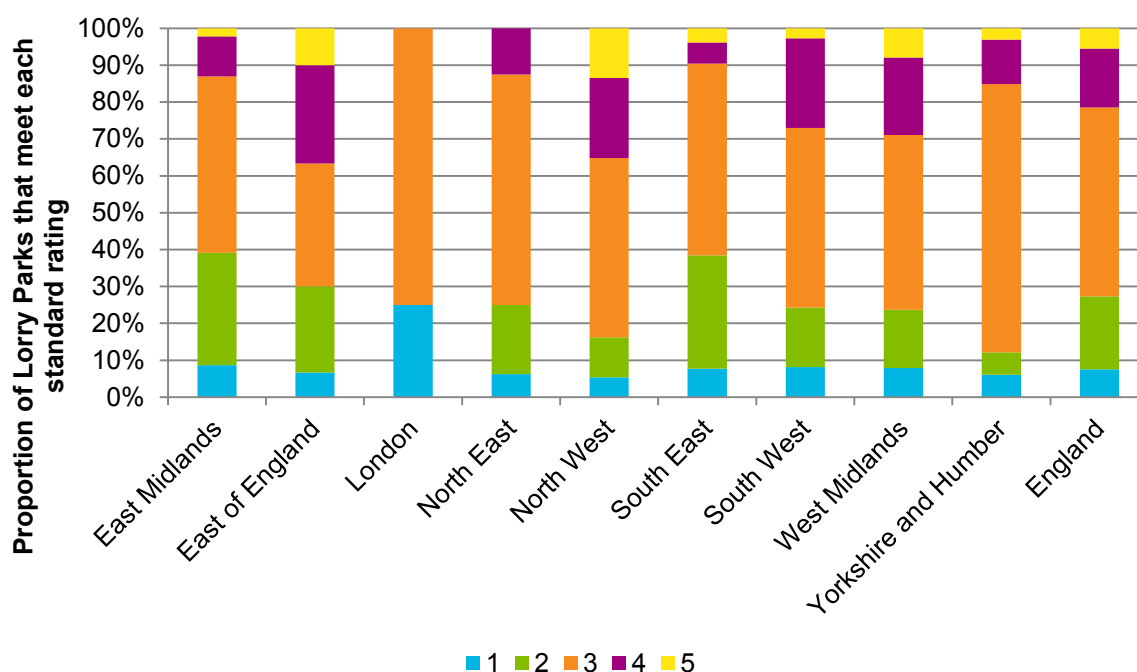


Figure 5.4: Regional split of rated facilities at lorry parks

Table 5.5: Number of lorry parks and their ratings in each region

Region	Number of Lorry Parks ranked at each level										Average Price (£)
Levels of Ranking	1		2		3		4		5		-
East Midlands	4	9%	14	30%	22	48%	5	11%	1	2%	£13.20
East of England	2	7%	7	23%	10	33%	8	27%	3	10%	£18.70
London	1	25%	0	0%	3	75%	0	0%	0	0%	£21.70
North East	1	6%	3	19%	10	63%	2	13%	0	0%	£13.50
North West	2	5%	4	11%	18	49%	8	22%	5	14%	£18.00
South East	4	8%	16	31%	27	52%	3	6%	2	4%	£18.60
South West	3	8%	6	16%	18	49%	9	24%	1	3%	£15.50
West Midlands	3	8%	6	16%	18	47%	8	21%	3	8%	£16.30
Yorkshire and Humber	2	6%	2	6%	24	73%	4	12%	1	3%	£17.20
England	22	8%	58	20%	150	51%	47	16%	16	5%	£16.60

The North West has the highest proportion of highly rated lorry parks, meaning these have the most facilities including security features; this is also represented in cost as the North West has the second highest average pricing.

The East of England and West Midlands also have a significant proportion of highly rated parks.

The majority (51%) of lorry parks have a rating of three which denotes good amenities but no security features.

London and the North-East do not have any secure lorry parks; this is because the region denoted as London only considers areas within and not including the M25.

London has the highest priced Lorry Parks as expected, however this does not relate to facility ranking but the high land cost.

5.2.4 Offsite parking

Table 5.6 below shows the amount of vehicles parking in lay-bys, industrial estates compared to the utilisation of on-site parking facilities in each particular region. The three regions with the highest on-site utilisation have particularly high levels of off-site parking; Eastern, South East and West Midlands. The East Midlands also had a high level of parking in lay-bys.

Table 5.6: Offsite parking

Regions	Lorry Parks	Industrial Estates		Laybys		Total Off-site
	On-site utilisation	Number of Sites Visited	Number of Vehicles Parked	Number of Sites Visited	Number of Vehicles Parked	Number of Vehicles Parked
East Midlands	72%	115	561	559	921	1,482
South East	84%	128	235	554	1,065	1,300
East of England	97%	26	107	470	855	962
North West	54%	150	536	357	424	960
West Midlands	87%	86	352	362	504	856
Yorkshire and Humber	76%	95	258	276	356	614
North East	60%	108	298	287	203	501
South West	72%	67	130	523	359	489
London	48%	26	15	9	22	37
England	76%	801	2,492	3,397	4,709	7,201

Figure 5.5 and **Table 5.7** show that the East Midlands has the highest number of vehicles parked off-site. The East Midlands also has the second largest percentage of vehicles parked offsite at 42%. It is likely that this is due to high demand for parking in industrial estates as a number of distribution centres are in this area and many have no provision for lorry parking after delivery. The East Midlands also has the highest issues with freight crime across the UK.

The North East has a high percentage of off-site vehicles parked but this is likely due to the low capacity of lorry parking as well as a lot of the off-site parking being centred near the Port at Teesport.

The South East has the second highest number of total vehicles parked off-site and the highest number for total vehicles counted parking overnight.

Table 5.7: Off-site Parking Summary

Region	Lorry Park Capacity	Total Parked Vehicles	Total Vehicles Parked offsite	Percentage of vehicles parked offsite
North East	405	745	468	63%
East Midlands	2,167	3,032	1,264	42%
North West	2,573	2,357	883	37%
South West	1,084	1,272	424	33%
West Midlands	1,906	2,519	740	29%
Yorkshire and Humber	1,856	2,032	563	28%
East of England	1,943	2,854	731	26%
South East	2,871	3,723	890	24%
London	207	136	31	23%
England	15,012	18,670	7,201	39%

To create **Table 5.8** the length of the SRN in each region was estimated using the google maps measuring tool, in doing so the number of vehicles found parked per km of SRN could be used as a basis to compare data across regions. The higher the number for “parking density” shows that there is a high off-site parking in relation to the length of SRN within a region.

As expected, the regions with the highest number of excess vehicles in a region also have a high number of vehicles per km of SRN and the three areas of highest lorry park utilisation also have an off-site parking density above 1 vehicle/km.

East Midlands has 72% utilisation but has high off-site parking, it has the highest density of vehicles parked off-site and the second highest number of excess vehicles, and this is also evident from looking at **Figure 5.5**.

Table 5.8: Off-site Parking Density and Excess Vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parking
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density vehicle/km of SRN	
	On-site utilisation	Number of Vehicles Parked	Number of Vehicles Parked	Number of Vehicles Parked	Estimated distance of SRN (km)	Density vehicle/km of SRN	Excess vehicles
East of England	97%	107	855	962	840	1.1	911
East Midlands	72%	561	921	1,482	550	2.7	865
South East	84%	235	1,065	1,300	1,210	1.1	852
West Midlands	87%	352	504	856	700	1.2	613
North East	60%	298	203	501	430	1.2	340
South West	72%	130	359	489	1,080	0.5	188
Yorkshire and Humber	76%	258	356	614	780	0.8	179
London	48%	15	22	37	360	0.1	-71
North West	54%	536	424	960	1,130	0.8	-216
England	76%	2,492	4,709	7,201	7,080	1	3,658

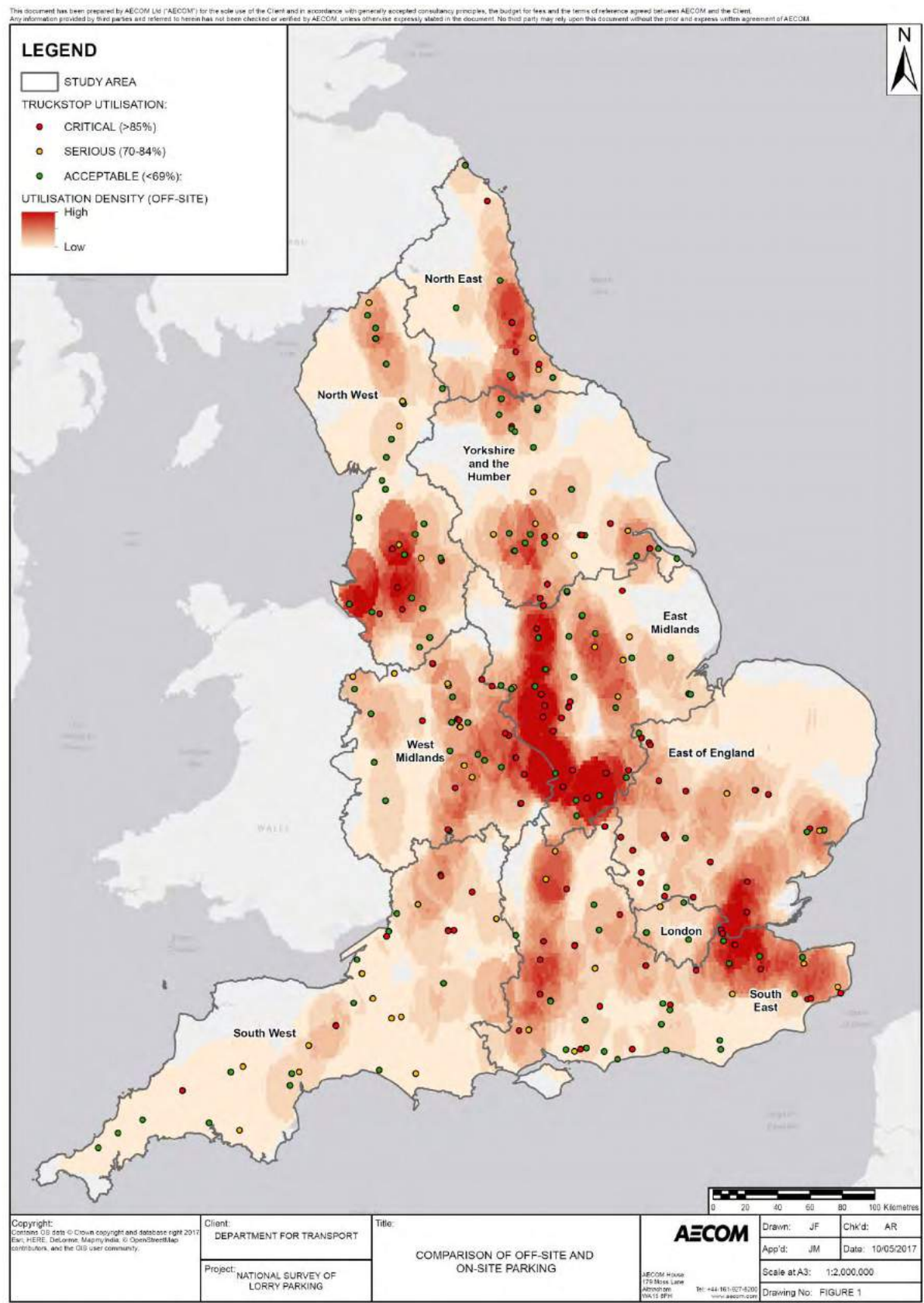


Figure 5.5 – Off-site density and On-site utilisation

5.2.5 *UK and Foreign vehicle parking comparison*

Across England 25% of vehicles counted taking overnight stops were foreign registered in contrast to road freight data which suggests that 3.3%²⁴ of total UK HGV vehicle kilometres are made up by foreign registered vehicles. This confirms that a number of journeys made by UK vehicles can be completed within the day and do not require an overnight stop.

The range of foreign vehicles parked overnight in UK lorry parking areas was from 17% in the North East to 41% in the South East – as shown in **Figure 5.6**. The percentage of foreign vehicles parked on-site is 1% lower than those parked off-site. However, in both cases (on and off-site parking) the highest proportion of foreign vehicles is in the South East. The majority of international road movements move across the Dover Straits and Channel Tunnel, so this is an expected outcome.

London has a notable difference between the numbers of foreign vehicles found on and off-site, one of many reasons may be concern over congestion charging.

²⁴ Department for Transport, 2015 - Road Traffic Estimates: Great Britain 2014 (R)

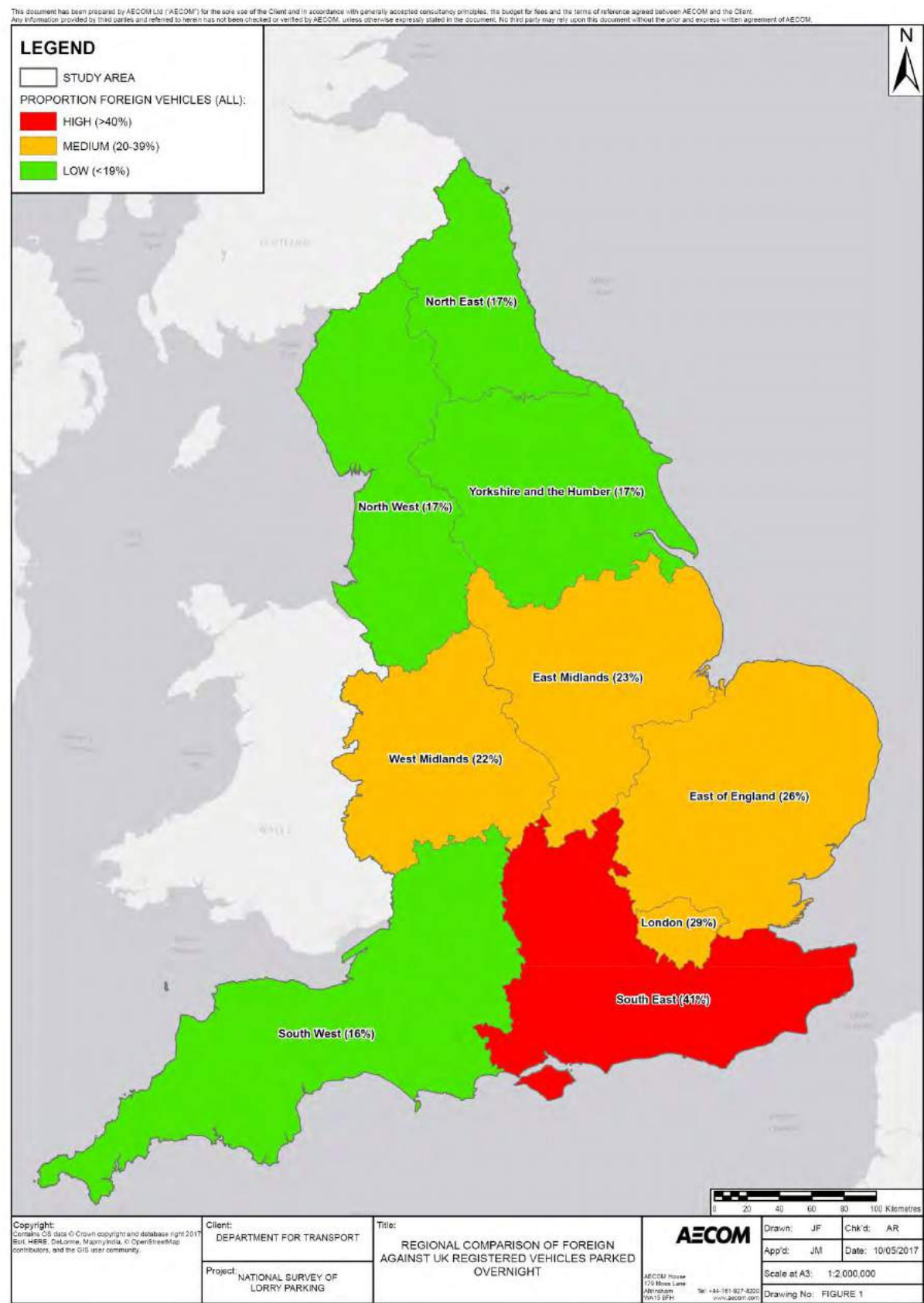


Figure 5.6: UK to Foreign vehicle comparison for all overnight parking

Table 5.9: UK to Foreign vehicle comparison for all overnight parking

All Parking	UK vehicles	Foreign vehicles	All Vehicles	Foreign / Total
East Midlands	2,341	691	3,032	23%
East of England	2,098	756	2,854	26%
London	96	40	136	29%
North East	619	126	745	17%
North West	1,951	406	2,357	17%
South East	2,203	1,520	3,723	41%
South West	1,074	198	1,272	16%
West Midlands	1,955	564	2,519	22%
Yorkshire and Humber	1,678	354	2,032	17%
England	14,015	4,655	18,670	25%

5.2.6 Major ports in England and strategic corridors connecting to the ports

The heat maps below identify areas of high off-site parking in relation to 10 main ports, the locations considered are:

- Liverpool
- Bristol
- Southampton
- Portsmouth
- Dover
- London Gateway
- Felixstowe
- Immingham & Grimsby
- Hull
- Teesport.

