# Kent Lorry Parks Feasibility Study

## Demand Analysis and Business Model Report

28 February 2014

***Within this commission AECOM is not giving investment advice. The truck park assessments as set out in this report are based on a series of assumptions as set out in the report and associated technical notes and as agreed between AECOM and Kent County Council. The outcome of assessments are directly driven by the assumptions and the data used for the assessments and subject to uncertainty. Whilst the uncertainty of the assessments can be the subject of a risk analysis, the remit of this work does not include undertaking of risk analysis.***

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| | | | | |
| 1 | Draft Final Report | | JH | 15 Oct 2013 |
| 2 | Final Demand Analysis and Business Model Report | | JH | 28 Feb 2014 |

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Job No 60305766 Reference Date Created 28 Feb 2014

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# Introduction

# 1 Introduction

## 1.1 Introduction

In this report we provide a short recap on the locations identified as potential sites for truck parking as detailed in the demand and analysis business model. Section 2 gives an updated view on international freight drivers' parking choice behaviour including the possible impact of the proposed UK HGV levy. Section 3 provides a brief commentary on risks and benefits of the various 'ownership' models for KCC and this will be further informed by the outcomes of the financial analysis. Our demand forecasting methodology, assumptions and outcomes are laid out in Section 4. Section 5 explains our adopted approach to the financial modelling of the selected sites and outcomes are detailed in Section 6. Finally in Section 6 we draw conclusions on the possible selection of a preferred single site.

## 1.2 Proposed Suitable Sites

AECOM went through an iterative process to arrive at a list of shortlisted sites that will be most suitable for lorry parks in Kent. The process started by developing a list of sites that were identified from previous studies.

The next stage of the process was to have confidential discussions with the Local Authorities within Kent County Council and the Highways Agency regarding the list of sites.

In conjunction with KCC the study team developed a set of detailed assessment criteria which captured all relevant aspects of decision making to assess the list of sites to determine the most suitable sites for lorry park development. The criteria against which each site was assessed are grouped into five areas:

- Transport
- Site Characteristics
- National and International Environmental Considerations
- Local Environmental Considerations
- Planning Considerations

All sites under consideration were visited in person by the consultant, in order to assess each site's physical characteristics. This allowed access to the sites to be assessed, along with aspects such as the site's shape and topography, and the character of the environment around the sites.

## 1.3 Shortlisted Sites

The table below shows the short listed sites identified by the site assessment process as most suitable for lorry park development within Kent. The list of sites is in the order of ranking.

| Site ID | Name/ Description | Size Ha | Capacity (Trucks) | Located On | Nearest Trunk Road/ Junction | Grid Ref | Authority/ District | LAT | LONG |
|---|---|---|---|---|---|---|---|---|---|
| | **A2/M2 Corridor** | | | | | | | | |
| 57 | White Cliffs Business Park 1 | 3 | 234 | A2 | A2/A256 | TR313443 | Dover | 51.15125 | 1.30541 |
| 21 | A2/Coxhill Road, Shepherdswell (east) | 24 | 1,872 | A2 | A2 | TR249469 | Dover | 51.17708 | 1.21624 |
| 20 | A2/Coxhill Road, Shepherdswell (west) | 4 | 312 | A2 | A2 | TR247469 | Dover | 51.17716 | 1.21338 |

| Site ID | Name/ Description | Size Ha | Capacity (Trucks) | Located On | Nearest Trunk Road/ Junction | Grid Ref | Authority/ District | LAT | LONG |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | **M20/A20 Corridor** | | | | | | | | |
| 8 | Westenhanger (site behind STOP 24) | 6 | 468 | M20 | J11 M20 | TR136369 | Shepway | 51.09162 | 1.04890 |
| 56 | Lympne Industrial Estate | 2 | 156 | M20 | B2067 | TR112359 | Shepway | 51.08319 | 1.01395 |
| 6 | Site adjacent to Ashford Int'l Truck Stop | 11 | 858 | A2070 | J10 M20 | TR033397 | Ashford | 51.12051 | 0.90360 |
| 12 | East of Stanford (site opposite M20 from STOP 24) | 16 | 1,248 | B2068 | J11 M20 | TR133375 | Shepway | 51.09712 | 1.04498 |
| 5 | Site Adjacent to Maidstone MSA, Hollingbourne | 11 | 858 | M20 | J8 M20 | TQ828551 | Maidstone | 51.26574 | 0.61885 |

**Table 1.1 - Short-listed Sites**

### 1.4 Report Structure

The structure of the remaining sections of the report is as follows:

**Chapter 2 – Parking Choice Behaviour**

This chapter examine the various aspects of why freight drivers choose to park in Kent and the factors that influence their parking preference.

**Chapter 3 – Potential Ownership Models for Truck Parking**

This chapter provides a short overview of the different types of 'ownership' models that might be deployed for truck parking facilities.

**Chapter 4 – Demand Forecasting**

This chapter sets out the methodology on how the project team has forecasted the level of demand for truck parking between 2014 and 2060.

**Chapter 5 – Financial Modelling**

This chapter gives a description of the financial model developed for the financial analys.

**Chapter 6 – Modelling Outcomes**

This chapter sets out the results of the financial model runs for the various sites.

# Parking Choice Behaviour

# 2 Parking Choice Behaviour

## 2.1 Introduction

In this section we examine the various aspects of why freight drivers choose to park in Kent and the factors that influence their parking preferences. A reasonable amount of primary data has been gathered over recent years on this matter and we seek to identify any major shifts that will influence trends going forwards, including the forthcoming HGV Levy.

## 2.2 Reasons for Stopping in Kent

The reasons why international freight drivers have a tendancy to take an overnight rest in Kent were explored in the work undertaken for KCC by AECOM in 2005[1]. Almost half of the drivers stated that the main reason they parked overnight in Kent was to do with running out of Drivers' Hours (Figure 2.1). This went up to 65% of Central European Drivers. At the time concerns over immigrants getting into vehicles in France, while the vehicle was parked was the number one reason for 20% of drivers.

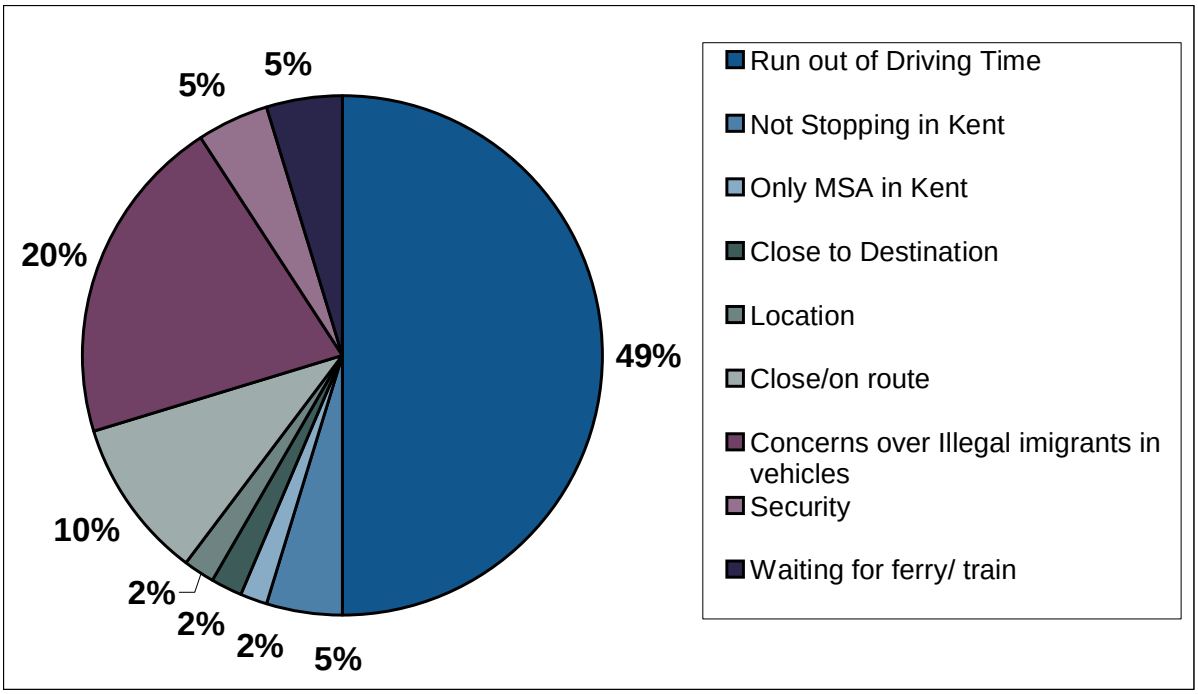


**Figure 2.1 - Reasons for Stopping in Kent**

Whilst such concerns about stowaways have subsided, the behavioural trait of making the Channel crossing then taking a break does not seem to have subsided and there has been no change in Drivers' Hours legislation to indicate that simply running out of driving time wouldn't still be a significant reason for stopping in Kent today. Indeed there is evidence from the current providers of truck parking in Kent that some operators will in-fact create their European distribution schedules to specifically factor in overnight rests at a particular truck park.

An interesting trait does seem to have developed in recent years and that is the apparent increasing demand for weekend parking, principally by eastern European hauliers. The split between UK, European and eastern European lorries is set out in Table 2.1.

[1] Kent Overnight Lorry Parking Study, July 2005, AECOM

| Days | Split |
|---|---|
| **Monday to Thursday** | 60% European<br>20% Eastern European<br>20% British |
| **Friday to Sunday** | 60% Eastern European<br>20% European<br>20% British |

**Table 2.1 – Split between UK, European and Eastern European Lorries per day of week (reported by a truckstop in Kent, 2013)**

From the table it is clear that during the week the majority of HGVs are Europeans and over weekends they are Eastern Europeans. It is not entirely clear the reasoning behind this activity but the ongoing opening of the haulage market, including cabotage, to the EU-12 member states (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia) and their continued increase in the share of international markets (see Figure 2.2) means there are likely to be more trucks from these destinations 'camped out' across European destinations who spend little or no time in their home country.