Ovals, which are 10km wide and 50km in length, have been overlaid onto the map, **Figure 5.7**, with their origins starting at key ports – the dimensions of the ovals have been created to highlight the audit boundaries of 5km from the SRN and 50km being within an hour's driving distance of the port - meaning one can reasonably assume that a proportion of the parking in this area is related to the port.

Key areas of high offsite density are surrounding the port of Dover, London Gateway, Felixstowe, Southampton and Liverpool.

The SRN surrounding the three ports in the South East and East of England is under a lot of pressure from lorry parking. The heat maps show high off-site parking on the M20, A2, A14, A12 and A120 leaving the ports and also in and around the counties of Essex and Kent. Almost all lorry parks within the counties of Essex and Kent are at critical levels of utilisation.

The A34 leading north from the ports of Southampton and Portsmouth had high levels of offsite parking and a high number of serious and critically utilised lorry parks – although a lot of this is outside the '50km' defined distance from the ports, it is the logical route leading north from the ports.

As an example there is high off-site parking density around the Port of Liverpool and no lorry parking facilities in the immediate vicinity and a number of facilities on routes close to the port are at critical utilisation. Port expansion is likely to make the issue more acute.

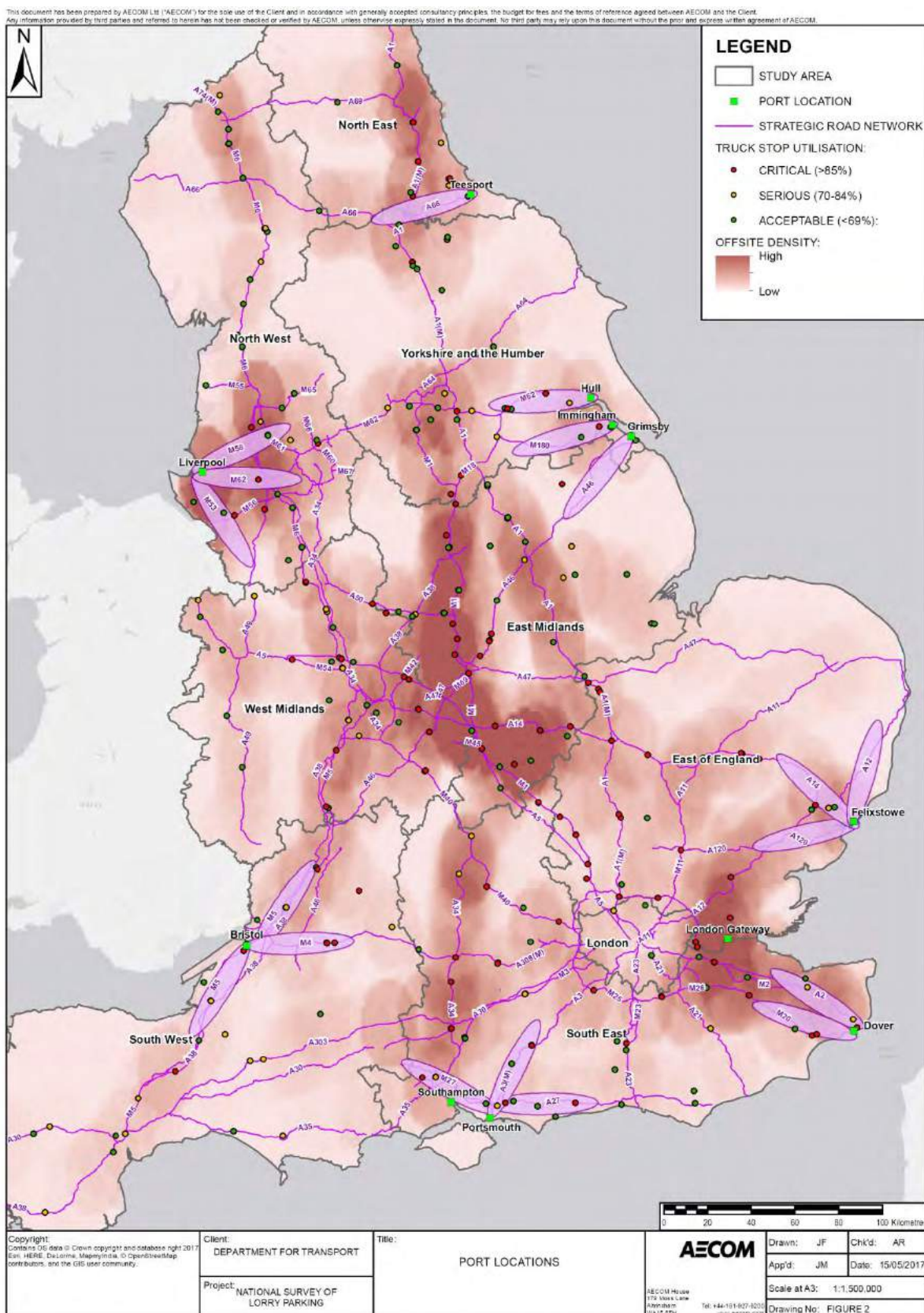


Figure 5.7: Map to show the effect of ports on overnight lorry parking

5.2.7 Crime

All crime data was collected from NaVCIS, it was recorded across the whole of 2016. NaVCIS identified an issue that not every police force report crime to them, as such there is significant differences in crime statistics from region to region. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worth of further examination.

The key areas of freight crime have been captured in detail in the regional analysis.

The areas found to have the biggest freight crime problems from data and stakeholder interview are:

- Northampton (East Midlands),
- Essex (East of England),
- Leicester (East Midlands) and;
- Nottinghamshire (East Midlands).

This is supported in **Table 5.10** which displays the East Midlands and East of England as having significant crime problems having a total collective stolen value of almost £35Million.

Table 5.10: Regional Crime Summary (2016)

Region	Total Number of Offences	Number of Offences On-site	Number of Offences Off-site	Total Value of Stolen Items	Average Value of Stolen Items
East Midlands	455	162	293	£ 17,850,867	£ 39,232
East of England	389	69	320	£ 16,601,017	£ 42,676
West Midlands	45	6	39	£ 3,166,000	£ 70,356
South East	105	42	63	£ 2,581,210	£ 24,583
North West	19	2	17	£ 831,000	£ 43,737
Yorkshire and Humber	6	2	4	£ 676,700	£ 112,783
London	5	3	2	£ 248,000	£ 49,600
South West	5	1	4	£ 232,200	£ 46,440
England	1,029	287	742	£ 42,186,994	£ 40,998

5.2.8 Estimation of additional parking required

We have developed immediate and long term responses which could be used to progress developments in increasing lorry parking capacity. The immediate response is focused on specific lorry parking locations that currently are at critical capacity of over 85%. Whereas the long-term estimations are based on all overnight parking compared with current capacity, this considers a situation where all overnight parking occurs on-site.

5.2.8.1 Immediate response

The following **Table 5.11** has been created to aid initial response decisions, the terminology can be defined as:

- Theoretical : the total number of spaces required if there is an on-site parking space provision for every single lorry counted overnight;
- Practical: the total number of spaces required for every lorry to be able to park in a space overnight considering that a lorry park is, in practice, full at 85% capacity.

To deliver an immediate response, only lorry parks considered as critical ($\geq 85\%$) were considered, as such London is excluded from the table. Theoretically six regions require additional spaces; yet practically eight regions have been identified as needing increased parking facilities, with the most urgent need found to be in the South East

Table 5.11: Immediate response estimation of additional parking requirements from considering lorry parks currently equal to or above $\geq 85\%$ capacity

Region	Theoretical Spaces needed	Practical total spaces needed	Practical number of additional spaces needed	Practical additional spaces needed (%)
East Midlands	-43	866	87	11%
East of England	58	1,848	335	22%
North East	8	153	31	25%
North West	17	351	70	25%
South East	210	1,731	470	37%
North West	-10	472	61	15%
West Midlands	27	1,262	216	21%
Yorkshire and Humber	15	844	142	20%
Total	282	7,526	1,411	19%

5.2.8.2 Long term response

It is useful to examine a long term response to the need for rest areas. The following need to be considered;

- The purpose of lay-bys should be limited to short breaks and emergency stops.
- Overnight parking in industrial estates is inappropriate.
- Thus, the ideal is for all overnight lorry parking to be contained within appropriate on-site facilities.

There is an excess of 3,658 vehicles (24%) when compared to the total number of on-site parking spaces (11,469). Hence, in theory, if there is to be no off-site parking overnight, there is a need for 24% more lorry parking spaces immediately.

In practice it is difficult to fill each lorry park above 85%, as explained in the utilisation categorisation, so on the basis that a 15% excess of spaces are required, there is a real need for 46% more lorry parking spaces.

N.B. This figure, of 46%, factors in the need for 15% more spaces than vehicles needing to park; it has been calculated by dividing total number of vehicles needing to park by a factor of 0.85 (21,965) before dividing this by the current number of on-site spaces.

5.3 Regional Findings

5.3.1 Introduction

This sub-section provides a regional analysis of the study results. By dividing England into nine regions it aims to inform stakeholders at a more detailed level.

The nine regions considered are:

- East Midlands
- East of England
- London (inside and excluding the M25)
- North East
- North West
- South East
- South West
- West Midlands
- Yorkshire and Humber.

The analysis is structured as follows;.

- **Regional Overview:** A summary of key information such as the on-site utilisation, capacity, percentage of foreign vehicles and crime totals. This is important to provide the context for each region before it is discussed in detail.
- **On-Site Parking:** This is used to start the process of understanding demand. The on-site utilisation is considered within the region, which is usage as a percentage of total capacity. The key sites with critical demand (>85% utilisation) are identified which indicates that these areas that do not have enough capacity to accommodate on-site parking demand.
- **Off-Site Parking:** This analysis is done in three ways
 - **Calculating excess demand** - presents an overall situation of demand for each local authority in the region, in terms of the total vehicle numbers that needed to park (on and off-site combined) compared to total capacity.
 - **Calculating off-site parking density** – by estimating the total length of SRN within each region this allows us to compare each region fairly by considering scale. The density is therefore the total number of vehicles parked off-site divided by the total length of SRN in kilometres.
 - **Density mapping** – GIS allows the user to collate points identifying specific locations with high off-site parking issues.
- **Crime:** This is used to add a further level of comparison to demand issues²⁵. The total number of crimes is highlighted in each local authority of the region. A further map is then used to show specific locations of where crime was happening in key areas, to help understand relationships between location of crime and off-site parking.

Facilities: A system was devised to rate all on-site lorry parking facilities as described in **Table 5.4**. It provides a useful overview of the types of facilities available to drivers at lorry parks and their respective costs.

²⁵ All crime data sourced from Truckpol 2010

5.3.2 East Midlands

5.3.2.1 Regional overview

Table 5.12: East Midlands Regional Overview

East Midlands				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	1,550	921	561	3,032
Foreign vehicles (%)	20	24	28	24
Number of Sites	49	470	115	634
Utilisation	72%			
Lorry Park Capacity	2,167			
Excess vehicles	(Total Number of vehicles parked – Capacity = Excess)			865

The East Midlands has the largest number of vehicles parking offsite (1,264) which amounts to 42% of all parking in the region. The utilisation is 72% which although in the serious criteria is comparatively low when considering other regions with such high off-site parking – this may be due to the large number of distribution centres in the East Midlands that do not provide off-site parking provision for their delivery drivers.

5.3.2.2 Critical Utilisation of on-site parking

Table 5.13 displays the 18 lorry parking sites in the East Midlands which have a Critical Utilisation (Critical: >85% utilisation).

Table 5.13: Onsite Utilisation

East Midland Sites with Critical Utilisation (>85%)	Utilisation
Welcome Break Leicester Forest East Southbound	102%
BP Kettering Eastbound	100%
BP Kettering Westbound	100%
Junction 23 Lorry Park	100%
Leicester North Services	100%
Portly Ford Cafe	100%
Six Hills Service Station	100%
Spicenick	100%
Super Sausage Cafe	100%
Trussington Services Southbound	100%
Welcome Break Leicester Forest East Northbound	98%
Leicester (Markfield) Services (BP)	96%
Roadchef Watford Gap Services Northbound	91%
Roadchef Watford Gap Services Southbound	89%
Junction 29 Truckstop	89%
Caenby Corner Transport	87%
Moto Donington Park	86%
Shell Thrapston	85%
Regional Average Utilisation	72%