Figure 2.2 shows who is responsible for which international flows. In the biggest market, between EU-15 Member States, the majority of work is conducted by EU-15 hauliers, however in each of the other markets EU-12 hauliers conduct the majority of the work. This is due to a range of factors including those relating to lower operating costs.

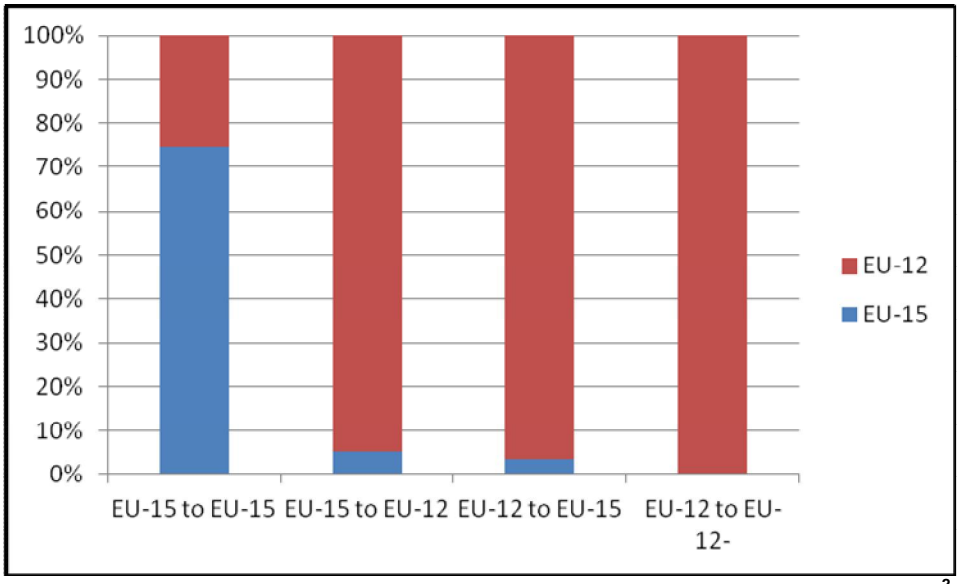


**Figure 2.2 – Role of EU-12 Member States in International Movements - % of Tonne Kilometres (2011)**[2]

[2] AECOM analysis of Eurostat, [road_go_ia_tc], 2013, *Eurostat*

## 2.3 Routing Behaviour

The majority of international freight drivers make the cross Channel trip on a regular basis – 94% on a monthly or more regular basis according to AECOM's survey undertaken for the HA in 2006. Their routing, certainly in terms of planning and way-finding to and from the Channel ports tends to be knowledge based.

Routes tend to be planned in advance, but drivers show flexibility in their routing behaviour once underway – in particular drivers will use the M2/A2 route and the 'cross' routes of the A249, A229 and A260 to avoid accidents, road works and general traffic congestion. Many say that their main source of traffic information is radio travel news bulletins.

Where a truck operator has a choice between using a ferry and Eurotunnel, just under a half do not make the final selection until their journey is underway.

Not unsurprisingly, Eurotunnel traffic uses the M20 route. For Dover, around 60% of the freight traffic makes use of the M25/M26/M20/A20 route south of London. Around 20% uses the M25/M20/A20 route via the Dartford crossing. Around 15% of traffic uses the M25/A2/M2/A2 route via the Dartford Crossing.

There is evidence that some drivers will seek to avoid the Dartford toll charge and route M25 south.

Drivers will actively select M2/A2 because of the greater availability of road-side rest locations and services.

From this evidence base, it is concluded that international freight drivers will continue to show flexibility in their choice of routes to and from the Channel Ports.

## 2.4 The UK HGV Levy and its Possible Impact on Overnight Truck Parking

As of April 2014, lorries seeking to use roads in the UK will need to pay a time based charge related to the weight of the vehicle. It is hoped that this will go some way to equalising the costs of operation between EU- and UK-based operators, for whilst the charge will be applied to all drivers, regardless of nationality, the UK government plans to reduce Vehicle Excise Duty (VED) by the same amount, thus making the new charge broadly cost neutral for UK operators. This charge will essentially be equal to the European vignettes or toll systems which charge all lorry drivers, whilst the UK's system was based mostly on VED and fuel duty, which foreign truck companies were able to avoid paying.

The charged is based on the length of time that the lorry will be in the UK and its weight, with charges for the heaviest vehicles (of around 40,000kg) being equivalent to £10 a day or £1,000 for the year (the corresponding lightest charges are £1.70 and £85 – with gradations in between based on weight). There are also options for weekly and monthly passes, which will be offered at a discount to the price of the equivalent daily permits.

As to how this will impact on the use of Kent Lorry Parks, this need to be assessed in two separate contexts; the direct financial impact of the levy and how long foreign-based vehicles spend in the UK.

### 2.4.1 Consultation and research undertaken by the AECOM project team

The following were directly consulted on the potential impacts on truck parking of the proposed levy:

- Freight Transport Association (FTA)
- Road Haulage Association (RHA)
- French Road Haulage Association (FNTR)
- French Ministry of Transport (International Affairs Department)
- UK Department for Transport (HGV Levy and Charging section)

Interestingly FTA reported that it had 'heard' but could not substantiate that parking would increase around Calais as drivers would wish to avoid paying the levy for what would effectively be 'downtime'. None of the other consultees could substantiate

this possibility and were not aware of the issue. A search on Google France and of the French newspaper 'Voix du Nord' has not revealed any further information either.

The Department for Transport contact reported that foreign operators were likely to consolidate the number of vehicles used for UK/International haulage to reduce overall payments but that this would not impact on overall trips.

### 2.4.2 UK Department for Transport Consultation Exercise on the HGV Levy[3]

The following provides an analysis of the UK Department for Transport Consultation on the levy that was conducted between January and April 2012 and published in October 2012.

Cost Impacts

Essentially this comes down to a question of how price-sensitive hauliers are. The Government, in its own consultation on the introduction of the Levy, set out to find this information, asking two questions, with selected responses appearing below:

**Question 6: The Government is not aware of any specific evidence on the price sensitivity of transport by foreign-registered HGVs in the UK, or whether there are markets which are particularly price sensitive. Do you have any information on this issue?**

"In general the haulage industry operates a business model of high volumes and low margins to achieve profitability. This does make the industry price sensitive, particularly to rising input costs including fuel and staffing costs".

**The Government's response:** The consultation elicited many views suggesting that charging would have an impact, but quantifying the impact remains a challenge.

**Question 7: If you are a road transport operator licensed elsewhere in the EU or a customer of such an operator, how might the HGV user charge affect your business (please justify by evidence where possible)?**

"£10 per day will not affect foreign hauliers or anyone else"

"Many of our contracts contain provisions that allow 'legislative costs' to be recharged to the customer who will decide whether to pass on costs to the end-user"

"The cost of the proposed road tax would be absorbed without any effect on the customer as it would be less than 0.5% of the freight cost"

**The Government's response:** Again, the consultation elicited views suggesting that charging could have some impact, but quantification is difficult.

Average Length of Stay

Furthermore, the Government fully expects the majority of permits sold to be for periods of longer than one day:

[3] https://www.gov.uk/government/consultations/charging-heavy-goods-vehicles-consultation

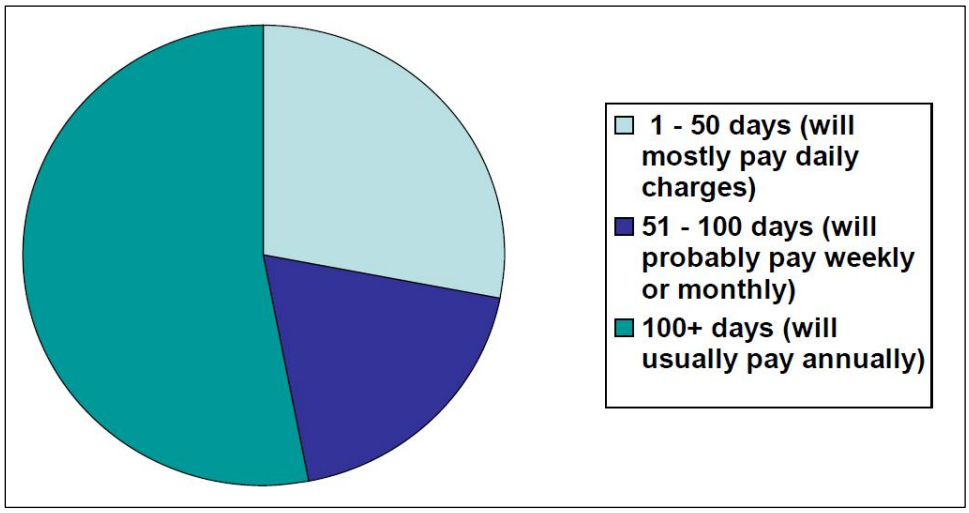


**Figure 2.3 – Average Length of Stay**

This would suggest that over half of levy purchases will be for the maximum price anyway, allowing unlimited use of the UK road network and therefore not having an impact on these drivers' use of Kent Lorry Parks.

In 2009, the average length of stay of a foreign vehicle in the UK was 45 hours, with median being 33 hours. In either case, a permit for two days would be required. Unless over 9 hours could be cut from the median journey time in the UK then numbers are unlikely to fall. Indeed, depending on the quality of truck stop on either side of the Channel and the various price factors that affect ferry bookings, there is potential that, having already "paid" for their time in the UK of up to 48 hours, they may be tempted to stay in Kent rather than cross the channel with unused time, potentially increasing the usage of lorry parks in Kent.

## 2.5 Access and Facilities

Proximity to the strategic route network is an important factor in parking choice. Surveys have shown that whilst some drivers are willing to deviate off route for some distance to go to a parking place of choice, the majority do not wish to deviate more than a few Km, and nearly 25% will never travel away from the 'main line'. The preferred sites selected as part of this current commission are all adjacent to the strategic route network and thus distance to travel to them will not be a factor in suppressing potential demand.

Repeatedly surveys show that secure parking, showers and toilets and the quality of food are key factors when determining parking choice. Table 2.2 shows the outcomes of the 2008 survey work undertaken by AECOM.

| Attribute | MSAs | | Truck stop | | Lay by | |
|---|---|---|---|---|---|---|
| | British % | European % | British % | European % | British % | European % |
| Secure parking | 63 | 65 | 63 | 43 | 9 | 0 |
| Facilities e.g. showers | 39 | 49 | 46 | 57 | 1 | 0 |
| Cost | 6 | 0 | 20 | 21 | 62 | 30 |
| Company policy | 44 | 37 | 23 | 14 | 5 | 20 |
| No choice, run out of driver time | 15 | 21 | 13 | 14 | 24 | 60 |
| Do not have to detour | 16 | 16 | 9 | 21 | 14 | 40 |
| Quiet | 3 | 26 | 14 | 21 | 14 | 30 |
| 24 hour opening | 18 | 30 | 21 | 36 | 9 | 10 |
| Know there will be space | 10 | 7 | 15 | 36 | 6 | 10 |
| Quality of food | 6 | 12 | 23 | 7 | 5 | 0 |

| Attribute | MSAs | | Truck stop | | Lay by | |
|---|---|---|---|---|---|---|
| | British % | European % | British % | European % | British % | European % |
| Beds | 2 | 0 | 1 | 0 | 0 | 0 |
| **Base** | **62** | **43** | **94** | **14** | **78** | **10** |

**Table 2.2 - Parking Attributes**

More recently (March 2013) to help inform its response to consultation on the Lower Thames Crossing the South East Local Enterprise Partnership (SELEP) undertook a sector survey which included a question on minimum requirements for overnight lorry parking. A total of 102 organisations responded to the online survey. Figure 2.4 shows that toilets, showers, security and food are the most required attributes, whilst bars and entertainment are the least required.

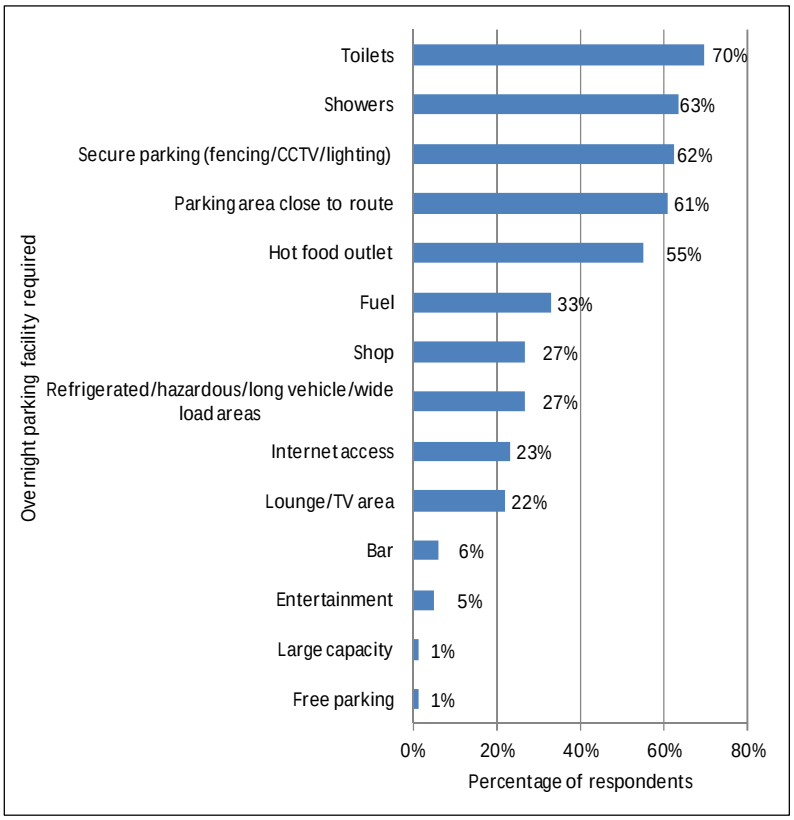


**Figure 2.4 - Facilities required at overnight lorry parks**

The issue of security is becoming more and more prominent. One commentator informed our study team that the recession has prompted an uplift in truck crime and as a result insurance companies started to mandate the use of secure truck parks. Initiatives such as the European Secured Parking Organisation (ESPORG) and LABEL, the auditable standard for truck parking are gaining traction and an ongoing and uplifted demand for secure parking spaces seems to be evolving.

Interestingly major foreign logistics enterprises from both west and eastern Europe are reportedly setting policies that require drivers to use secure sites, and as a result of negotiating contracts with sites, discounted rates are available.

## 2.6 Expenses

Again from the 2005 study it is evident that a large proportion of HGV operators reimburse drivers for overnight expenses, or had some kind of allowance (Figure 2.5), although it was reported that some drivers were encouraged not to park in official parking areas if the vehicle was empty. Eastern European drivers interviewed indicted that they too were encouraged to find free parking and the cost represented the equivalent of a day's wages in many cases.

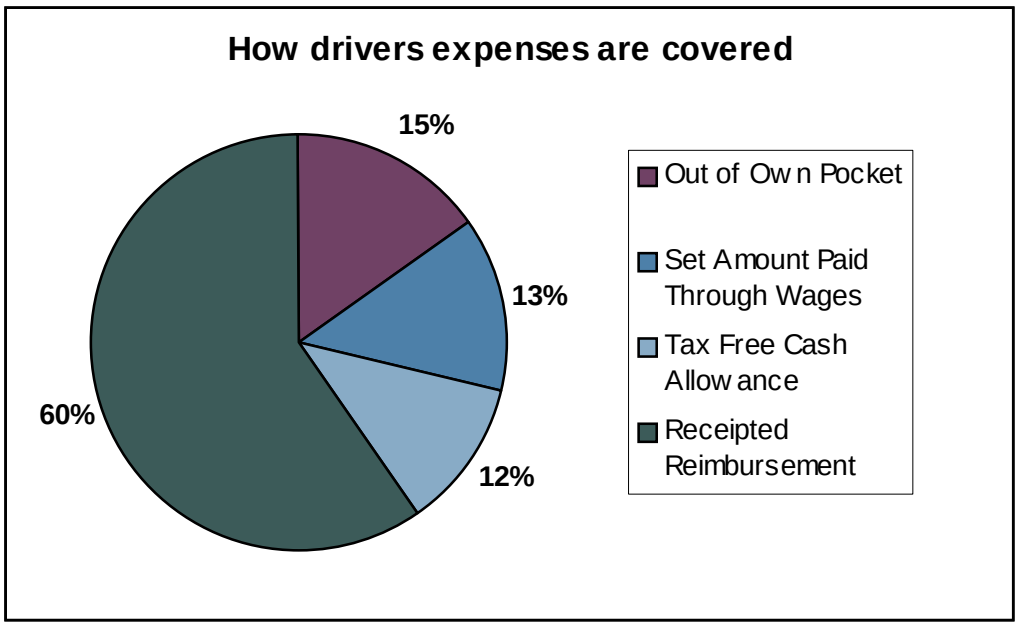


**Figure 2.5 – Drivers' Expenses**

Given the continued presence of inappropriate parking in the County we can assume that there are still drivers either un-able or unwilling to expend money on overnight parking, but that the fact that the official parks are so well utilised today, even at weekends, indicates that the greater proportion of drivers do have parking costs covered by their employer or they are reimbursed. Indeed through the engagement on this current study with truck park operators it was revealed that the vast majority of 'payments' are made via fuel cards such as DKV or UTA, or are by way of company account.

Overall, 76% of drivers have their overnight stays paid for them in some form. The 24% who have to pay out of their own pocket are, unsurprisingly, most likely to use lay-bys overnight. However, those who do receive subsidy in cash can actually pocket this as a tax free allowance, again meaning it is not whether drivers have expenses paid, it is also how they have them paid that is a contributing factor to driver motivation.

From the SELEP survey an indication of pricing sensitivity is given with 78% of respondees indicating a preference for a charge of under £20.

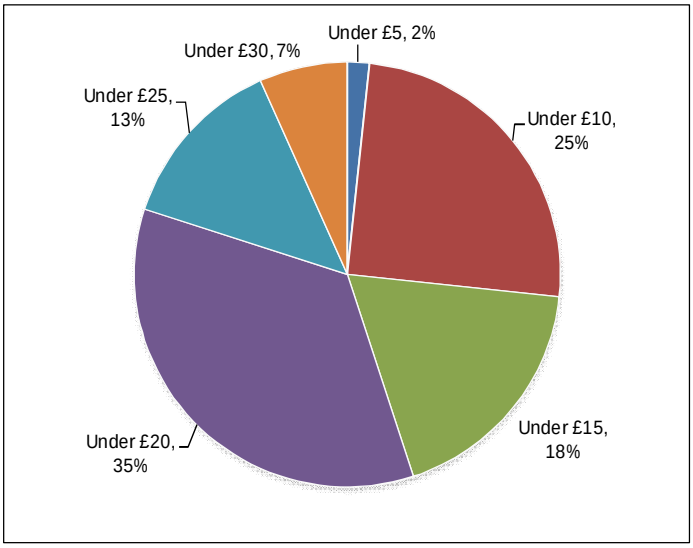


**Figure 2.6 – Stated Acceptable Payment for Overnight Lorry Parking**

Recent dialogue with the Kent Police Commercial Vehicle Unit revealed that they felt there is a need to make parking a sensible price so drivers can afford it and that if there were more facilities for parking more parking restrictions could be invoked to deter inappropriate parking. For Bulgarians, Latvians, Lithuanians, Romanians and Turkish the pricing point for overnight parking is between £5 and £10 according to the Police.