5.3.2.3 Off-site parking hotspots

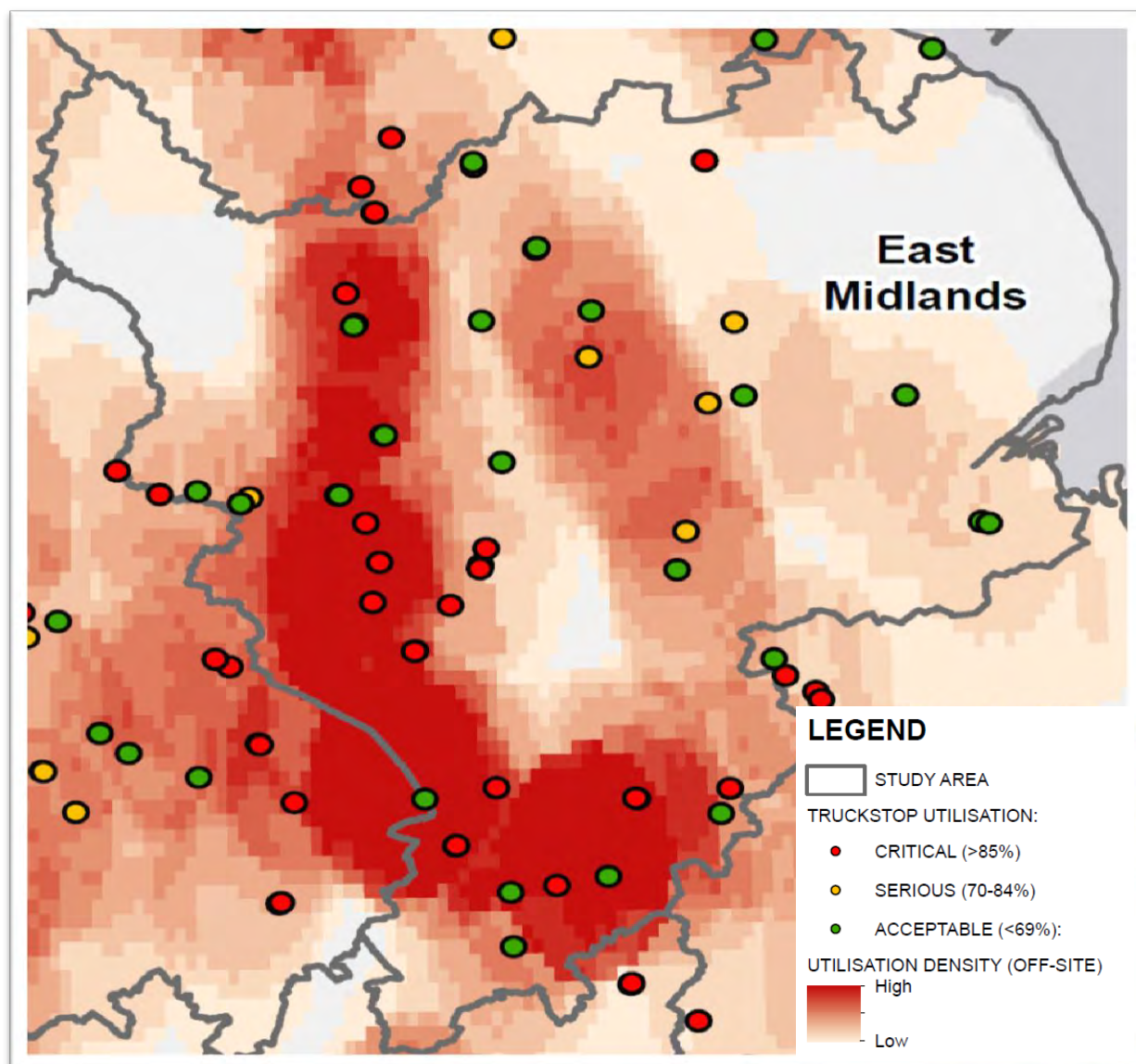


Figure 5.8: Off-site parking locations

The East Midlands has severe levels of offsite parking. The region has the highest off-site parking density of 2.7 vehicles/km of SRN, and has the second highest number of excess vehicles in the region. The overall lorry park utilisation, whilst still at a seriously level, is relatively low when compared with other regions with similarly high off-site parking.

Table 5.14: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density (vehicles /km of SRN)	Number of Vehicles Parked	Percentage parked off-site	Excess
East Midlands	72%	561	921	1,482	550	2.7	3,032	42%	865
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.2.4 Crime

The East Midlands was found to have the highest number of freight crimes in the UK when compared with other regions data – this also amounted to the largest total value of goods stolen. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worthy of further examination.

Table 5.15: Crime Data

Crime			
	On-site	Off-site	Total
Total number	293	162	455
Value (£)	£ 17,850,867		

Specific problematic areas found from data collection and stakeholder interview are:

- Northamptonshire,
- Leicestershire,
- Nottinghamshire.

A map has been produced for each of these areas, from the data collected from NaVCIS, to identify key problematic areas.

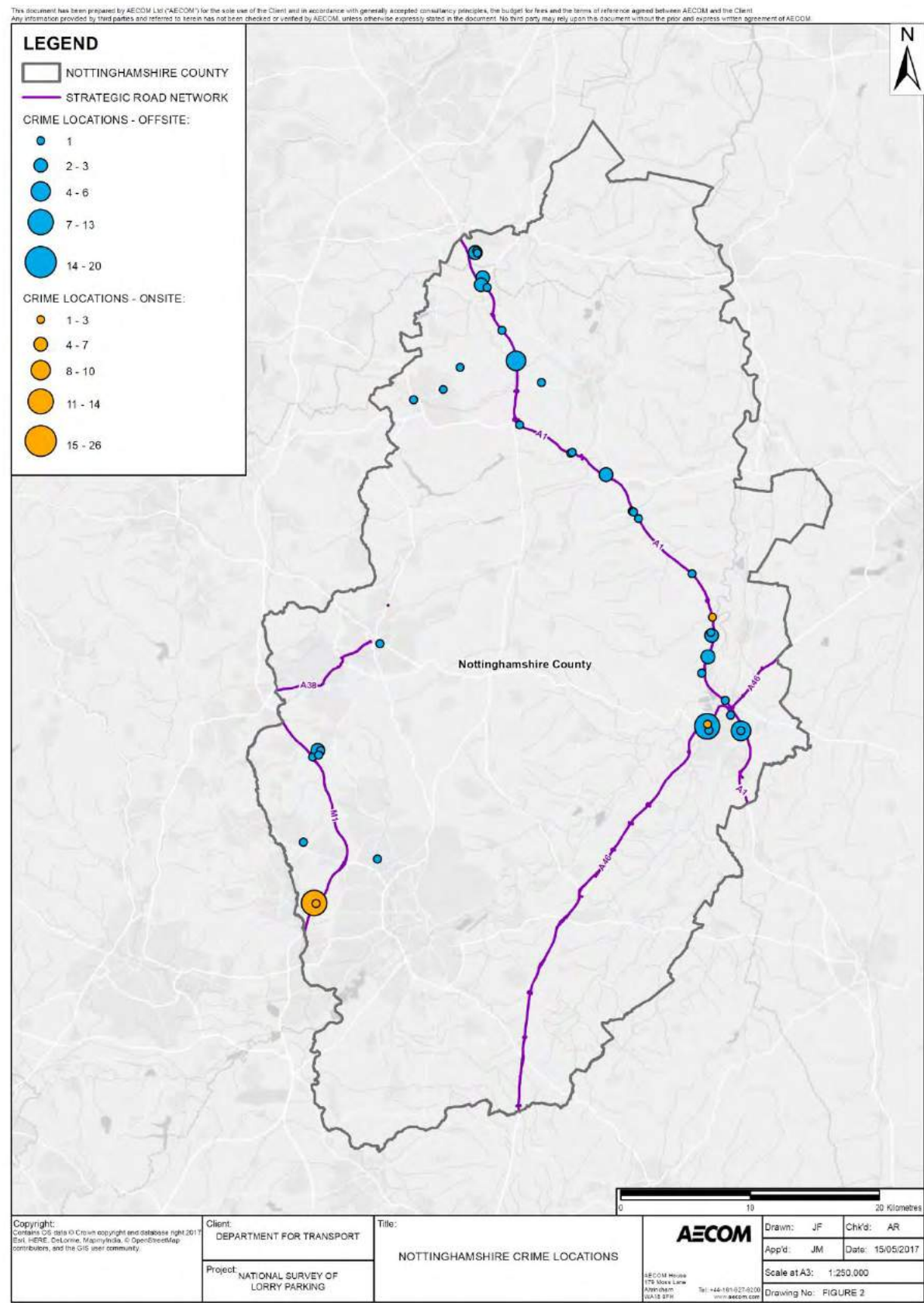


Figure 5.9: Freight Crime reported to NaVCIS in Nottinghamshire

The majority of crime reported in Nottinghamshire was found along the A1 with a hotspot at the intersection between the A1 and A46.

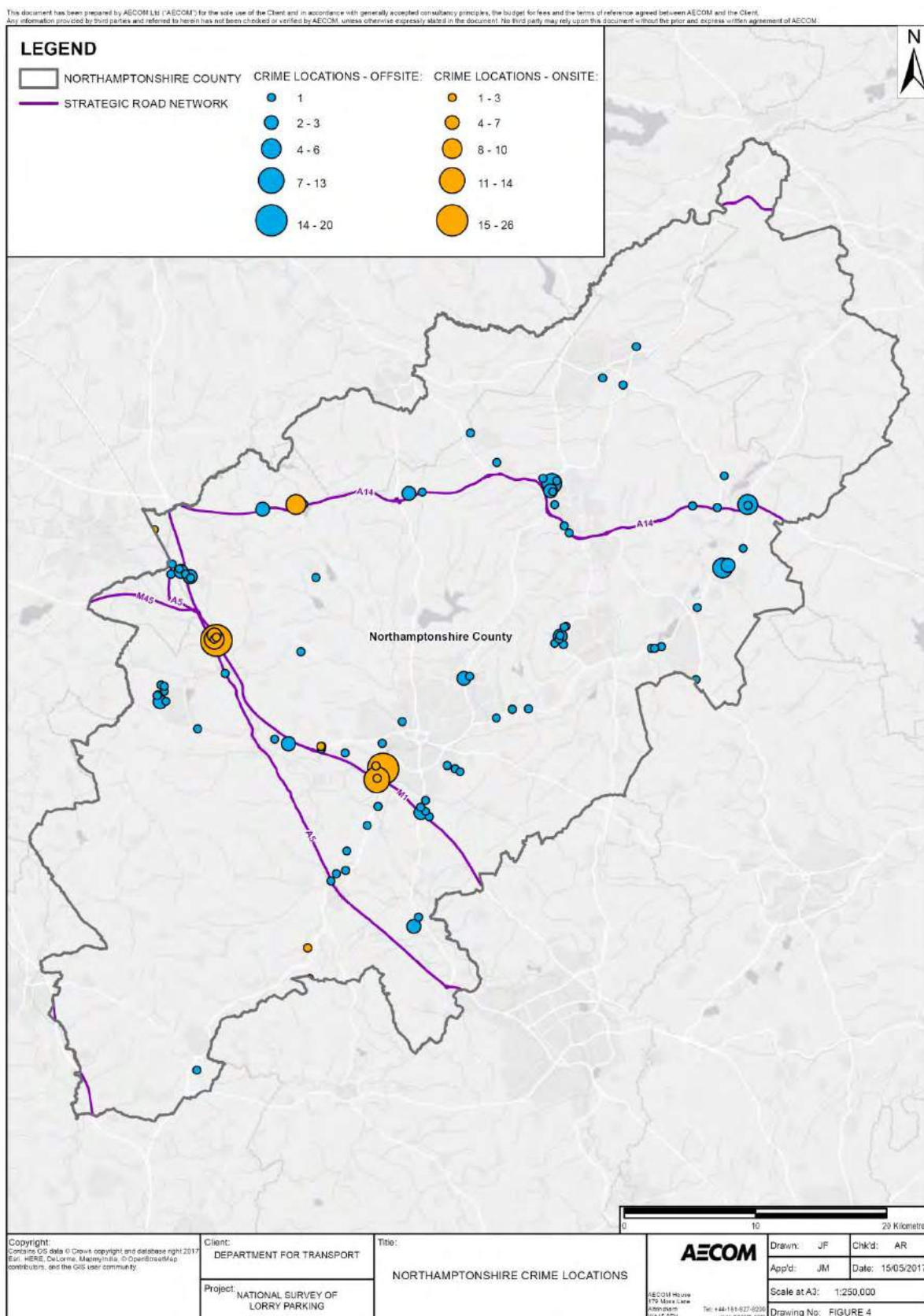


Figure 5.10: Freight Crime reported to NaVCIS in Northamptonshire

A number of freight crimes reported in Northamptonshire were away from the SRN in-between the A5 and A14. There are clusters of off-site crimes to the south of the M45, on the A5 and along the A14. There were also a high number of on-site crimes reported along the M1.

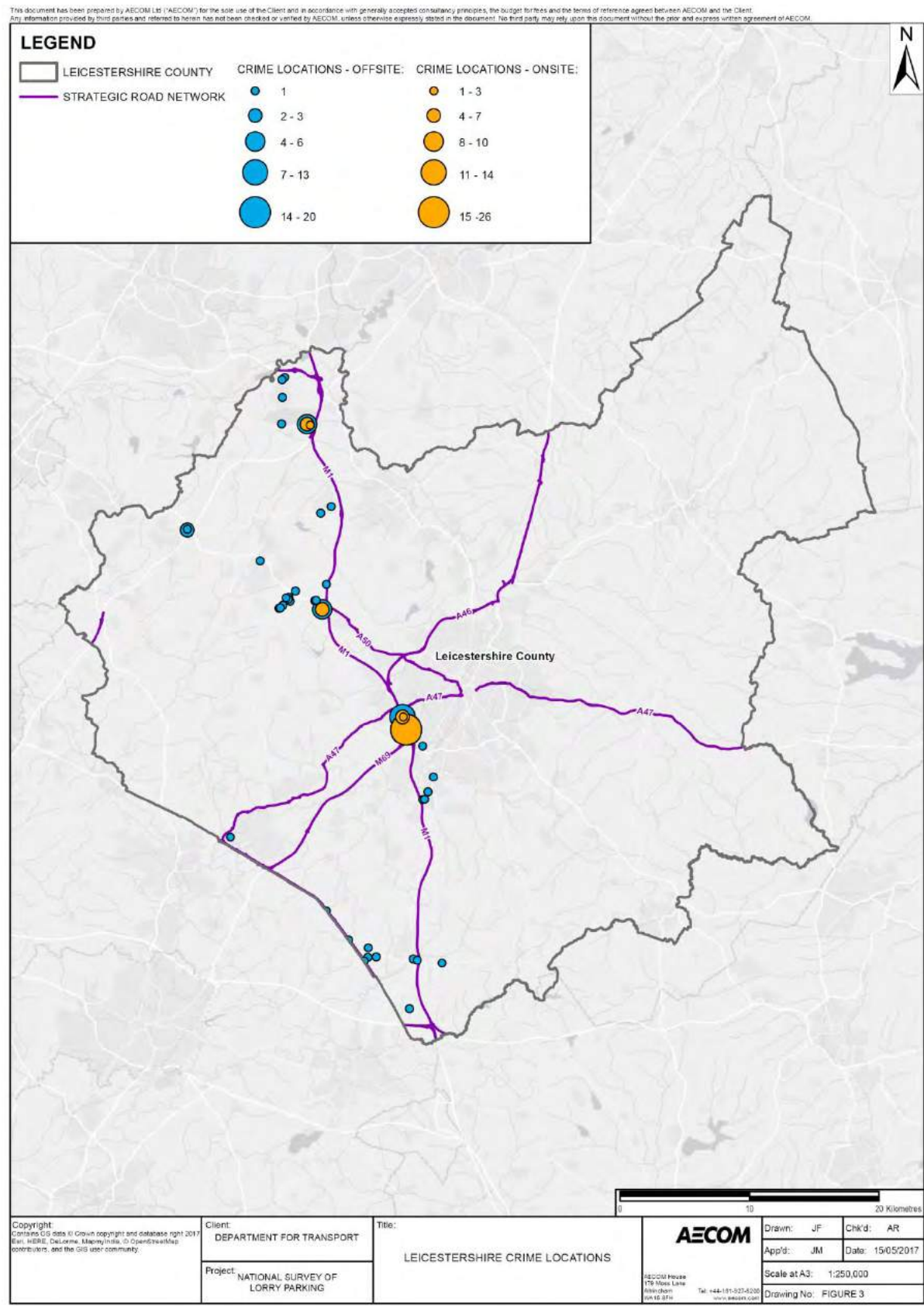


Figure 5.11: Freight Crime reported to NaVCIS in Leicestershire

The majority of freight crime reported in Leicestershire is along the M1 and West of the A50.