## 2.7 Summary

From our discussions with truck parking providers in Kent it is clear that demand for good quality parking is outstripping supply, with trucks regularly being turned away (for example around 18 a night from Stop 24 and up to 15 from Ashford). There may of course be an element of double counting here, but we deduce there is a proportion of freight traffic that is willing to pay for parking provision but can't obtain it, or in other words 'suppressed demand'.

Whilst initiatives such as ESPORG and the general 'tightening' of insurer controls do seem to be increasingly influential, and more logistics companies negotiate contracts for parking provision, the Police report the need for enforcement action to tackle on-going inappropriate parking and it seems certain that high levels of inappropriate parking will be a common feature well into the future.

Pricing policy will clearly be influential in the ability of KCC to impact on the volume of trucks using proper parking facilities. £20 seems to be an important pricing point, with the Police suggesting a figure of around £5 - £10 being attractive to those hauliers least willing to pay. However, our demand forecasts suggest that with the ongoing increase in international freight traffic, whilst suppressed demand for parking may be catered for, there would need to be a huge uplift in parking provision to cope with all truck parking.

The general tone of responses to the DfT consultation on the HGV levy is that whilst it won't discourage foreign owned hauliers from operating in the UK, it should go some way towards rebalancing the discrepancy in costs between UK and European-based operations. Extrapolating from this, therefore, it could be argued that the industry does not expect there to be a significant change in the amount of haulage or the routes taken by foreign trucks, pointing towards a negligible influence on the number of foreign lorry drivers staying at Kent lorry parks. Overall then, our analysis would broadly suggest that there will be little impact on the usage of lorry parks, but Her Majesty's Government themselves find this a difficult area to quantify.

Recent surveys have confirmed that drivers want good basic facilities that are secure. Stop 24 may provide a good security model and whilst it does not meet LABEL's top security standard, with its secure fencing, CCTV and key-coded ANPR barrier

system it offers a satisfactory level of security. The increase in the volume of weekend parking, particularly from EU-15 hauliers looks to be an emerging trend, that will further enhance the business case for paid for parking.

Whilst rather subjective in nature we have attempted to reflect these factors of driver parking behaviour, willingness and ability to pay in our demand forecasting – in particular a pricing point of under £20, the desire for good facilities and security, and a high level of demand, including weekend parking. Ultimately though, levels of enforcement will be a key driver of paid-for parking demand.

# Potential Ownership Models for Truck Parking

# 3 Potential Ownership Models for Truck Parking

## 3.1 Introduction

This section provides a short overview of the different types of 'ownership' models that might be deployed for truck parking facilities. We understand also that KCC are seeking to secure LEP Funding and Public Works Loan Board financing. Four possible operational models have been suggested by KCC. Under these scenarios KCC builds the lorry park and the revenue/financial risk can be retained by KCC or transferred in part or wholly to a private developer/operator.

| Operating Model | Operate the lorry park | Revenue owner | Financial risk owner |
|---|---|---|---|
| **A** | Outsourced: fixed cost contract and operator's profit not linked with revenue | KCC | 100% KCC |
| **B** | An agreement is made with a private sector to run and maintain the site and collect revenue over a certain period of time | Any financial risk/profit is shared equally between KCC and a private sector. KCC owns the site. | Up to 50% KCC |
| **C** | An agreement is made with a private sector to run, maintain and be responsible for renewal of the site and to collect revenue over a longer period of time | Any financial risk would be taken by private sector and a certain proportion of the profit would be shared with KCC | 0% KCC |
| **D** | KCC sells a lorry park to a private sector and gets all investment plus repayments back from the private sector | Private sector owns the site with no involvement from KCC | 0% KCC |

**Table 3.1 – Operating models**

These options will impact the eventual ownership/operational model and will need to be further investigated following the conclusion of the financial modelling being undertaken on the five selected sites. AECOM does not seek to provide specific recommendations with this regard and a quantitative risk analysis could be undertaken to understand sensitivities in cost and revenue and the impact on commercial viability in more detailed follow-on work if appropriate.

Pending this outcome the following provides the basic characteristics and associated benefits and risks of each model in operational terms of the three standard models for the provision of overnight truck parking. These are:

- Local Authority Built and Operated
- Local Authority Built and Operated by Private Company
- Private Developer Built and Operated

Importantly, a complete network of truck park and driver rest facilities need not simply adopt one model, but instead the network can be made up of a combination of the operation models. For example, KCC could build and operate truck parks at key strategic locations and then create a standard that other private developers need to adhere to if they wish to provide additional provision on the strategic road network.

### 3.2 Local Authority Built and Operated

| Local Authority Built and Operated Truck Parking Area Considerations | | |
|---|---|---|
| **Land** | **Infrastructure** | **Operation** |
| If the land is not already in public ownership it will need to be purchased or leased. Compulsory purchase powers may be invoked. | The infrastructure, including the parking and the facilities, will be designed and constructed by the local authority. | Once constructed the operation of the truck parking area, including the security, restaurant, shop, etc. will be operated by local authority or contracted employees. This is often done by council or local authority employees. This model enables the local authority to provide free or below market rate parking if that is deemed to be agreed strategy. |

**Table 3.2 – Local Authority Built and Operated Truck Parking Area Considerations**

The table below sets out the benefits and risks of this model.

| Benefits | Risks |
|---|---|
| Helps ensures that provision meets demand | Financial outlay and rate of return |
| Guarentee that the right facilities are built and operated | Potential to discourage private developers or accusations of unfair subsidies |
| Ensures that a better quality of life is available for truck drivers when away from base | If they are not operated correctly then bad publicity for the local authority |

**Table 3.3 – Local Authority Built and Operate Benefits and Risks**

### 3.3 Local Authority Built and Operated by a Private Company

| Local Authority Built and Operated Truck Parking Area Considerations | | |
|---|---|---|
| **Land** | **Infrastructure** | **Operation** |
| If the land is not already in public ownership it will need to be purchased or leased. Compulsory purchase powers may be invoked.<br><br>It is important that when the operation of the truck is handed over to a private developer that the land can only be used for truck parking and not for any other uses such as residential, commercial or retail. | The infrastructure, including the parking and facilities, will be designed and constructed by the local authority. If the private company wishes to add more facilities (e.g. a truck wash) this should be encouraged as long as it relates to truck parking and does not jeopardize the capacity required to meet demand. | The entire operation of the truck park is normally operated by the private company, which includes security and facility provision (i.e. restaurant, toilets and showers, etc). In order to maintain high standards, the private company should agree to standards of compliance in the contract and be audited regularly by the local authority.<br><br>This model enables the local authority to provide free or below market rate parking if that is deemed to be the agreed strategy. |

**Table 3.4 – Local Authority Built and Operated by a Private Company**

The table below sets out the benefits and risks of this model.

| Benefits | Risks |
|---|---|
| Ensure that provision meets demand | Financial outlay and rate of return |
| Guarantee that the right facilities are built and operated | Potential to discourage private developers or accusations of unfair subsidies |
| Removes the burden of operation from the local authority | Poor standards of operation reflecting poorly on the local authority |

**Table 3.5 – Local Authority Built and Operated by a Private Company Benefits and Risks**

### 3.4 Private Developer Built and Operated

| Local Authority Built and Operated Truck Parking Area Considerations | | |
|---|---|---|
| **Land** | **Infrastructure** | **Operation** |
| The land is often purchased by a private developer at the market rate. This is the main substantial cost to building a truck park. It is possible for the local authority to provide land on a long term lease which stipulates that the land can only be used for a truck park. They could lease this land to the private developer at a favourable rate to encourage private investors to invest in truck parks. However, the term of the lease must be substantial enough to give developers confidence in their investment. | The infrastructure, including the parking area and facilities, is often designed and constructed by the private developer at their own cost. This is normally considerable and therefore a developer will charge a market rate for parking. | The entire operation of the truck park will be operated by the investor or a sub-contractor, which includes security and facility provision (i.e. restaurant, toilets and showers, etc).<br><br>An investor or sub-contractor will look to be as efficient and cost effective as possible to maximise returns. |

**Table 3.6 – Developer Built and Operated Truck Parking Area Considerations**

The table below sets out the benefits and risks of this model.

| Benefits | Risks |
|---|---|
| Creates competition in the provision of facilities | May lead to cost cutting and low standards |
| Encourages innovation entrepreneurialism | Prices can discourage drivers to use the facility and result in unauthorised parking. |
| | |

**Table 3.7 – Private Developer Built and Operated Benefits and Risks**

### 3.5 Summary

In this section we have set out the broad parameters of the various options for local authority involvement in truck parking development and operations. KCC has specific financial risks to weigh up and these will be examined further in the study.

# Demand Forecasting

# 4 Demand Forecasting

## 4.1 Introduction

A successful truck parking strategy has two critical elements that need to be determined. The first is **location** which can be determined by a variety of factors including the routes vehicles take, the level of provision already available and policy regarding the length of time drivers can work without breaks. The second factor to consider is the **quantity** of parking to be provided. Determining factors will be volume of traffic, the propensity of drivers to take breaks and to some extent the location of the truck park. The two factors are to a degree, interdependent

This section addresses how the project forecasts the level of demand for truck parking between 2014 and 2060. This has been done primarily through a spreadsheet model that determines demand based primarily on the volume of truck traffic on key corridors.

## 4.2 Methodology

The methodology for building the model is set out in the following four key stages.

### 4.2.1 Corridor Analysis

Preliminary work identified that the suitable sites were to be located on either the M20 or A2/M2 corridors, the principle truck routes between London and the Channel Tunnel/Port of Dover. Figure 4.1 shows the location of the key corridors and the modelled sites.

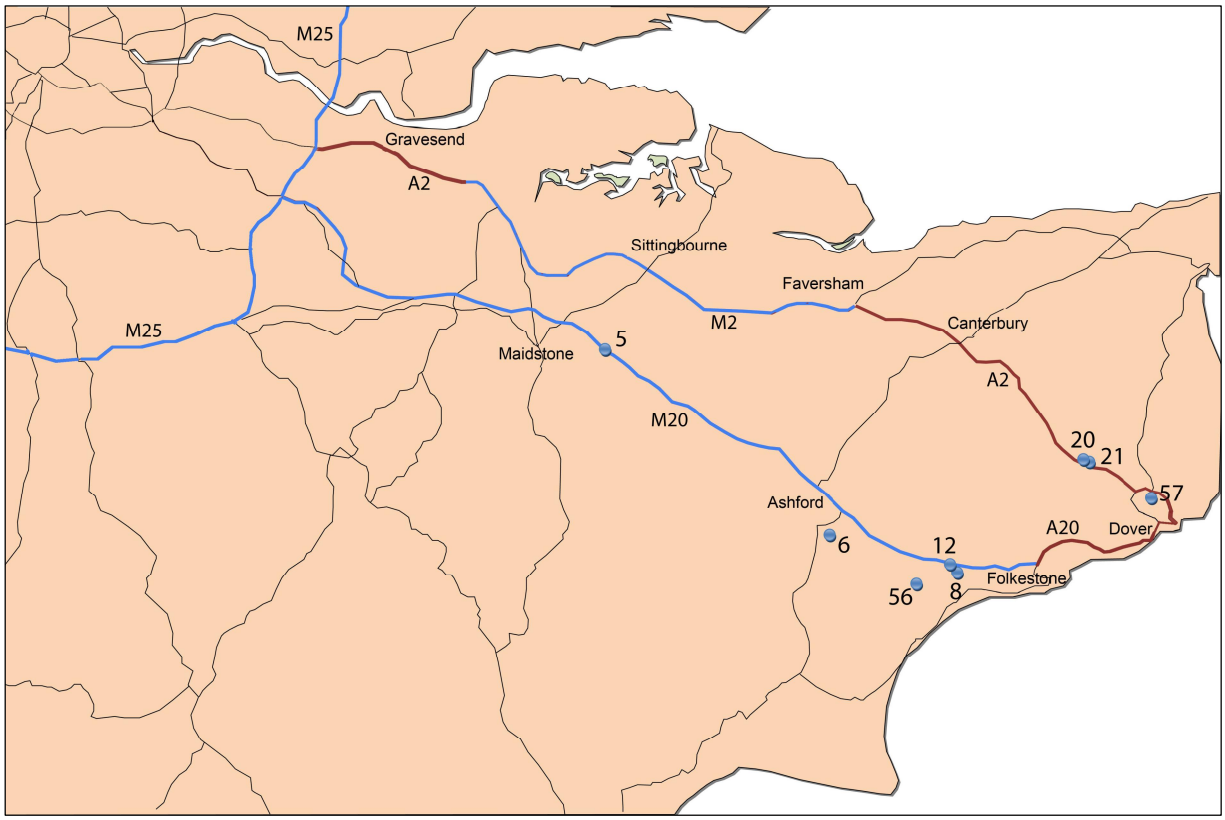


**Figure 4.1 – Modelled Truck Stop Sites**

As such, truck volumes were obtained for those corridors as the key driver of demand. Volumes were obtained from the Highways Agency TRADS database, providing real count data as well as the Lower Thames model (LTM) undertaken by AECOM for another project providing a readily available forecasting model.

The LTM was compared to the TRADS Data, and whilst it was found to be indicative, figures provided by TRADS were significantly higher than the LTM model. This, coupled with advice from the AECOM modelling team regarding the efficacy of the model for the purpose of determining truck stop demand – largely as it was not designed to look at HGVs specifically, created some concerns regarding its robustness.

As such, the decision was taken to use Highways Agency TRADS data and apply growth factors from the DfT, Eurotunnel and Port of Dover in order to forecast volume to 2060. Further details are provided in the 'Growth Factors'.

#### 4.2.2 Network Sectors

HA TRADS provides detailed data for traffic volumes across the vast majority of the trunk road network, classified by vehicle length. A reading can be taken nearest to each truck stop site in order to gain a snapshot of traffic at that point. However, this does not account for traffic flow and changes to the volume as traffic enters or exits at different junctions.

To account for this, readings were taken across the entire corridor and averaged out to provide a volume indicative of flow along the entire length of the corridor. This average was used to determine base volume of traffic.

As large vehicles are classed by vehicle length over and above 6.6m, the classification will capture both HGVs and coaches (buses form an insignificant proportion of traffic on these routes). As such, Port of Dover and Channel Tunnel coach volumes were subtracted from the overall total.

#### 4.2.3 Growth Forecasts

Three key measures of growth were used to predict the uplift in traffic for the model. These were:

- DfT National Travel Model – HGV Growth
- Channel State of Freight Report 2006
- Port of Dover 2009 Master Plan

The DfT National Travel Model, predicts the overall growth of HGV traffic across the network, and has been used to forecast growth in Local Traffic, which accounts for around 6% on the M20 and M2/A2, when comparing Port of Dover /Channel Tunnel daily averages with the overall volume averages.

Channel Corridor and Port of Dover Forecasts were added together to provide growth for international traffic. Table 4.1 shows the factors used.

| | Annual | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| General Growth Factor | 0.8 | | | | 0 |
| Eurotunnel Growth Factor | 0.49 | | | | |
| Dover Port Growth Factor | - | 2.3 | 2.85 | 3.55 | 0 |

**Table 4.1 – Channel Crossing Growth Factors**

General growth factors predicted a growth of 21.5% by 2040, equating to an annual average growth of 0.8% per annum. It is assumed that this rate continues beyond 2040.

Eurotunnel has not provided us with growth forecast, as such we have taken the Channel Corridor forecasts of 2.43% per annum to 2030 and we have assumed that the Channel Tunnel accounts for about 20% of this growth. Growth is expected to flat line after 2030 as the tunnel will be at capacity.

The Port of Dover provides an accelerating annual growth forecast to 2025, and this has been incorporated as above.

Parking requirements are determined by overnight parking rather than short term daytime parking. As such, demand is based on international traffic volumes as local traffic is unlikely to be stopping overnight en-route.

Local Traffic will provide a level of day time use that can be inputted into the financial model, calibrated by observations and feedback on current levels of day time truck park usage reported by site operators to the study team.

4.2.4 Parking

Having established base volumes and determined how traffic will grow, the data now needs to be linked to determine parking. As a measure of parking, figures were used from observational audits of lorry parking across the UK produced by AECOM for the DfT in 2005 and 2011, covering both **appropriate parking** (truck stops and MSAs) and **inappropriate parking** (Lay-bys, industrial estates).

*Appropriate Parking*

The audits counted the number of trucks parked along key strategic routes including the M20 and M2 as well as the capacity of appropriate parking sites. These figures were used to establish the base level of parking undertaken along the corridors.

*Night Time Uplift*

Evidence from truck stop interviews as well as sample observations conducted for this project suggests that sites are consistently 100% full overnight, in light of recent changes to insurance policies for certain freight operations, as such, capacity observations were taken and used to indicate appropriately parked traffic.

Inappropriate parking volumes were taken from the 2005 and 2011 audits for the following districts shown in Table 4.2 and then distributed proportionately to the volume on each corridor.

| Local Authority Districts |
|---|
| Swale District |
| Canterbury District |
| Maidstone District |
| Tonbridge and Malling District |
| Dover District |
| Medway |
| Shepway District |
| Ashford District |
| Dartford District |
| Gravesham District |

**Table 4.2 – Local Authority Districts**

This is expected to grow in line with international traffic as local traffic is unlikely to be parking overnight in inappropriate places. An enforcement factor of 3% per year is also applied that will slow the rate of growth in order to represent improving levels of enforcement. This is based on the difference between the 2005 and 2011 audits that show an 18% reduction. This 3% was then added to the appropriate parking simulating them being forced into truck stops or motorway service facilities.

A third factor, not considered in the report is latent demand – covering drivers who have tried to park but been turned away from existing truck parks, a measure that was obtained by asking truck stops how many vehicles are turned away, though it's difficult to tell if there's any double counting, with trucks being turned away from multiple sites. This is assumed to apply across both corridors.

Table 4.3 shows the level parking across each category and on each route.

| Corridor | Appropriate | Latent | Inappropriate |
|---|---|---|---|
| **M20** | 642 | 32 | 247 |
| **M2/A2** | 261 | 13 | 134 |

**Table 4.3 – Level of Parking Accross the Network**

Truck stop demand therefore will be taken on the basis of appropriate + latent demand.

4.2.5 Demand Forecasting

Having established both the traffic volumes and the level of appropriate and latent parking on each route the two figures can be divided to establish the proportion of vehicles parking on each corridor. That ratio can then be applied to the volume forecasts per annum to 2060 in order to predict the anticipated need for truck parking in Kent.

The next section outlines the results of the model.

## 4.3 Analysis

4.3.1 Volume Split

Figure 4.2 shows the HGV traffic volume split between the two main corridors based on average traffic levels across their entire length. It shows the majority of traffic, 84% travelling on the M20/A20. Volume indications outside Dover indicate an 81%, 19% split in favour of the M20 with additional traffic coming from the M20. Taking the demand across both corridors we get the following figures.