5.3.2.5 Facilities

Table 5.16: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
East Midlands	9%	30%	48%	11%	2%	£13.20
England	8%	20%	51%	16%	5%	£16.60

5.3.3 East of England

5.3.3.1 Regional overview

Table 5.17: East of England Regional Overview

East of England				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	1,892	855	107	2,854
Foreign vehicles (%)	26%	27%	30.84%	28%
Number of Sites	31	559	26	616
Utilisation	97%	-		
Lorry Park Capacity	1,943			
Excess vehicles	(Total Number of vehicles parked – Capacity = Excess)			911

5.3.3.2 Critical Utilisation of on-site parking

Table 5.18 displays the 24 lorry parking sites in the East of England which have a Critical Utilisation (Critical: >85% utilisation). Notably Brampton Hut Services, which is located at the intersection of the A14/A1, has been recorded as having a utilisation of 305%. Through observation it was noted that this particular truck stop had lorries parking along the slip road and on surrounding kerb sides and car parking spaces; every lorry parked in the immediate vicinity of the truck stop was assigned to this service point. Crucially this lorry park is priced at £11 for overnight parking which compares to the regional average of £18.70 yet has extensive features such as: toilets, showers, a petrol station, a security fence and a range of food/drink facilities. This evidences that providing lorry parking facilities which are good value for money and in busy areas is likely to be worthwhile and lead to high utilisation. Very high utilisation leads to issues such as inappropriate parking and safety concerns.

Table 5.18: Onsite utilisation

Sites with Critical Utilisation (>85%)	Utilisation
East of England	97%
Brampton Hut Services	305%
Extra Cambridge	132%
Kates Cabin Cafe	120%
Extra Peterborough Services	120%
Extra Baldock Services	118%
Junction 26 Truckstop	110%
Welcome Break Birchanger Green Services	104%
Crawley Crossing (Truckstop café)	103%
BP Baldock	100%
Courtaulds Road now 2010 truck stop	100%
Furnells Transport and Storage	100%
Watling Street Truck Stop	100%
Welcome Break South Mimms Services	100%
Moto Toddington Southbound	98%
Titan Truckstop	97%
Stibbington Diner	97%
BP Connect @ Chelmsford LA Truckstop	96%
Beacon Hill services	93%
Coopers Cabin Truck Stop	93%
Risbys	89%
Moto Thurrock	89%
Tesco fuelling station	88%
Moto Toddington Northbound	86%
Hill Top Cafe	85%

5.3.3.3 Off-site parking hotspots

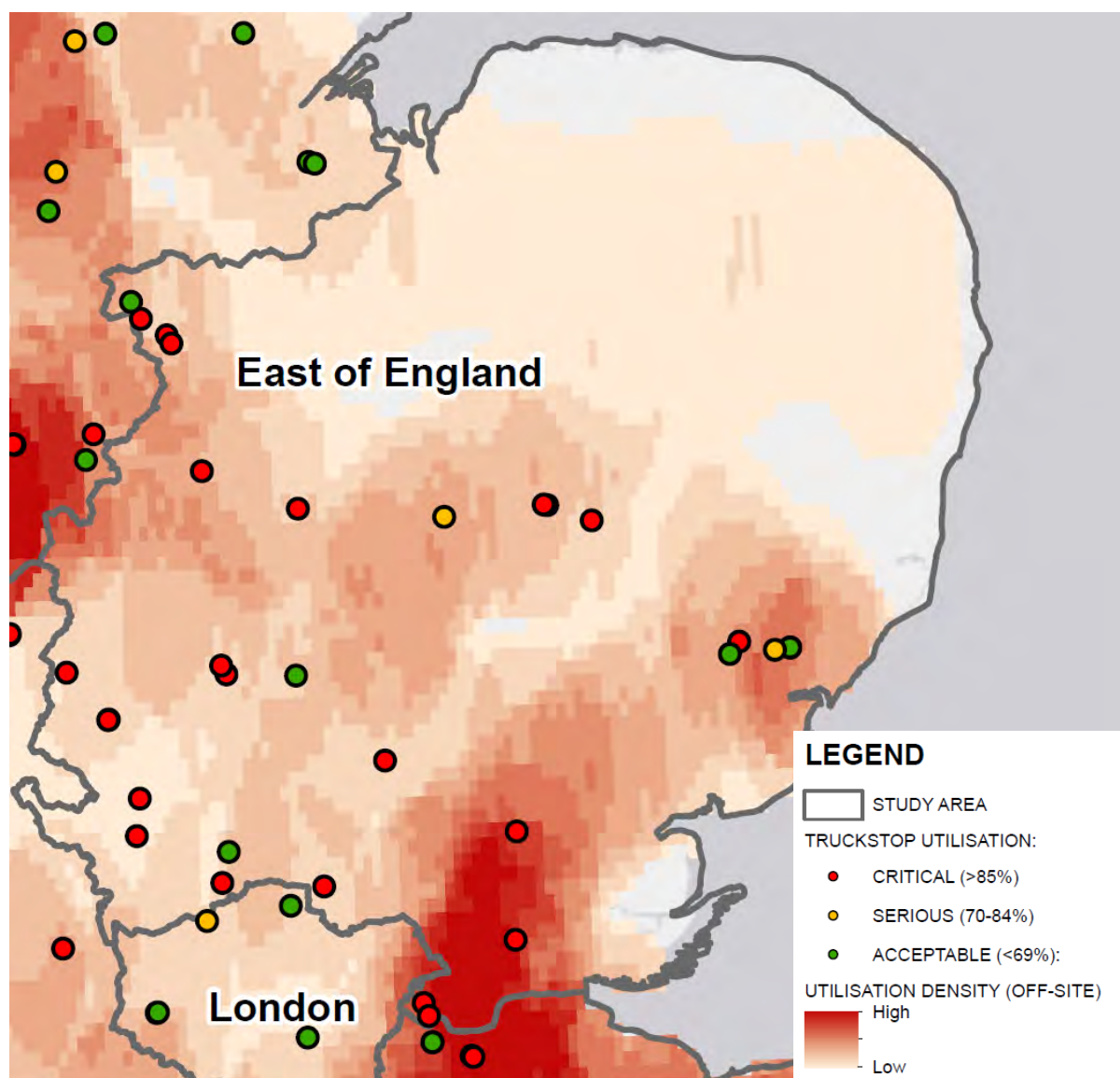


Figure 5.12: Off-site parking locations

Whilst only 26% of vehicles were counted off-site in the East of England, it has the second largest number of vehicles counted off-site when compared with other regions. The region also has the highest lorry park utilisation of all regions therefore suggesting that additional lorry parks are required here. **Figure 5.12** indicates that the south-east area of the region, namely Essex, has particular issues with off-site parking and all lorry parks have critical levels of utilisation; Essex also has one of the largest freight crime issues in the country.

Table 5.19: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
East of England	97%	107	855	962	840	1.1	2,854	26%	911
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.3.4 Crime

The East of England has the second largest number and value of freight crimes/stolen goods across England, a particular hotspot for crime has been identified as Essex.

Table 5.20: Crime Data

Crime			
	On-site	Off-site	Total
Total number	162	293	455
Value (£)	£ 16,601,017		

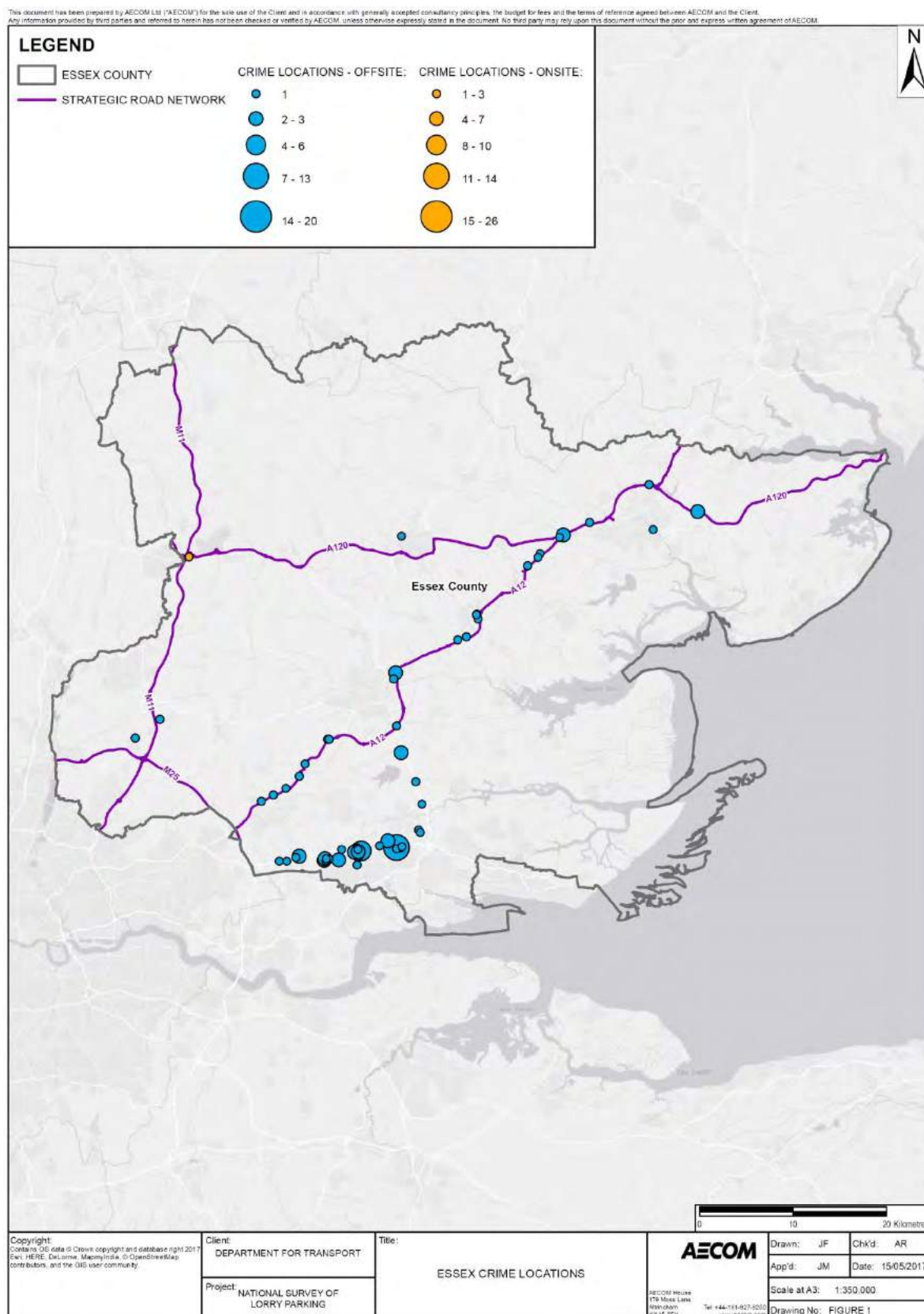


Figure 5.13: Freight Crime reported to NaVCIS in Essex

The majority of crime reported in Essex was found off-site – there have been a number of incidents reported along the A12. A problematic area can be seen to be on the A13/A130 around the Basildon area.

5.3.3.5 Facilities

The East of England has a high percentage (37%) of secure facilities which is denoted by lorry parks in category 4 (security fence) or 5 (CCTV) – this is the highest across England and the average price is higher than the average across England.

Table 5.21: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
East of England	7%	23%	33%	27%	10%	£18.70
England	8%	20%	51%	16%	5%	£16.60

5.3.4 London

5.3.4.1 Regional overview

Table 5.22: London Regional Overview

London				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	99	22	15	136
Foreign vehicles (%)	34%	27%	0.00%	21%
Number of Sites	5	9	26	40
Utilisation	48%			
Lorry Park Capacity	207			
Excess vehicles	(Total Number of vehicles parked – Capacity = Excess)			-71

5.3.4.2 Critical Utilisation of on-site parking

There are no critically classified lorry parks within London (inside the M25) however **Table 5.23** displays the London Gateway Welcome Break site as it is 1% off having a Critical Utilisation (Critical: >85% utilisation) and is the most utilised site within the M25.

Table 5.23: Onsite utilisation

Sites with Critical Utilisation (>85%)	Utilisation
London	48%
Welcome Break London Gateway Services	84%

5.3.4.3 Off-site parking hotspots

London was not found to have excessive overnight off-site lorry parking this may be due to a number of reasons:

- A congestion charge is applied to some areas of London – if a lorry is to park within these areas overnight the driver may have to pay the congestion charge twice over, meaning some drivers may opt to park outside of these areas.
- The SRN within the M25 is reasonably small, therefore the parking could take place at locations farther than 5km from the SRN which was the boundary set within this study.
- There are fewer distribution centres in London than other areas due to the high land value, meaning less deliveries are likely to occur outside working/daytime hours – hence the logical places for lorry drivers to park up for their overnight stop is near their night-time delivery/collection points.

The area between London and the South East coast leading to Dover port can be seen to have an excess of vehicles parking off-site and a high number of critically defined Truckstops.

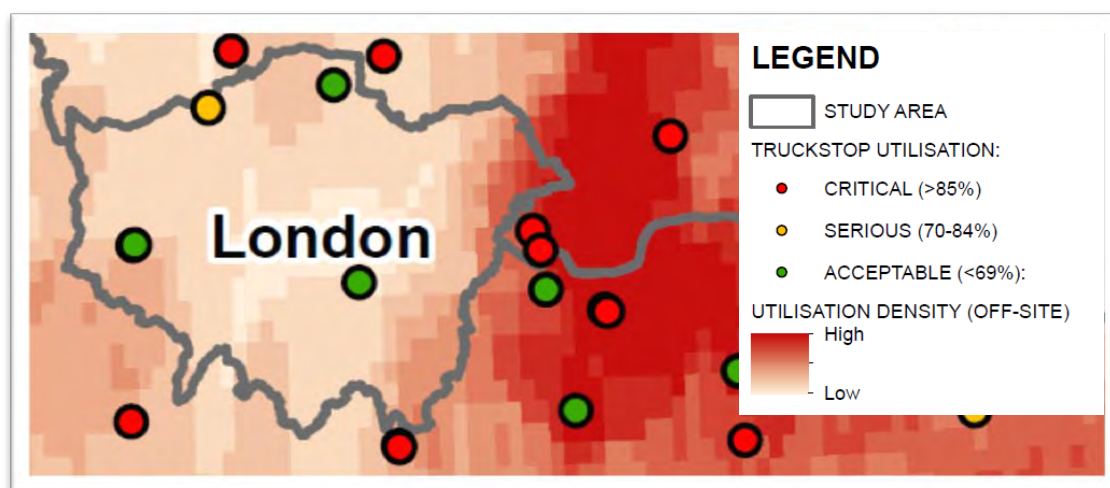


Figure 5.14: Off-site parking locations

Table 5.24: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
London	48%	15	22	37	360	0.1	136	23%	-71
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.4.4 Crime

The crime data for London is not complete due to the London Police Force not reporting all crimes to NaVCIS who supplied the crime data; however the crimes that have been reported are of high value averaging at £49,600. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worth of further examination.

Table 5.25: Crime Data

	Crime		
	On-site	Off-site	Total
Total number	3	2	5
Value (£)			£ 248,000

5.3.4.5 Facilities

London was defined as the boundary within and not including the M25, as such there are only four lorry parks to consider – however none of these have any security features (4/5) and 75% have the basic provisions of Toilets, Showers and a Café.

London has, as expected, got the highest average pricing across all regions – this is due to the high land cost within the M25.

Table 5.26: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
London	25%	0%	75%	0%	0%	£21.70
England	8%	20%	51%	16%	5%	£16.60

5.3.5 North East

5.3.5.1 Regional overview

Table 5.27: North East Regional Overview

North East				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	244	203	298	745
Foreign vehicles (%)	15%	16%	19%	17%
Number of Sites	17	287	108	412
Utilisation	60%			
Lorry Park Capacity	405			
Excess vehicles	(Total Number of vehicles parked – Capacity = Excess)			340

5.3.5.2 Critical Utilisation of on-site parking

Table 5.28 displays the 6 lorry parking sites in the North East which have a Critical Utilisation (Critical: >85% utilisation). Two of the sites are recorded as having utilisation over 100% which indicates that a number of lorries were counted parked outside of the designated parking spots, this often includes on the kerb side or straddling car parking spaces.