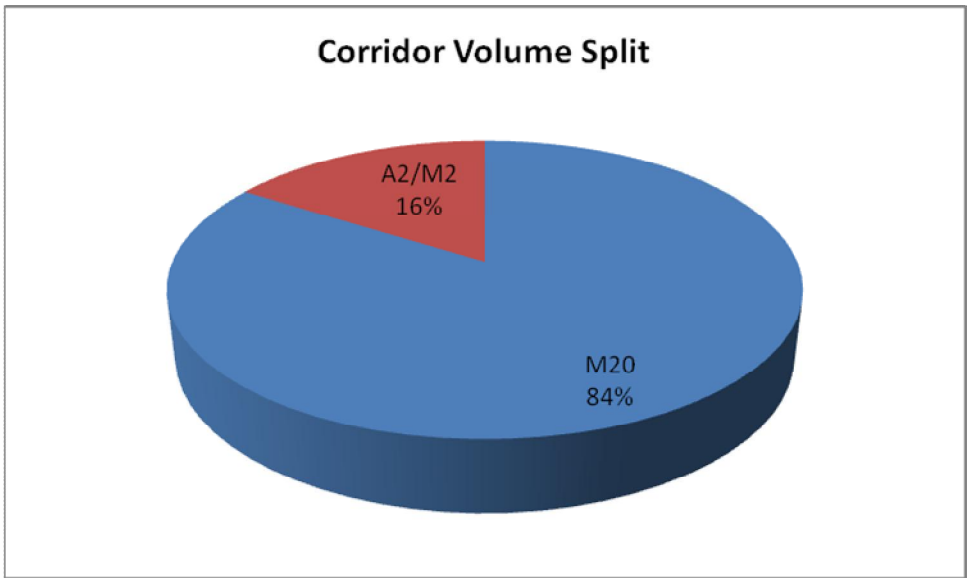


**Figure 4.2 – Traffic Volume Split (Highways Agency TRADS Database)**

Table 4.4 summarises the model outputs and shows the daily overnight parking demand and volumes every 5 years to 2060 for each corridor. Data is available for every year in the model if required. It can be seen that the demand for parking spaces increases between 2014 and 2060 by 330% from around 990 to over 3,300 spaces.

| Road | Year | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M20 | Volume | 6,201 | 7,115 | 8,209 | 9,674 | 11,209 | 13,346 | 15,344 | 16,941 | 18,704 | 20,651 |
| | Demand | 706 | 810 | 935 | 1,102 | 1,276 | 1,520 | 1,747 | 1,929 | 2,130 | 2,352 |
| A2/M2 | Volume | 1,215 | 1,395 | 1,609 | 1,896 | 2,197 | 2,616 | 3,007 | 3,320 | 3,666 | 4,048 |
| | Demand | 287 | 330 | 381 | 449 | 520 | 619 | 711 | 785 | 867 | 957 |
| **TOTAL** | **Volume** | **7,416** | **8,510** | **9,818** | **11,570** | **13,407** | **15,961** | **18,351** | **20,261** | **22,370** | **24,698** |
| **TOTAL** | **Demand** | **994** | **1,140** | **1,315** | **1,550** | **1,796** | **2,138** | **2,459** | **2,714** | **2,997** | **3,309** |

**Table 4.4 – Daily HGV Forecasts**

### 4.3.2 Aggregated Demand Analysis

Figure 4.3 shows the demand forecast graphically, and demonstrates a rapid and increasing growth in volume, the driver primarily being growth at Dover and supported by a consistent 0.5% growth of Channel Tunnel Ro-Ro traffic. Current levels of provision are shown, and it can be clearly seen that current facilities are already full.

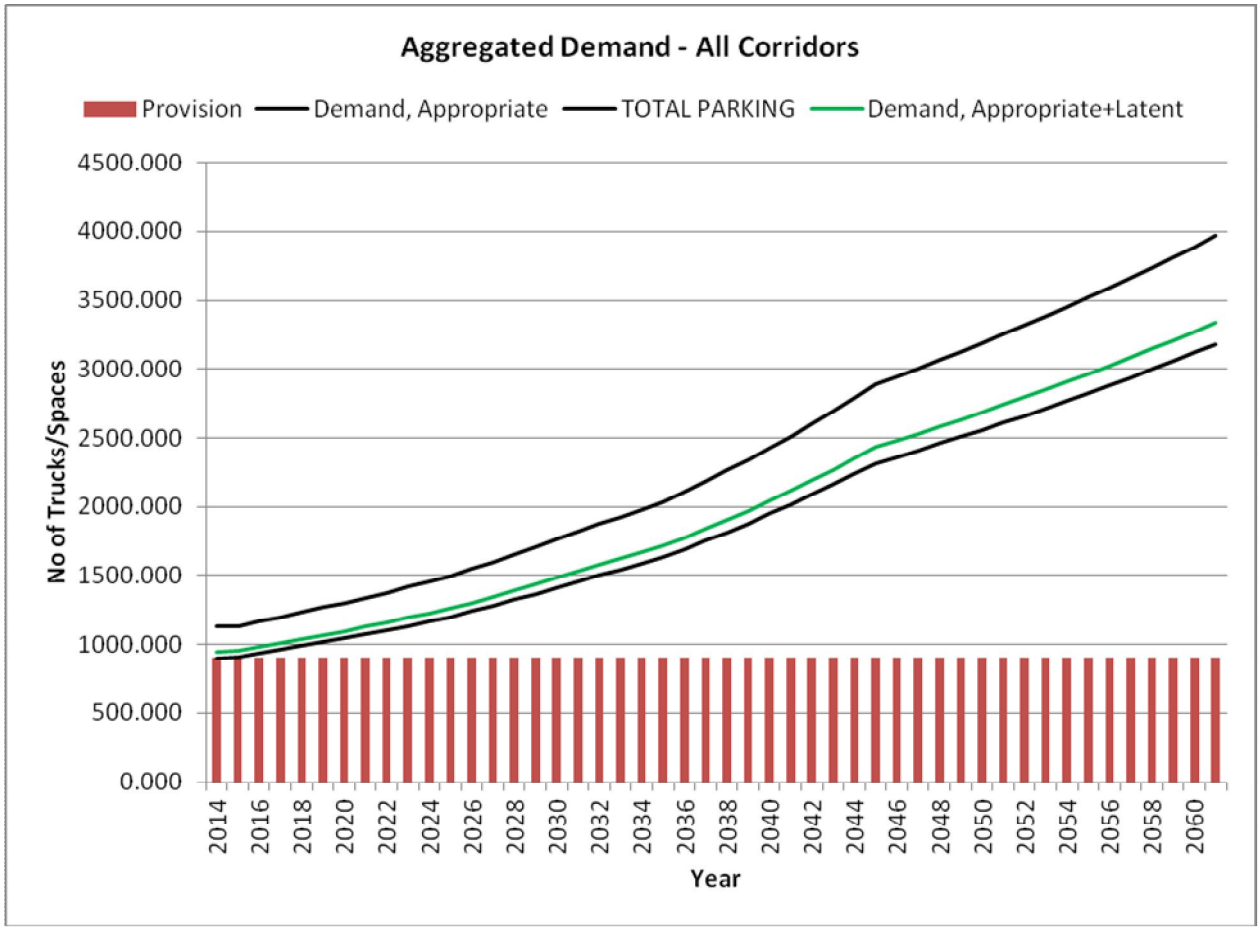


**Figure 4.3 – Aggregated Daily Demand – All Corridors**

Figure 4.4 takes the volume of traffic as a whole to show aggregated demand and provides a plan of future provision to develop the requisite 5 sites envisaged, an average size of 550 spaces is required, which provides 10% capacity above the maximum size for the sites, providing a strong indication of adequate demand to justify the proposed five sites. The model automatically provides a new site when demand gets to within **1**% of provision. It is assumed that there are no competitive factors involved and that demand for the current truck stops does not alter allowing an indicative timetable to be produced.

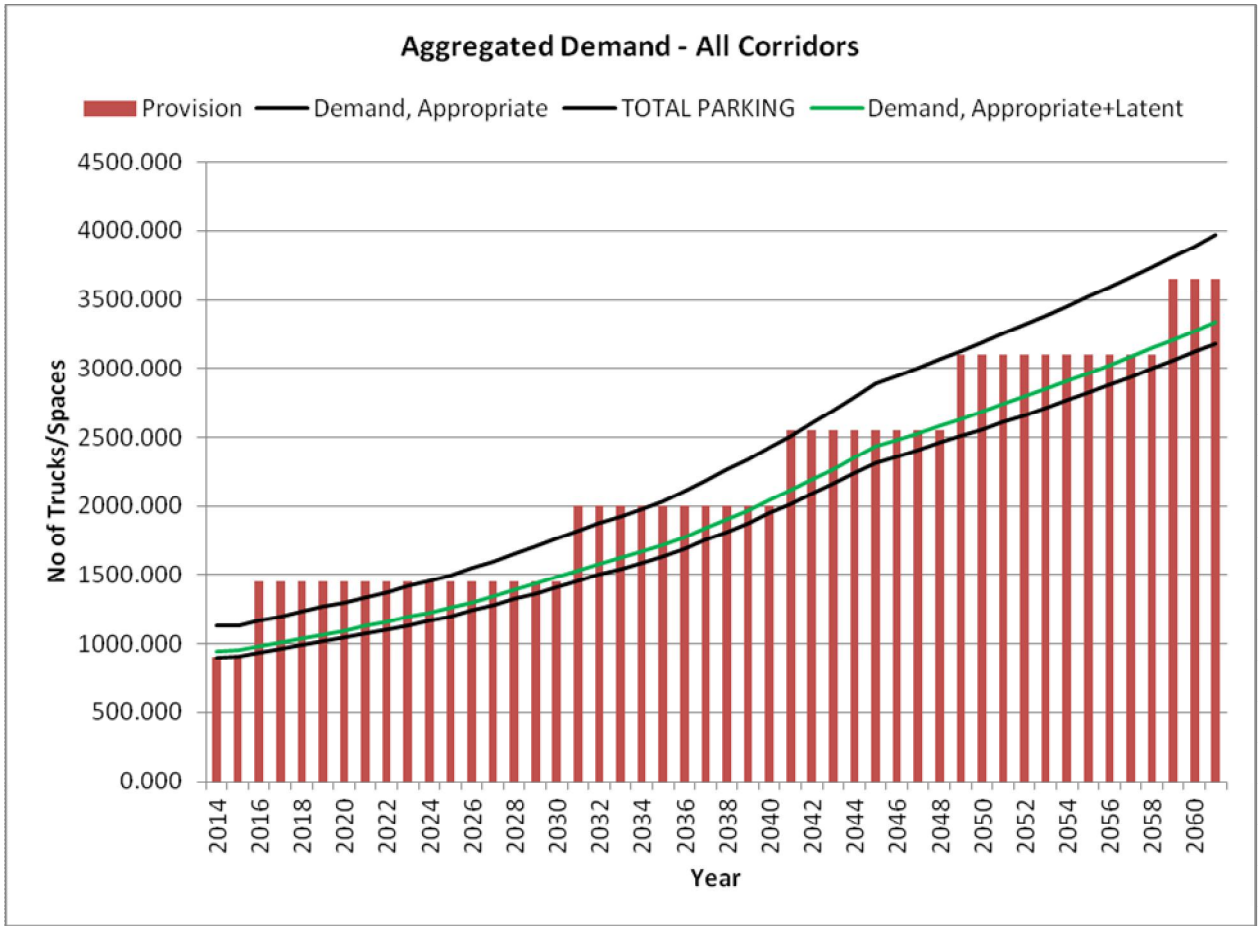


**Figure 4.4 – Aggregated Daily Demand – All Corridors**

## 4.4 Summary

The demand model has provided a forecast that balances robustness with the limitations of information and timescale available. It provides an indication of both the capacity required as well as an approximate timetable, based on an average site capacity that meets the specification of 5 sites. It is apparent that there is an immediate demand for truck parking and this is forecasted to grow at an increasing rate towards 2030.

# Financial Modelling

# 5 Financial Modelling

## 5.1 Introduction

AECOM developed a financial analysis tool for KCC to identify the likely internal rate of return for one or more lorry parks based on the assumptions set out in the preceding chapters and costs estimates for building and operating a lorry park. There are a number of fundamental issues that KCC need to understand in order to make the case for promoting a number of new lorry parks and pursuing the most appropriate method of ownership.

- What is the likely demand and utilisation and how will it change over time? This is set out in chapter 4 and is a key input to the financial model.
- Where, how many and what size of lorry parks are feasible? This needs to take into account the findings in both chapters 2 and 4, and is a key input to the financial model.
- What pricing strategy or other revenue raising mechanisms are feasible? This will be a function of a number of variables, including demand and willingness to pay. The demand and pricing strategy are key inputs to the financial model, estimating likely annual revenue.
- What are the costs of constructing and operating the lorry parks and the desired facilities? This is another key input, noting that there it may be feasible to phase the construction of lorry parks in response to demand.
- What is the annual cash flow? This is based on the above inputs. The financial model calculates the internal rate of return over a specified number of years. This provides a benchmark with which to evaluate the investment, its commercial viability and appropriate methods of ownership.

There are a number of assumptions and caveats that are relevant to this chapter:

- There has been no risk adjustment to the cost and revenue assumptions. Ideally a quantified risk analysis would be undertaken of revenue and costs to examine the impact on the business case.
- There has been no consideration of wider economic or social costs and benefits, as would be the case if putting forward a webTAG compliant business case for investment by the public sector in a transport scheme.
- The assumptions on demand, utilisation, pricing strategy, discount rates, life of lorry park/ operating period and costs are all subject to refinement and sensitivity tests.
- No assumption has been made on asset value at the end of the appraisal period or depreciation.
- No account has been made of the availability of commercial or public sector loans and guarantees or grants. These should, in practice, be based on the business case for a lorry park.

## 5.2 Revenue Derivation

### 5.2.1 Demand and Lorry Park Utilisation

Revenue within the model is derived as a function of truck parking demand, charges, and added value services such as the restaurant or cafe. Chapter 5 sets out the assumptions on demand and utilisation over time. The main driver of revenue relates to overnight lorry parking. Table 5.1 summarises utilisation over 25 years for each site. It should be noted that Year 1 is the first year of operation and not the construction year. The model is set up for a year ‘0’ build year with operations for the next 25 years / next 40 years and closure in year 26 for major refurbishment.

| Year | White Cliffs Business Park 1 | Westenhanger (site behind STOP 24) | Lympne Industrial Estate | Site Adjacent to Ashford Int'l Truck Stop | East of Stanford (site opposite STOP 24) | Site Adjacent to Maidstone MSA | A2/Coxhill Road, Shepherds-well (east) | A2/Coxhill Road, Shepherds-well (west) |
|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 53 | 26 | 26 | 53 | 53 | 16 | 16 |
| 2 | 25 | 81 | 53 | 53 | 81 | 81 | 25 | 25 |
| 3 | 33 | 110 | 81 | 81 | 110 | 110 | 33 | 33 |
| 4 | 42 | 139 | 110 | 110 | 139 | 139 | 42 | 42 |
| 5 | 52 | 170 | 139 | 139 | 170 | 170 | 52 | 52 |
| 6 | 61 | 201 | 156 | 170 | 201 | 201 | 61 | 61 |
| 7 | 71 | 233 | 156 | 201 | 233 | 233 | 71 | 71 |
| 8 | 81 | 265 | 156 | 233 | 265 | 265 | 81 | 81 |
| 9 | 93 | 306 | 156 | 265 | 306 | 306 | 93 | 93 |
| 10 | 106 | 348 | 156 | 306 | 348 | 348 | 106 | 106 |
| 11 | 119 | 391 | 156 | 348 | 391 | 391 | 119 | 119 |
| 12 | 133 | 435 | 156 | 391 | 435 | 435 | 133 | 133 |
| 13 | 147 | 468 | 156 | 435 | 482 | 482 | 147 | 147 |
| 14 | 161 | 468 | 156 | 482 | 529 | 529 | 161 | 161 |
| 15 | 174 | 468 | 156 | 529 | 571 | 571 | 174 | 174 |
| 16 | 187 | 468 | 156 | 571 | 614 | 614 | 187 | 187 |
| 17 | 200 | 468 | 156 | 614 | 659 | 659 | 200 | 200 |
| 18 | 214 | 468 | 156 | 659 | 704 | 704 | 214 | 214 |
| 19 | 232 | 468 | 156 | 704 | 763 | 763 | 232 | 232 |
| 20 | 234 | 468 | 156 | 763 | 824 | 824 | 251 | 251 |
| 21 | 234 | 468 | 156 | 824 | 886 | 858 | 270 | 270 |
| 22 | 234 | 468 | 156 | 858 | 951 | 858 | 290 | 290 |
| 23 | 234 | 468 | 156 | 858 | 1019 | 858 | 310 | 310 |
| 24 | 234 | 468 | 156 | 858 | 1088 | 858 | 331 | 331 |
| 25 | 234 | 468 | 156 | 858 | 1161 | 858 | 353 | 353 |

**Table 5.1– Lorry Park Utilisation over Time. Note, Shepherdwell East is not expected to reach capacity within the life of the forecast**

Demand is calculated using the model from 1 year after construction to the point at which it reaches capacity, whereby growth stops and the site remains full. It is assumed that each site will be built when the previous site reaches 100% capacity. Table 6.1 shows the level of growth for each site, where year 1 is the first revenue generating year, as such years indicate the life of the site, rather than years from 2014.

Assuming that a given site reaches capacity at a faster rate than the assumptions set out above will result in a better NPV and return. These assumptions may also impact on the case for building more than one lorry park. Changing these assumptions, in particular in the early years of operation, can have a substantial impact on the business case.

5.2.2 Pricing Strategy

The pricing strategy assumes a charge structure of:

| | £ per lorry |
|---|---|
| Overnight | £15 |
| Day < 2 hours | Free |

**Table 5.2 – Pricing Strategy**

It is possible to change these assumptions in the model, for example to bring charges in line with those charged elsewhere. This can have a significant impact on the business case.

Charges are not assumed to change over time, although in practice there may be scope to increase them depending on average returns and wages in the freight industry.

5.2.3 Estimated Added Value Services Revenue

The potential revenue that could be generated from the provision of added value services such as a restaurant and shop may be an important consideration. For the purposes of this study AECOM have been relatively modest in their assumptions and have not taken into account potential revenue that would be generated from other provisions such as fuel. However, these may be necessary to build a stronger business case for a given site.

The average additional spend on value added services e.g. in the restaurant, is assumed to be:

| | £ |
|---|---|
| Overnight | £6 |
| Day | £3 |

**Table 5.3 – Average Additional Spend**

This average additional spend is assumed to apply to all lorry drivers, overnight lorry drivers are expected to spend £6 each with daytime drivers spending much less – around £3 on sundries such as drinks or newspapers. Revenue within the model is therefore the level of overnight demand multiplied by overnight fees added to day time drivers multiplied by daytime fees.

## 5.3 Costs

5.3.1 Introduction

When modelling development projects, there are a number of key components that need to be considered within the model. These are:

- Capital Costs
- Operating Costs
- Maintenance Costs

The following section looks at these in turn, highlighting the method of estimation nd any assumptions and limitations the estimates have in this high level model.