Table 5.28: Onsite utilisation

North East Sites with Critical Utilisation (>85%)	Utilisation
North East	60%
Roadchef Durham Services	117%
Ron Perry (Southbound)	110%
Wentworth Car Park	100%
Purdy Lodge	97%
Moto Washington Southbound	90%
Newton Park Services	86%

5.3.5.3 Off-site parking hotspots

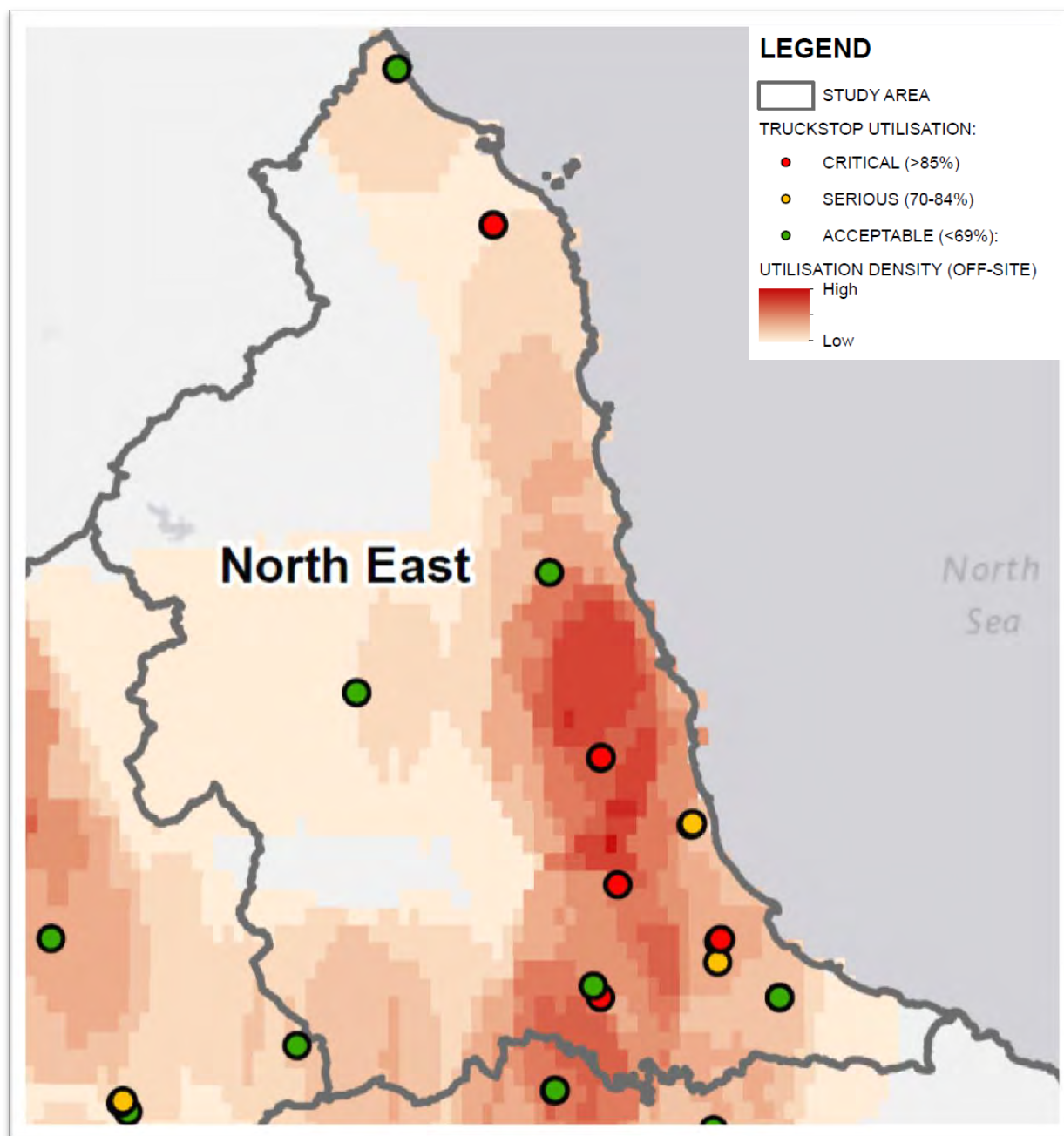


Figure 5.15: Off-site parking locations

The North east has the highest percentage of vehicles parking off-site across the whole of England which is surprising as the utilisation is relatively low at 60%. The North East also has one of the lowest average overnight parking charges for lorries so it would suggest that there are number of lorry parks which are not located in the busiest road freight areas.

The area indicated in **Figure 5.15** as having high off-site parking surrounds Teesport, and all of the lorry parks within the immediate area of this port are shown as red or yellow indicating critical and serious utilisation respectively. It may be feasible to locate an additional lorry park within this region.

Table 5.29: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site			All Parked Vehicles		
				(Laybys and Industrial Estates)					
	On-site utilisation	Number of Vehicles Parked	Number of Vehicles Parked	Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN)	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
North East	60%	298	203	501	430	1.2	745	63%	340
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.5.4 Crime

No crime data was reported to NaVCIS for the North-East. The issue of comprehensive reporting of truck crime is beyond the scope of this report but worthy of examination.

5.3.5.5 Facilities

87% of facilities in the North East do not have any security facilities which are greater than average; however the average price is lower than the average.

Table 5.30: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
North East	6%	19%	63%	13%	0%	£13.50
England	8%	20%	51%	16%	5%	£16.60

5.3.6 North West

5.3.6.1 Regional overview

Table 5.31: North West Regional Overview

North West				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	1,397	424	536	2,357
Foreign vehicles (%)	17%	18%	16%	17%
Number of Sites	39	357	150	546
Utilisation	54%			
Lorry Park Capacity	2,573			
Excess vehicles	(Total Number of vehicles parked – Capacity = Excess)			-216

5.3.6.2 Critical Utilisation of on-site parking

Table 5.32 displays the eight lorry parking sites in the North West which have a Critical Utilisation (Critical: >85% utilisation).

Table 5.32: Onsite utilisation

North West Sites with Critical Utilisation (>85%)	Utilisation
North West	54%
Welcome Break Charnock Richard Services Southbound	126%
Welcome Break Charnock Richard Services Northbound	125%
Roadchef Chester Services	113%
Moto Birch Services Westbound	113%
Welcome Break Burtonwood Services M62	94%
Let's Eat Cafe	90%
Moto Knutsford Northbound	90%
Moto Lancaster (Northbound)	88%

5.3.6.3 Off-site parking hotspots

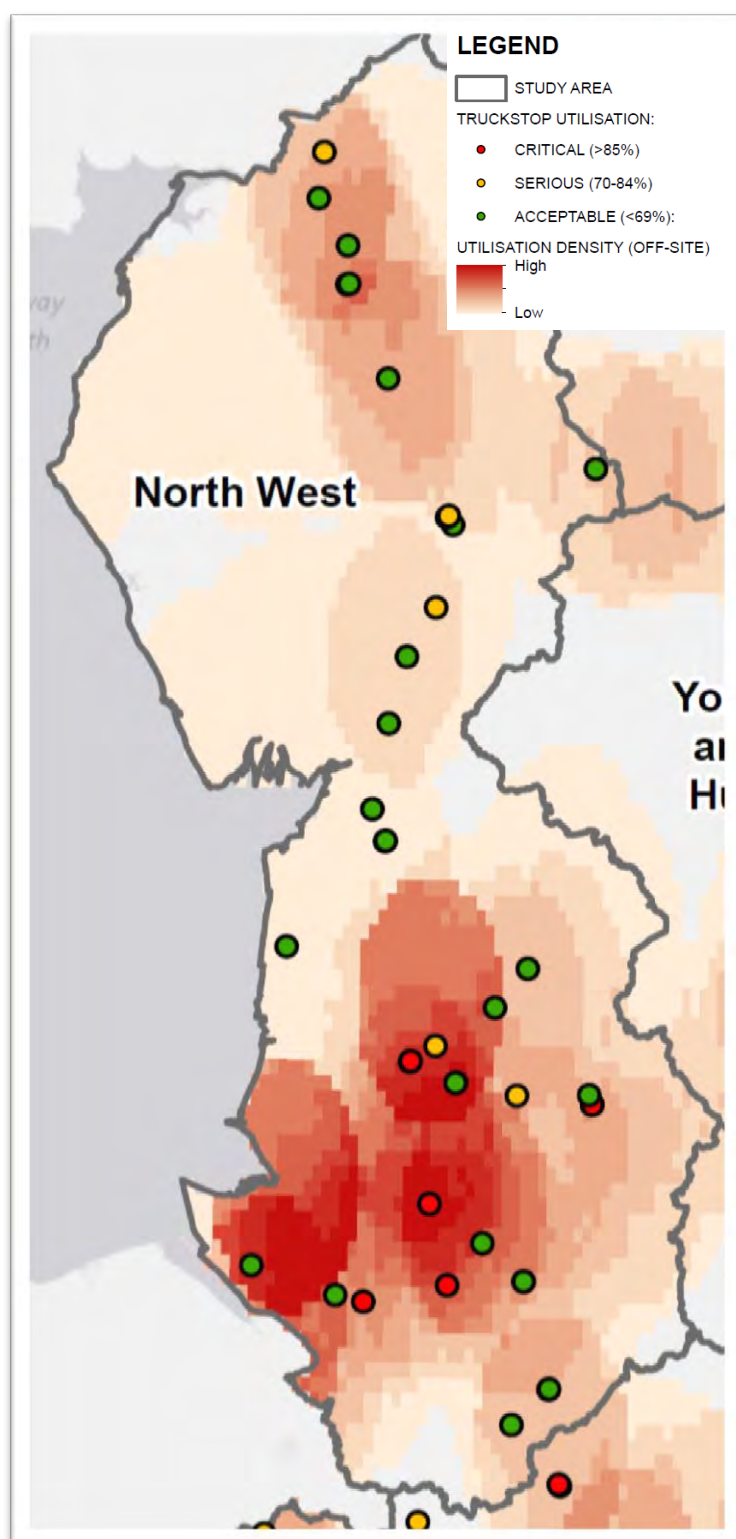


Figure 5.16: Off-site parking locations

In the North West a high proportion of vehicles were found off-site (37%), this was the area with the fourth largest number of vehicles parked offsite (960); conversely the onsite utilisation was relatively low at 54%. **Figure 5.16** shows a high off-site parking density around the Port of Liverpool and no lorry parking facilities in the immediate vicinity and a number of those on routes close to the port are at critical utilisation. However further from the port and particularly in the North most of the lorry parks are showing an acceptable level

of utilisation, therefore if a lorry park is to be considered in the North West this should be in the immediate vicinity of the Port of Liverpool.

Table 5.33: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
North West	54%	536	424	960	1,130	0.8	2,357	37%	-216
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.6.4 Crime

19 crimes were reported to NaVCIS from the North West region – this is the fourth highest crime value across England. The North West has not been identified as one of the four major crime hotspots. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worth of further examination.

Table 5.34: Crime Data

Crime			
	On-site	Off-site	Total
Total number	2	17	19
Value (£)			£ 831,000

5.3.6.5 Facilities

The North West has the highest percentage of vehicles ranked at level 5 which includes the highest security level of CCTV and comfort level including accommodation. It should be noted that CCTV has been recorded when cameras were seen on the facility however stakeholder engagement has identified that in most cases these cameras do not provide security but just function as parking revenue protection systems using Automatic Number Plate Recognition (ANPR). The North West also has a greater than average number of facilities rated as a 4; this higher percentage of secure facilities may be reflected in the average price being higher than the national average.

Table 5.35: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
North West	5%	11%	49%	22%	14%	£18.00
England	8%	20%	51%	16%	5%	£16.60

5.3.7 South East

5.3.7.1 Regional overview

Table 5.36: South East Regional Overview

South East				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	2,423	1,065	235	3,723
Foreign vehicles (%)	42%	38%	42%	41%
Number of Sites	58	554	128	740
Utilisation	84%			
Lorry Park Capacity	2,871			
Excess vehicles	(Total Number of vehicles parked - Capacity)			852

The South East unsurprisingly has the highest percentage of foreign registered vehicles parking overnight (41%) across the whole of England. This reflects the fact that around 88% of all Mainland Europe to UK road freight comes into Kent ports or through the Channel Tunnel.

5.3.7.2 Critical Utilisation of on-site parking

Table 5.37 overleaf displays the 24 lorry parking sites in South East which have a Critical Utilisation (Critical: >85% utilisation).

19/24 of the critical lorry parks have reached $\geq 100\%$ - observations at site visits found a number of vehicles parked outside of designated parking spaces:

- across car parking spaces
- on kerbs
- on the roads leading up to off-site parking locations.

Table 5.37: Onsite utilisation

South East Sites with Critical Utilisation (>85%)	Utilisation
South East	84%
Welcome Break Newport Pagnell Southbound	245%
Extra Beaconsfield	237%
Sutton Scotney Southbound	173%
Roadchef Maidstone Services	168%
Esso Cobham	150%
Airport Cafe	135%
Moto Reading Westbound	120%
Sutton Scotney Northbound	120%
Roadchef Rownhams Services Eastbound	118%
Roadchef Clacket Lane Services Westbound	116%
Welcome Break Oxford Services	114%
Welcome Break Newport Pagnell Northbound	111%
Moto Pease Pottage	108%
Extra Cobham Services	108%
Roadchef Clacket Lane Services Eastbound	104%
Moto Chieveley	102%
Motis Truckstop	100%
Shell TotHills Service Area	100%
Texaco Ower Roundabout services	100%
Moto Reading Eastbound	94%
Crossbush Services	87%
Havant Lorry Park	86%
Liphook Services Southbound	86%
Stop24 Services - Folkestone	85%

5.3.7.3 Off-site parking hotspots

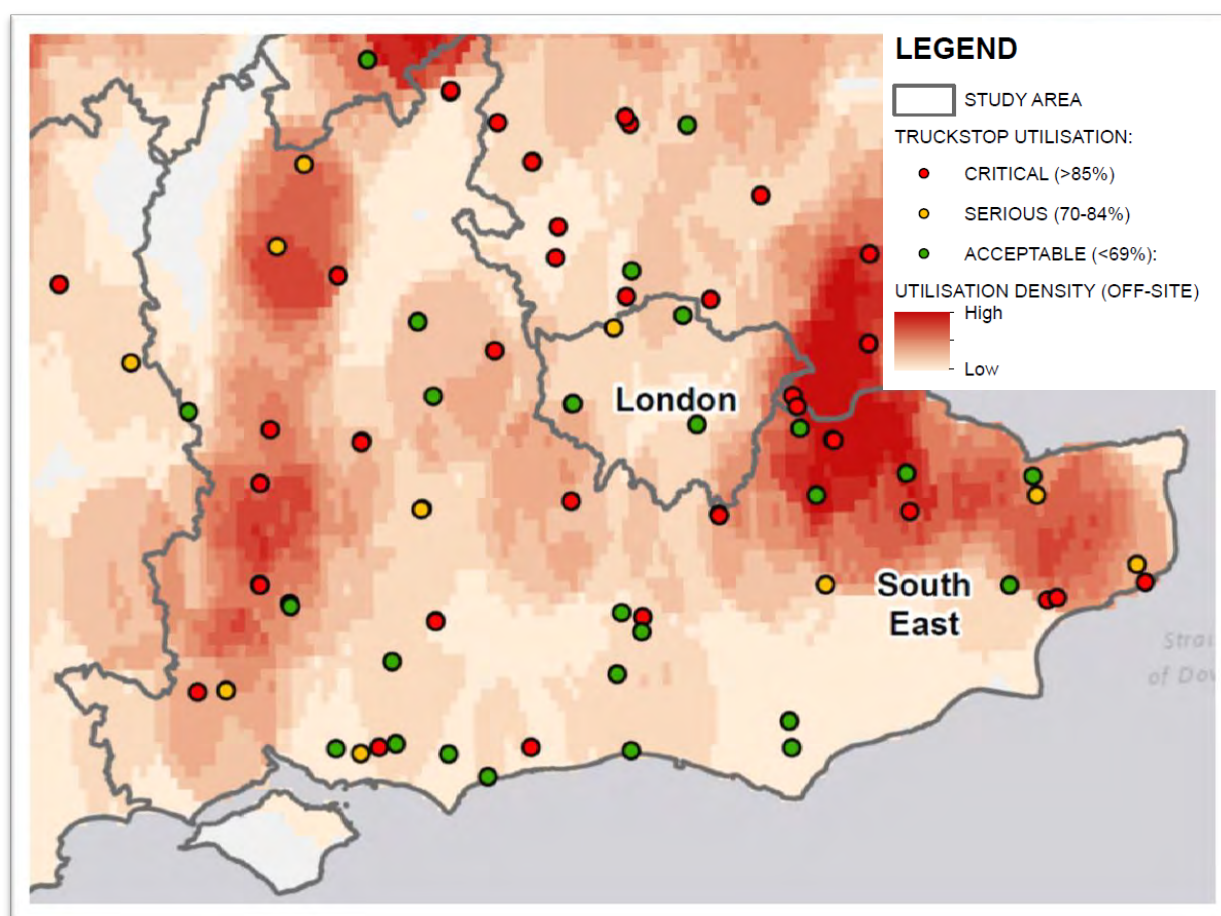


Figure 5.17: Off-site parking locations

The largest numbers of vehicles were counted inside the South East and the region also had the second highest number of vehicles found parked off-site.

Onsite utilisation was 84% which is just 1% off being included in the critical level of parking. The hotspots of high off-site parking can be seen clearly on **Figure 5.17** as the A34 corridor leading from Southampton north and the M20 and M2 corridors leading from the Port of Dover towards London. Kent has a particularly high density of off-site parking.

Table 5.38: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
South East	84%	235	1,065	1,300	1,210	1.1	3,723	24%	852
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.7.4 Crime

The South East has the fourth highest total crime value across the whole of England, with each crime averaging at a value of £24,583. All crime data was collected from NaVCIS, N.B. not all crimes are reported to NaVCIS. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worth of further examination.

Table 5.39: Crime Data

Crime			
	On-site	Off-site	Total
Total number	42	63	105
Value (£)			£ 2,581,210

5.3.7.5 Facilities

Only 10% of all on-site parking facilities in the South East have safety features (4/5), surprisingly the average price of lorry parking facilities is higher than the national average.

Table 5.40: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
South East	8%	31%	52%	6%	4%	£18.60
England	8%	20%	51%	16%	5%	£16.60

5.3.8 South West

5.3.8.1 Regional overview

Table 5.41: South West Regional Overview

South West Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	783	359	130	1,272
Foreign vehicles (%)	16%	18%	5.38%	13%
Number of Sites	37	523	67	627
Utilisation	72%			
Lorry Park Capacity	1,084			
Excess vehicles	(Total Number of vehicles parked - Capacity)			188

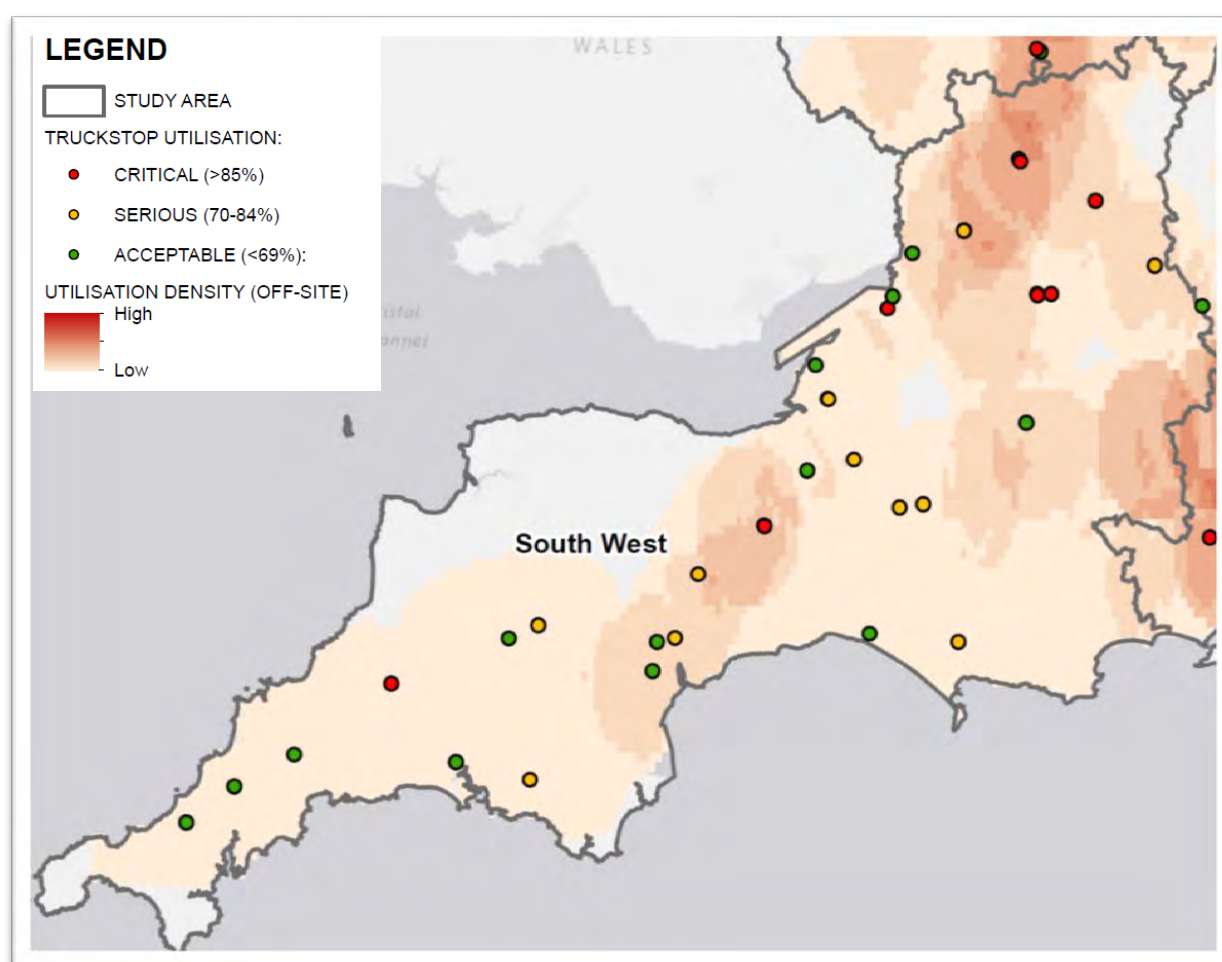
5.3.8.2 Critical Utilisation of on-site parking

Table 5.42 displays the eight lorry parking sites in the South West which have a Critical Utilisation (Critical: >85% utilisation).

Table 5.42: Onsite utilisation

South West Sites with Critical Utilisation (>85%)	Utilisation
South West	72%
Welcome Break Sedgemoor Services Northbound	129%
Welcome Break Gordano Services	115%
BP Burford Road	100%
Chippenham Pitstop	100%
Esso HGV Stop	94%
Gloucester services southbound	86%
Moto Leigh Delamere Westbound	85%
Roadchef Taunton Deane Services Southbound	85%

5.3.8.3 Off-site parking hotspots

**Figure 5.18: Off-site parking locations**

The South West has on average a serious level of lorry park utilisation (72%) and a hotspot for offsite parking on the M5 corridor leading north from the Bristol Port; however the percentage and numbers of vehicles parked offsite is relatively low in comparison to other regions.

Table 5.43: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
South West	72%	130	359	489	1,080	0.5	1,272	33%	188
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.8.4 Crime

The South West was not identified as a crime hotspot. All crime data was gathered from NaVCIS and not all police forces report their crime.

Table 5.44: South West Crime Data

Crime			
	On-site	Off-site	Total
Total number	1	4	5
Value (£)			£ 232,200

5.3.8.5 Facilities

27% of facilities in the South West have security features (4/5) which is higher than average however the average price to park overnight is lower than the national average.

Table 5.45: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
South West	8%	16%	49%	24%	3%	£15.50
England	8%	20%	51%	16%	5%	£16.60

5.3.9 West Midlands

5.3.9.1 Regional overview

Table 5.46: West Midlands Regional Overview

West Midlands Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	1,663	504	352	2,519
Foreign vehicles (%)	23%	23%	18.47%	22%
Number of Sites	38	362	86	486
Utilisation	87%			
Lorry Park Capacity	1,906			
Excess vehicles	(Total Number of vehicles parked - Capacity)			613

5.3.9.2 Critical Utilisation of on-site parking

Table 5.47 displays the 16 lorry parking sites in the West Midlands which have a Critical Utilisation (Critical: >85% utilisation).

Nine of the lorry parks were at or above 100% capacity which could be explained indicates that a number of lorries were counted parked outside of the designated parking spots, this often includes on the kerb side or straddling car parking spaces.

Table 5.47: Onsite utilisation

West Midlands Sites with Critical Utilisation (>85%)	Utilisation
West Midlands	87%
Welcome Break Keele Services Northbound	221%
Welcome Break Telford Services	158%
Welcome Break Warwick Services Northbound	142%
Welcome Break Corley Services Westbound	119%
Welcome Break Warwick Services Southbound	115%
Welcome Break Keele services southbound	107%
Dorton service station	100%
Pitstop Truckstop Bromsgrove	100%
PJs Café and Sudbury Services	100%
Truckers Rest	97%
New Hollies Truckstop	94%
Roadchef Strensham services north	93%
Moto Tamworth	92%
Uttoxeter Services	91%
Stafford Services Southbound	90%
PJM Lorry Park	88%

5.3.9.3 Off-site parking hotspots

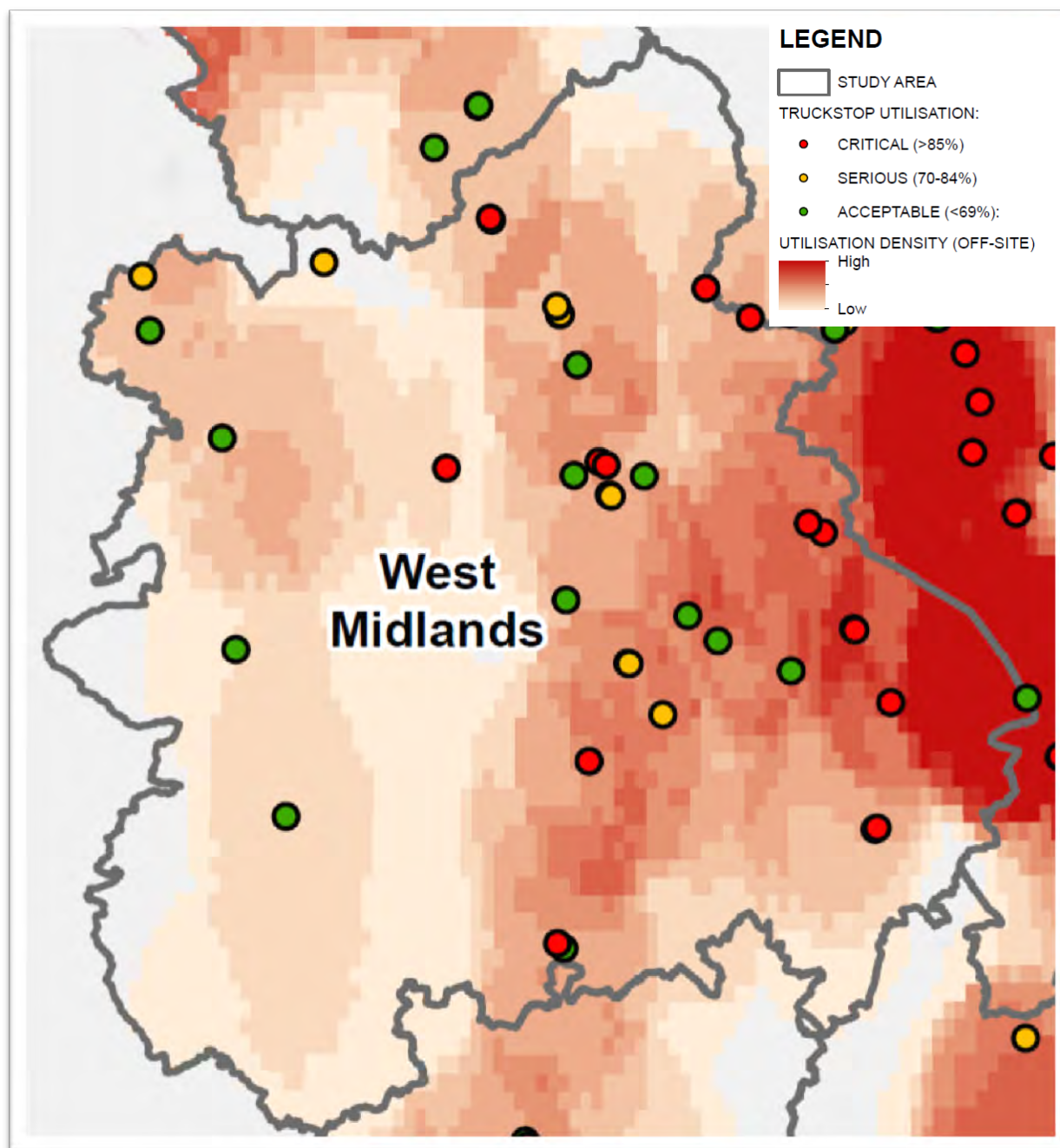


Figure 5.19: Off-site parking hotspots

The West Midlands has a high on-site utilisation and a high number of excess vehicles, off-site parking can be seen in **Figure 5.19**, to be predominantly centred on the M6 and A5.

Table 5.48: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN)	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
West Midlands	87%	352	504	856	700	1.2	2,519	29%	613
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.9.4 Crime

The West Midlands had the third highest number of items reported as stolen which also equated to the third highest value. However, not all crime data is reported to NavCIS. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worth of further examination.

Table 5.49: Crime Data

Crime			
	On-site	Off-site	Total
Total number	6	39	45
Value (£)	£ 3,166,000		

5.3.9.5 Facilities

29% of facilities in the West Midlands had security features which are higher than the national average, yet the average price was lower than the average across England.

Table 5.50: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
West Midlands	8%	16%	47%	21%	8%	£16.30
England	8%	20%	51%	16%	5%	£16.60

5.3.10 Yorkshire and Humber

5.3.10.1 Regional overview

Table 5.51: Yorkshire and Humber Regional Overview

Yorkshire and Humber				
Regional Overview				
	On-site	Laybys	Industrial Estates	Total
Total Number of Vehicles Parked	1,418	356	258	2,032
Foreign vehicles (%)	19%	14%	11.63%	15%
Number of Sites	37	276	95	408
Utilisation	76%			
Lorry Park Capacity	1,856			
Excess vehicles	(Total Number of vehicles parked - Capacity)			176

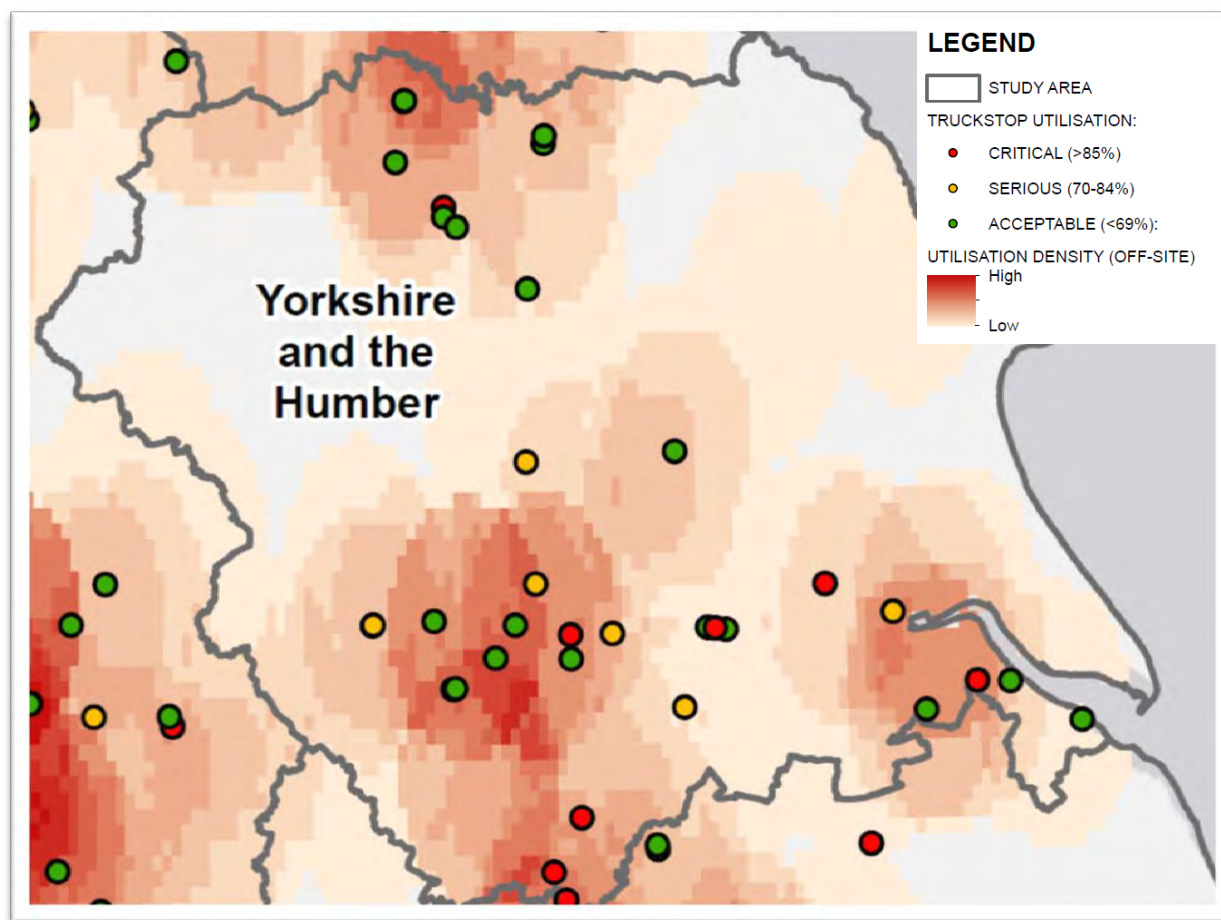
5.3.10.2 Critical Utilisation of on-site parking

Table 5.52 displays the nine lorry parking sites in Yorkshire and Humber which have a critical utilisation (Critical: >85% utilisation).

Table 5.52: Onsite utilisation

Yorkshire and Humber Sites with Critical Utilisation (>85%)	Utilisation
Yorkshire and Humber	76%
Welcome Break Woodall Services Northbound	179%
Moto Ferrybridge Services	117%
Exelby Services Ltd - Coneygarth	109%
The Stockyard Truckstop	98%
Shell Beacon	92%
Ulceby Truckstop	91%
Junction 31 Secure Parking	88%
Welcome Break Woodall Services Southbound	88%
Glews Truck Stop	87%

5.3.10.3 Off-site parking hotspots

**Figure 5.20: Off-site parking locations**

Yorkshire and Humber has relatively low numbers of vehicles parked off-site but there is a high density of offsite parking surrounding the ports and around the A1. Utilisation of lorry parks is at serious levels (76%).

Table 5.53: Off-site parking density and excess vehicles

Region	Lorry Parks	Industrial Estates	Laybys	Off-site (Laybys and Industrial Estates)			All Parked Vehicles		
				Number of Vehicles Parked	Estimated distance of SRN (km)	Density - vehicles/km of SRN)	Number of Vehicles Parked	Percentage parked off-site	Excess vehicles
Yorkshire and Humber	76%	258	356	614	780	0.8	2,032	28%	179
England	76%	2,492	4,709	7,201	7,080	1	18,670	39%	3,658

5.3.10.4 Crime

Yorkshire and Humber was not identified as having particular issues with crime as only six incidents of crime were reported to NaVCIS. The issue of comprehensive reporting of truck crime is beyond the scope of this report but is worth of further examination.

Table 5.54: Crime Data

Crime			
	On-site	Off-site	Total
Total number	2	4	6
Value (£)			£ 676,700

5.3.10.5 Facilities

The price of parking in Yorkshire and Humber is on average higher than the national average. A high majority of lorry parks are ranked at level 3 meaning they have basic facilities such as toilets, showers and a café – only 15% of lorry parks have security features (4/5).

Table 5.55: Regional Summary of On-Site Facilities

Region	Number of Lorry Parks ranked at each level					Average Price (£)
Levels of Ranking	1	2	3	4	5	-
Yorkshire and Humber	6%	6%	73%	12%	3%	£17.20
England	8%	20%	51%	16%	5%	£16.60

6. Summary Findings

6.1 Introduction

Lorry parking locations were surveyed within 5km of the Strategic Road Network (SRN) in England in March 2017. Desk based analysis identified all lorry parking locations within the 5km, this was then used to plan routes for all audit teams; to be clear every road in the SRN was surveyed as well as all routes leading to off-site parking locations and industrial estates. The aim of the study was to assess capacity and demand for overnight lorry parking; as such the physical “site visits” were conducted mid-week (Tuesday-Thursday) after 6pm. Data was recorded using a web based mobile application system, and a summary of findings is listed below. A broadly similar audit exercise was done in 2010.

- During the month long survey, 18,670 vehicles were counted parked overnight across England in off-site and on-site locations. Each site was counted for a single weekday night.
- The total capacity of on-site spaces available in lorry parks or motorway service areas (MSAs) was found to be 15,012.
- Therefore, when compared with the total number of vehicles counted, there was an excess of 3,658 vehicles that could not be parked even if every parking space could be filled.
- 311 on-site lorry parking facilities were surveyed across England, lorry parking facilities include:
 - Motorway service areas (MSAs) with overnight lorry parking options
 - Independently owned/managed truck stops
 - Trunk road service areas
 - Local authority truck park
- In addition to this 801 Industrial / Retail Estates and 3,397 Laybys were surveyed.
- Regions with ≥70% utilisation of lorry parks include:
 - East of England 97%
 - West Midlands 87%
 - South East 84%
 - Yorkshire and Humber 76%
 - East Midlands 72%
 - South West 72%
- 39% of all vehicles recorded were parked off-site in laybys or Industrial Estates.

Figure 6.1 shows the locations of all truck stops, laybys and industrial estates that were visited can be seen below. As expected the laybys display a structure following the strategic road network, and most industrial estates and lorry parks are close by.

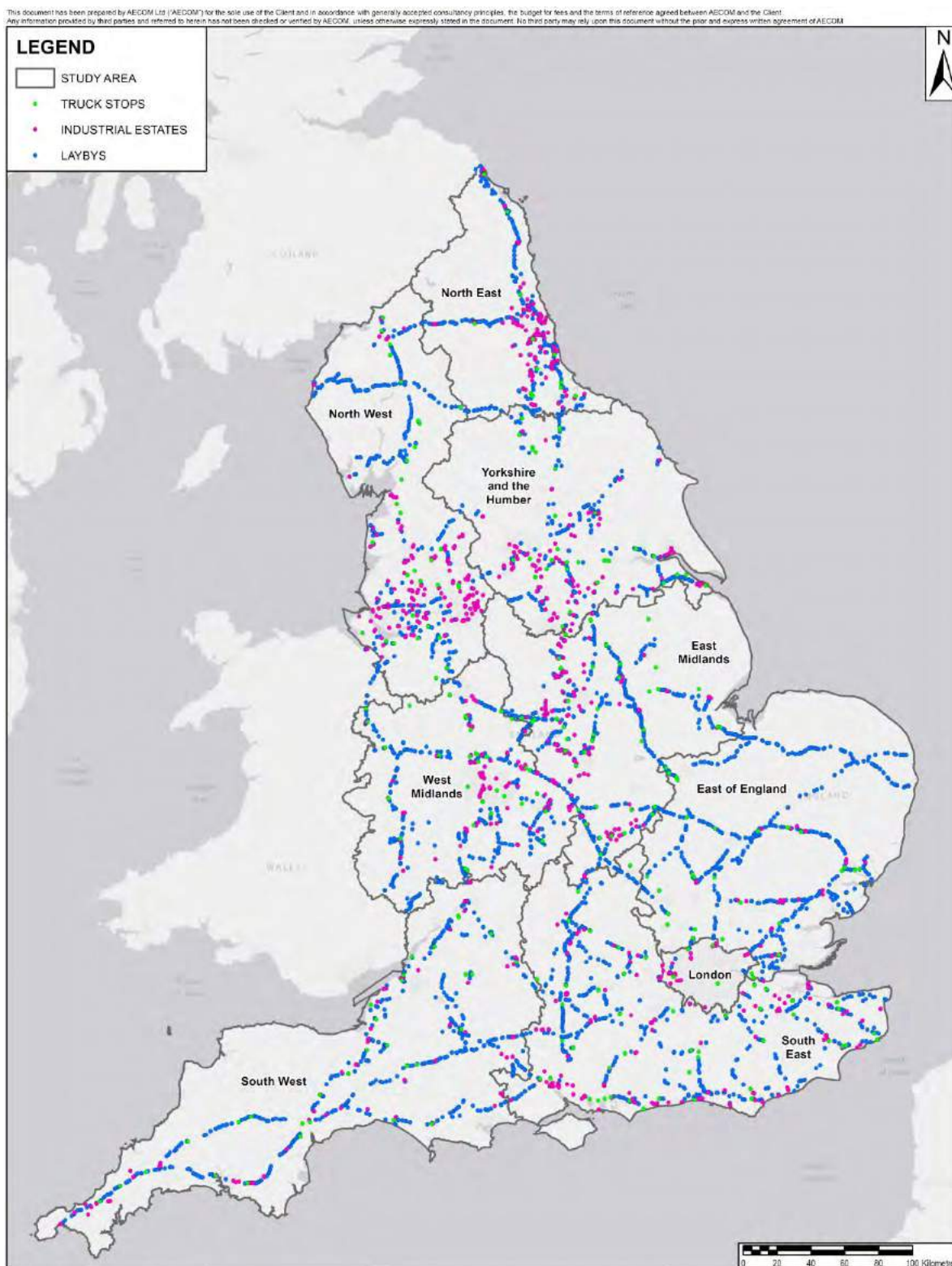


Figure 6.1: Locations of all truck stops, laybys and industrial estates surveyed

6.2 Results

The study recorded 311 sites across England allowing overnight parking. These sites had a total capacity of 15,012 parking spaces. The on-site utilisation of these sites varied across regions, from 48% to 97%, with the national average being 76%.

Table 6.1 and **Figure 6.2** breakdown the number of vehicles parked in lorry parks, industrial estates and lay-bys. The total capacity of on-site lorry parking facilities in each region is also presented allowing utilisation to be assessed.

Table 6.1- National overview of result

Region	Lorry Park Capacity	Parked vehicles				Total Parked Vehicles	Excess Vehicles
		On-site	On site utilisation	Industrial estates	Lay-bys		
East Midlands	2,167	1,550	72%	561	703	3,032	865
East of England	1,943	1,892	97%	107	624	2,854	911
London	207	99	48%	15	16	136	-71
North East	405	244	60%	298	170	745	340
North West	2,573	1,397	54%	536	347	2,357	-216
South East	2,871	2,423	84%	235	655	3,723	852
South West	1,084	783	72%	130	294	1,272	188
West Midlands	1,906	1,663	87%	352	388	2,519	613
Yorkshire and Humber	1,856	1,418	76%	258	305	2,032	176
England	15,012	11,469	76%	2,492	4,709	18,670	3,658

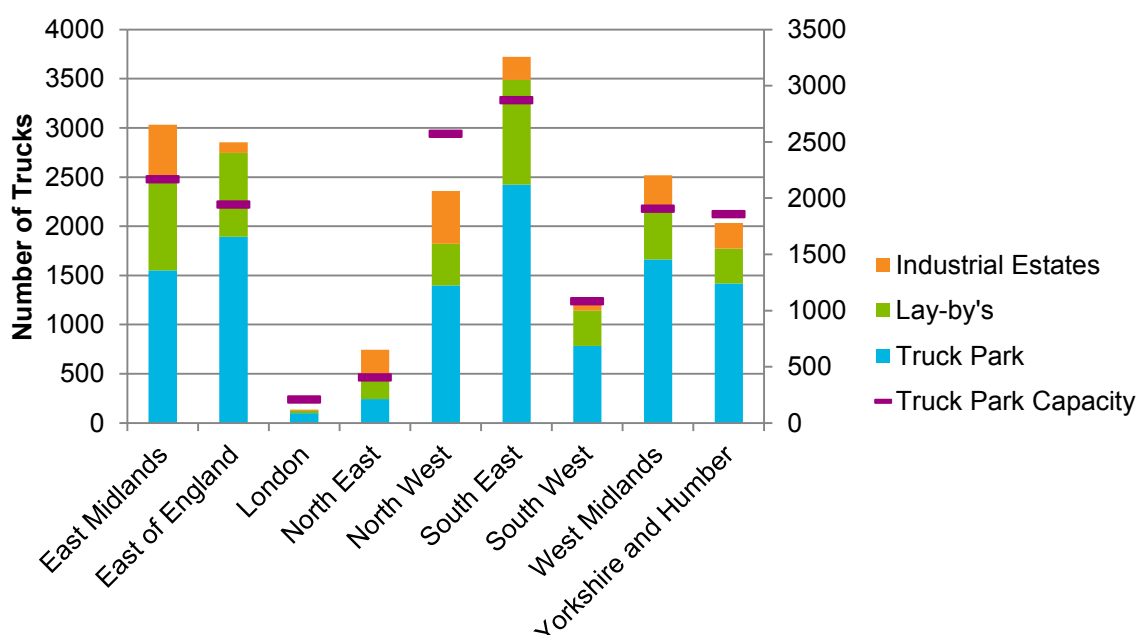


Figure 6.2: Number of vehicles parked by region and parking type

Two thirds of all regions have high lorry parking utilisation (above 70%) and five out of nine regions have parking which exceeds or is close to exceeding capacity as seen in **Figure 6.2** – this indicates that there is insufficient capacity to meet demand in many places.

Figure 6.2 also shows that the East Midlands, East of England and North East had more vehicles parking than there was space, additionally the South East and West Midland regions are also close to exceeding capacity. This survey was conducted in a representative month, March. However there are seasonal fluctuations in some types of freight goods transport traffic that mean it is possible that these regions could be over capacity during busy times of the year.

There is evidence to suggest that some drivers choose to park off-site in lay-bys or industrial estates even when spaces are available on-site – for example the North East has a lower capacity than total trucks parked yet overall utilisation is only 60%.

6.3 Comparison against previous study

The data collected in 2017 has been compared to the data collected from the previous lorry parking study in 2010. Comparisons of the two years are shown in **Table 6.2** below.

There has been an increase in the number of observed lorry parks by 11% which equates to 14% more spaces. On average each lorry park has a capacity of 48 vehicles and the lorry parking facilities that have been added since 2010 have an average of 59 spaces per site.

Table 6.2: Comparison of data from 2010 to 2017

	2010 Data	2017 Data	Difference
Vehicles parked overnight	13,708	18,670	4,962 (14% increase)
On-site spaces	13,173	15,012	1,839 (14% increase)
Number of lorry parks surveyed	280	311	31 (11% increase)
Regions with greater than 70% utilisation	South East West Midlands East of England	East of England 97% West Midlands 87% South East 84% Yorkshire and Humber 76% East Midlands 72% South West 72%	A greater number of regions have high utilisation as Yorkshire and Humber, the East Midlands & South West now also have utilisation over 70%
% of vehicles parking off-site	41	39	2

Table 6.3: Regions ordered in order of highest utilisation

Region	Lorry Park Utilisation	
	2010	2017
East of England	80%	97%
West Midlands	71%	87%
South East	71%	84%
Yorkshire and Humber	47%	76%
East Midlands	56%	72%
South West	46%	72%
North East	50%	60%
North West	55%	54%
London	45%	48%
England	58%	76%

Table 6.3 displays the utilisation of each region in descending order from the 2017 figures. There are noticeable trends across the regional data with most utilisations having increased since the previous study, and the areas with the highest utilisation remaining the same (East of England, West Midlands and South East). The utilisation in Yorkshire and Humber has increased the most since the previous study in 2010.

The data shows a low utilisation and low number of offsite parking in London. There are a number of reasons this may be so, a very small proportion of the road network in London is classed as part of the SRN and there may be industrial estates further than 5km from this network that were not captured. Additionally congestion charges in London may deter drivers from spending the night within the M25 as they may be charged for both days.

6.4 UK vs. Foreign Vehicles

Table 6.4: UK to Foreign vehicle comparison for Lorry Parks and MSAs

Lorry Parks and MSA's	UK vehicles	Foreign vehicles	All Vehicles	Foreign / Total (%)
South East	1,412	1,011	2,423	42%
London	65	34	99	34%
East of England	1,380	442	1,822	26%
West Midlands	1,280	383	1,663	23%
East Midlands	1,236	314	1,550	20%
Yorkshire and Humber	1,145	273	1,418	19%
North West	1,155	242	1,397	17%
South West	657	126	783	16%
North East	207	37	244	15%
England	8,537	2,862	11,399	23%

Table 6.5: UK to Foreign vehicle comparison for layby's and industrial estates

Offsite Parking	UK vehicles	Foreign vehicles	All Vehicles	Foreign / Total
South East	791	509	1,300	39%
East of England	698	264	962	27%
East Midlands	1,105	377	1,482	25%
West Midlands	675	181	856	21%
North East	412	89	501	18%
North West	796	164	960	17%
London	31	6	37	16%
South West	417	72	489	15%
Yorkshire and Humber	533	81	614	13%
England	5,458	1,743	7,201	24%

- Across England 25% of vehicles counted taking overnight stops were foreign registered in contrast to the 3.3%²⁶ of total UK HGV vehicle kilometres that is made up of foreign vehicles.
- This confirms that a number of journeys made by UK vehicles can be completed within the day and do not require an overnight stop.
- The percentage of foreign vehicles parked on-site is 1% lower than those parked off-site.
- In both cases on and off-site parking has the highest proportion of foreign vehicles in the South East. As the majority of international road movements move across the Dover Straits and Channel Tunnel, this is an expected outcome.
- London has a notable difference between the numbers of foreign vehicles found on and off-site, one of many reasons may be concern over congestion charging.

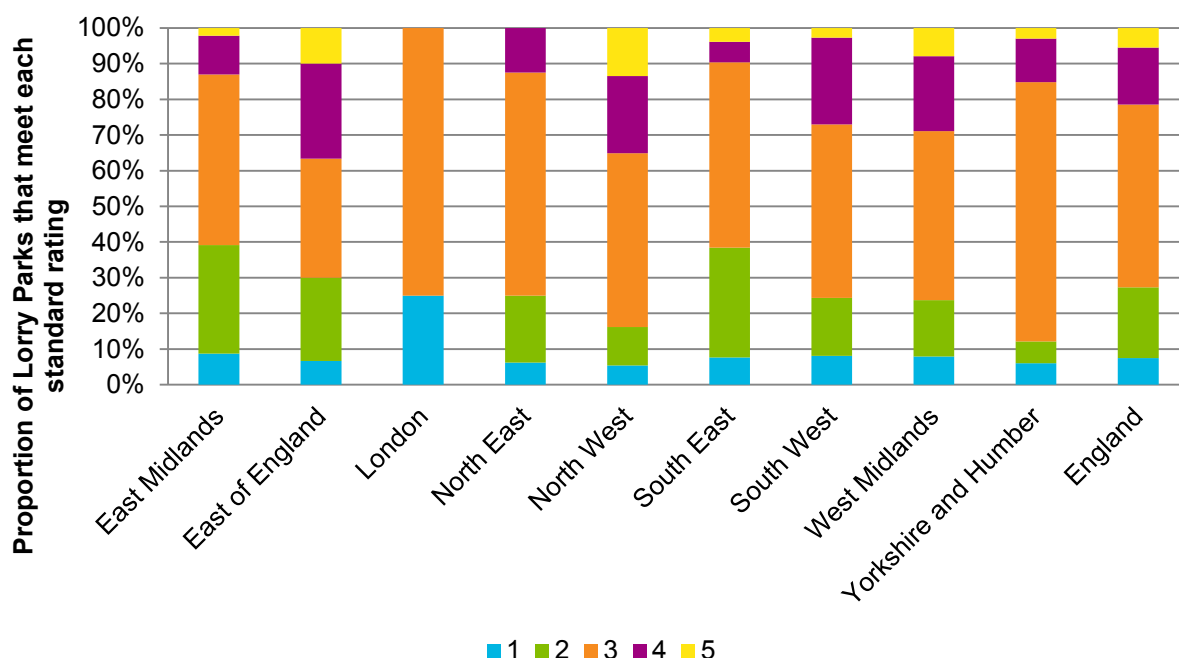
6.5 Facilities

A system was devised to rate all on-site lorry parking facilities as described in the **Table 6.6** below. This rating was based on a five point scale which is broadly in line with LABEL the European Truck Park Area Certification system. As the system devised does not include all of the LABEL criteria, the results should be used indicatively. Nevertheless, it provides a useful overview of the types of facilities available at lorry parks on a regional basis.

²⁶ Department for Transport, 2015 - Road Traffic Estimates: Great Britain 2014 (R)

Table 6.6: Lorry Park rating basis

Truck Stop Rating	Truck Stop Facilities	Description
1	Toilets	Basic rest area offering truck drivers a place to park and access to toilets.
2	Toilets & Café	Basic/medium rest area offering truck drivers a place to park and access basic amenities, including toilets and a cafe.
3	Toilets, Shower & Café	Medium level facility that offers truck drivers a place to park with shower facilities as well as toilets and a cafe.
4	Toilets, Lighting, Shower, Café, & Security Fence	Medium/High level facility that offers a degree of secure and safe truck parking whilst also offering a decent level of facilities for truck drivers.
5	Toilets, Lighting, Shower, Café, Security Fence Accommodation & CCTV	High end truck parking facility offering truck drivers a place to park securely and safely whilst also enjoying extensive facilities.

**Figure 6.3: Lorry park ratings by regions**

The North West and East of England have the highest proportion of highly rated parks, meaning these have the most facilities including security features – closely followed by the West Midlands.

The majority of lorry parks have a rating of three which denotes good amenities but no security features.

6.6 Other Observations

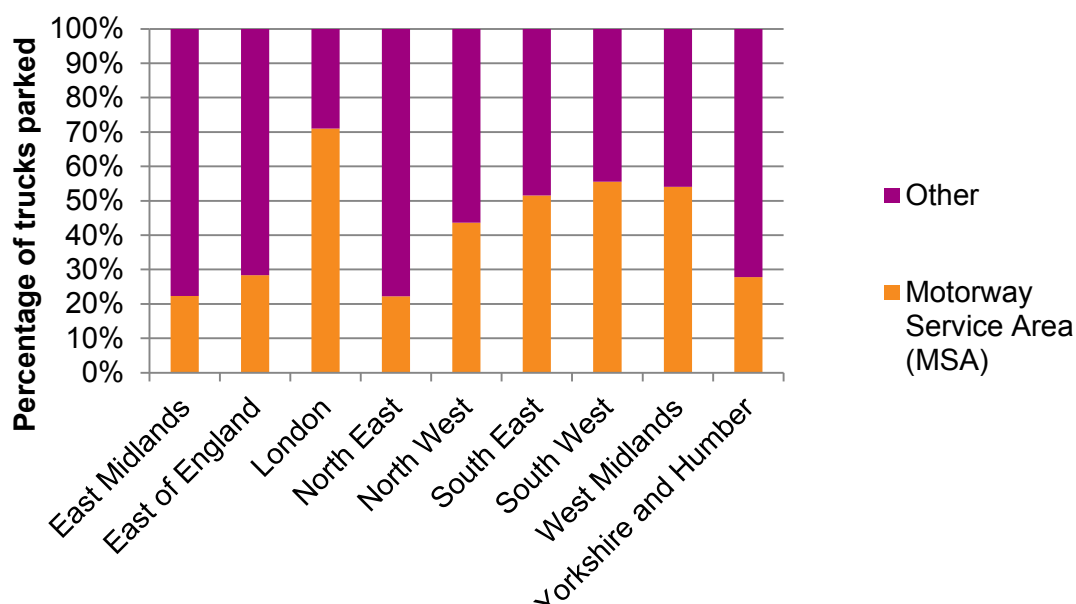


Figure 6.4: Proportion of MSAs compared to other parking facilities

Figure 6.4 shows how the split of MSA facilities versus other off-site parking facilities varies across the regions.

London covers the area inside M25 and has a small number of kilometres of SRN but it does have the highest proportion of MSAs compared to other parking areas.

East Midlands, East of England, North East and Yorkshire and Humber all have low proportions of MSAs (under 30%). This is due to the SRN in those regions being predominately made up of A roads.

Table 6.7: Average overnight parking charge for a lorry park regionally

Row Labels	Average Overnight Parking Charge for a lorry.
London	£ 21.70
East of England	£ 18.70
South East	£ 18.60
North West	£ 18.00
Yorkshire and Humber	£ 17.20
West Midlands	£ 16.30
South West	£ 15.50
North East	£ 13.50
East Midlands	£ 13.20
England	£ 16.60

Not surprisingly average parking charges are highest in London, the South East and the East of England; the North East and East Midlands have the lowest average parking charges.

6.7 Estimation of additional parking required

6.7.1 Utilisation Categorisation

A system has been used to categorise lorry park utilisation – see **Table 6.8**.

As with previous studies we have taken 70% full as reaching an increasingly serious level where drivers have to search carefully for spaces. At 85% utilisation or more it becomes difficult for drivers to find parking spaces due to the sizes of vehicles and the way they are positioned. So in practice some drivers may interpret a lorry park which is 85% utilised as being full.

Table 6.8: Utilisation Categorisation

Description	Utilisation (%)
Critical	≥ 85
Serious	70-84
Acceptable	<69

6.7.2 Immediate response

Table 6.9 has been created to aid initial response decisions, the terminology can be defined as:

- Theoretical : the total number of spaces required if there is an on-site parking space provision for every single lorry counted overnight;
- Practical: the total number of spaces required for every lorry to be able to park in a space overnight considering that a lorry park is, in practice, full at 85% capacity.

To deliver an immediate response, only lorry parks considered as critical (≥ 85%) were considered, as such London is excluded from the table. Theoretically six regions require additional spaces; yet practically eight regions have been identified as needing increased parking facilities, with the most urgent need found to be in the South East.

Table 6.9: Immediate response estimation of additional parking requirements from considering lorry parks currently equal to or above ≥ 85% capacity

Region	Theoretical Spaces needed	Practical total spaces needed	Practical number of additional spaces needed	Practical additional spaces needed (%)
South East	210	1,731	470	37%
North East	8	153	31	25%
South West	17	351	70	25%
East of England	58	1,848	335	22%
West Midlands	27	1,262	216	21%
Yorkshire and Humber	15	844	142	20%
North West	-10	472	61	15%
East Midlands	-43	866	87	11%
Total	282	7,526	1,411	19%

6.8 Summary

- This study concentrated on parking within 5kms of the SRN.
- The lorry parking situation has got more acute since the previous study in 2010.
- During a typical mid-week night there are 18,670 vehicles parked overnight across England in off-site and on-site locations.
- This is a 36% increase (4,962) since 2010. Part of the reason for this is that in 2010 the UK was in a recession and there were fewer HGVs on the road.
- In comparison, the total capacity of on-site spaces available in lorry parks or motorway service areas (MSAs) was found to be 15,012. This is an increase of just 14%.
- Six out of nine English regions have reached serious levels of utilisation (>70%). The average for the whole country is 76%.
- Taking just the critical areas >85% utilisation, there is an immediate need for 1,411 more spaces across the country (19%), with the most urgent need found to be in the South East where 37% more overnight parking spaces are required.
- The highest number of vehicles spotted was in the South East (3,723). 41% of these were foreign registered. This was followed by the East Midlands (3,032).
- 25% (4,605) of the vehicles parked overnight are foreign registered. This relates to foreign vehicles making up just 3.3% of HGVs on the roads.
- The highest concentration of UK vehicles was found in the East Midlands 77% (2,341).
- The average price for overnight parking in England is £16.60. Based on this figure the annual cost of paying for overnight parking in on-site facilities is approximately £3,187.
- 39% of vehicles were found to be parking off-site (e.g. in laybys and industrial / retail parks).
- In terms of the total number of vehicles parked off-site, the East Midlands was top with 1,264 followed by the South East with 890.
- The North East had the greatest percentage of vehicles parked off-site however (63%) followed by the East Midlands (42%).
- Freight crime is estimated to cost EU member states €11.6 billion each year.
- Just 21% of lorry parking facilities across England provide security features.

Glossary

Term(s)	Definition
Capacity	The total number of vehicles that could park in a lorry park.
Facilities	What is provided by lorry parks and includes services and security.
Heavy Goods Vehicle (HGV)	A heavy goods vehicle is the European Union (EU) term for any truck with a gross vehicle weight of over 3.5 tonnes
Local Authority Parking	A lorry park which is operated by a local council, generally these are council car parks which allow overnight lorry parking.
Motorway Rest Area (MSA):	A lorry park which is signed from the motorway and provides at least 2 hours free parking, free toilets, fuel and are open 24 hours a day.
Motorway Rest Area (MRA):	A lorry park which is signed from a motorway but does not meet all the requirements to be a motorway service area.
Strategic Road Network (SRN)	The road network maintained and operated by the Highways England (HE). It includes all motorways and major trunk roads. The vast majority of long distance trips take place on the SRN.
Utilisation	How busy the lorry park is as a percentage of number of vehicles parked compared to the capacity.

James Nankivell
Senior Consultant, Freight and Logistics –
AECOM
Tel: +44 (0)161 927 8331
james.nankivell@aecom.com
www.aecom.com