5.3.2 Capital Costs

Capital costs are items such as land purchase, design and construction and facilities.

*Purchase/Lease Property Costs*

Due to reasons of confidentiality regarding site assessment it has not be advisable to do a detailed investigation into specific land plot values. For the purposes of this project we have taken an overall agricultural land value for the area derived from a range of sources of £17,500/ha. A higher rate of £920,000/ha has been applied to the two sites that are located in areas where industrial usage is permitted, again derived from a range of general sources – these site are 56 Lympne Industrial Estate and 57 Dover

White Cliffs. This rate has also been applied for the sake of argument at site 6 adjacent to Ashford truckstop where it is believed an uplifted land value will apply.

| Site ID | Name/Description | Located On | Nearest Trunk Road/ Junction | Authority/ District | Size (Ha) | Number of Truck Parking Spaces | Land Value Estimate £m |
|---|---|---|---|---|---|---|---|
| A2/M2/A2 Corridor | | | | | | | |
| 57 | White Cliffs Business Park 1 | A2 | A2/A256 | Dover | 3 | 234 | 2.75 |
| 21 | A2/Coxhill Road, Shepherdswell (east) | A2 | A2 | Dover | 24 | 1,872 | 0.42 (agricultural land) |
| 20 | A2/Coxhill Road, Shepherdswell (west) | A2 | Coxhill Rd | Dover | 4 | 312 | 0.12 (agricultural land) |
| M20/A20 Corridor | | | | | | | |
| 8 | Westenhanger (site behind STOP 24) | M20 | J11 M20 | Shepway | 6 | 468 | 0.105 (agricultural land) |
| 56 | Lympne Industrial Estate | M20 | B2067 | Shepway | 2 | 156 | 1.8 |
| 6 | Site Adjacent to Ashford Int'l Truck Stop | M2070 | J10 M20 | Ashford | 11 | 858 | 10.1 |
| 12 | East of Stanford (site opposite M20 from STOP 24) | B2068 | J11 M20 | Shepway | 16 | 1248 | 0.28 (agricultural land) |
| 5 | Site Adjacent to Maidstone MSA, Hollingbourne | M20 | J8 M20 | Maidstone | 11 | 858 | 0.2 (agricultural land) |

**Table 5.4 – Land Value Estimates by Site**

It has been assumed that the land will be purchased (if it is not already in KCC's ownership). This will be a one off payment that will need to be set against the projected revenue of the lorry park in the future.

5.3.3 Construction Costs

The site development, infrastructure and security costs have been estimated for the potential sites, based on reports from quantity surveyors for a number of existing truck parks, taking into account relative sizes of the candidate sites. Cost estimates include earthworks, site clearance, and surfacing, with prices factored up to current values..

With regards to security, the estimates assume a minimum best standard based on our previous research. This includes secure site access, CCTV and security staff.

An additional 20% contingency has been assumed to cover sensitivity in pricing as well as risk, with a full engineering assessment yet to be carried out at the sites. As such, the model aims to provide the 'worst case' in terms of capital costs.

There may also be considerable professional services costs, dependent on what services are required. The following are likely to be required:

- Architectural services;
- Planning Permission and associated fees;
- Structural Engineers; and
- Contractor & Project Manager.

Though these costs will be individually tendered, for the purposes of this study the costs for these services have been assumed and factored into the infrastructure and equipment costs.

5.3.4 Operational Costs

Operational costs are incurred when the facilities are open including utilities, labour, tax and insurance and must be accounted for in the outline financial analysis. Table 5.5 provides a full breakdown of operating costs used. As the sites are likely to be of a similar size, it has been assumed that they will be the same across all candidate sites are bespoke to each site and therefore carry a degree of uncertainty and as such as indicative.

| Component | Cost |
|---|---|
| Management fees | £65,000 |
| Security/Labour | £230,000 |
| Electricity | £70,000 |
| Gas | £1,500 |
| Gardening | £4,500 |
| Maintenance & repair | £28,000 |
| Marketing | £74,000 |
| Vehicle Wash | £1,000 |
| Restaurant Building | £5,000 |
| Restaurant Fixtures & Fittings | £5,000 |
| Taxes | £13,000 |
| Insurance | £9,000 |
| Accounting | £14,000 |
| Other (Contingency) | £65,000 |

**Table 5.5 – Operating Costs**

A further complication exists in that many of these costs are dependent on the operational model of the truck stop, as such the model only seeks to evaluate the commercial case for a truck park irrespective of its operational model

*Staff*

Operational staff costs will be determined by the level of security and the additional services provided. Taking these into consideration, a forecast budget for staff shall be estimated in the outline financial analysis. Furthermore, staff may also require relevant training (e.g. health and safety).

*Associated Taxes & Insurances*

As well as those costs discussed above, it will also be necessary to consider the relevant local/national taxes and insurances. The following should be considered as a minimum:

- Business rate;

- Staff taxes;
- Public liability taxes;
- Contents insurance; and
- Buildings insurance.

Such taxes and insurances have been factored into the business case but should be amended when the correct rates have been determined.

Table 5.6 shows the average costs for each site over 25 and 40 years.

| | | | | Average Annual | |
|---|---|---|---|---|---|
| Site | Development Year | Life | Capital Cost | Revenue | Op + Main Costs |
| 57 | 2016 | 25 | £ 7,455,494 | £ 1,032,785 | £ 686,159 |
| 57 | 2016 | 40 | £ 2,349,247 | £ 1,302,265 | £ 720,022 |
| 21 | 2016 | 25 | £ 26,586,739 | £ 1,149,204 | £ 690,422 |
| 21 | 2016 | 40 | £ 13,083,369 | £ 1,993,281 | £ 723,304 |
| 20 | 2016 | 25 | £ 8,713,480 | £ 1,149,204 | £ 750,998 |
| 20 | 2016 | 40 | £ 4,297,240 | £ 2,039,008 | £ 761,164 |
| 8 | 2016 | 25 | £ 7,880,245 | £ 2,563,752 | £ 687,598 |
| 8 | 2016 | 40 | £ 3,887,623 | £ 2,834,037 | £ 721,539 |
| 56 | 2016 | 25 | 5,230,783 | £ 1,179,684 | £ 804,943 |
| 56 | 2016 | 40 | £ 3,887,623 | £ 2,834,037 | £ 721,539 |
| 6 | 2016 | 25 | £ 22,999,939 | £ 3,538,412 | £ 705,233 |
| 6 | 2016 | 40 | £ 6,445,470 | £ 4,617,092 | £ 760,130 |
| 12 | 2016 | 25 | £ 18,279,798 | £ 3,775,542 | £ 722,844 |
| 12 | 2016 | 40 | £ 8,999,899 | £ 5,843,812 | £ 758,669 |
| 5 | 2016 | 25 | £ 13,083,439 | £ 3,538,412 | £ 660,891 |
| 5 | 2016 | 40 | £ 6,445,470 | £ 4,617,092 | £ 714,963 |

**Table 5.6 – Average Cost per Site**

### 5.4 Other Costs and Benefits

The analysis in this section is based on the commercial viability of additional lorry parks in Kent. However, there are wider costs and benefits that are likely to accrue but which would not be taken into account by a private operator seeking to make an investment decision. The Kent Multi-facility Lorry Park Scoping Strategy (2007)[4] undertook economic impact analysis to estimate a cash equivalent benefit to society resulting from the provision of sufficient overnight lorry parking capacity in Kent and a well managed off-highway alternative to Operation Stack. Whilst the analysis indicated it did not include all the likely benefits and costs, it suggested that first year benefits would be in the order of £2.5m and a £77m benefit (in 2004 prices) over a 30 year time frame. These benefits took into account impacts on local businesses, policing costs, and congestion.

There are likely to be broader socio-economic costs and benefits involved in the construction and operation of new lorry parks in Kent.

[4] A report by AECOM for the Department for Transport and Highways Agency

# Modelling Outcomes

# 6 Modelling Outcomes

## 6.1 Introduction

This section sets out the results of the financial model runs for the various sites. We also examine the results to identify a possible single 'priority site' meriting KCC's further careful attention.

This analysis is based on a snapshot of each of the sites being built in 2016 and not on the basis of the sites being built on a sequential basis, although the financial model can be adjusted to reflect the latter.

The financial model calculates annual revenue and costs based on assumptions regarding demand, lorry park utilisation, pricing strategy and lorry park costs. The financial analysis is based on estimating cash flow as a function of these, the rate of return and the present value. A 25 and a 40 year time period has been assumed. If necessary, different time periods could be investigated.

The model then determines the **Internal Rate of Return** (or economic rate of return). This is in effect the discount rate that makes the net present value of the cash flows equal to zero. It provides an indication of the efficiency of the investment, which can be compared to the rate of return from other investments and a minimum acceptable rate of return, which will vary by operator, sector and appetite for risk. This can be used as the basis for determining and how and whether to take forward the investment and the most appropriate ownership model.

A **Net Present Value** for the investment is also calculated, providing an estimate of the magnitude of the return. As the construction and operation of the lorry parks is potentially a commercial venture, the social discount rate of 3.5% (3% after 30 years) cited in the Green Book may not be appropriate. Instead, the rate should reflect the potential commercial returns by operators in the market place facing a similar level of risk. This can be assumed to be somewhere between 5 – 10% (7.5% is assumed in the model, but can be changed), although a higher value may be appropriate if cost and revenue risks are considered to be particularly high.

It is important to note that within this commission AECOM is not giving investment advice. The truck park assessments as set out in this report are based on a series of assumptions as set out in the report and associated technical notes and as agreed between AECOM and Kent County Council. The outcome of assessments are directly driven by the assumptions and the data used for the assessments and subject to uncertainty. Whilst the uncertainty of the assessments can be the subject of a risk analysis, the remit of this work does not include undertaking of risk analysis.

## 6.2 Model Outputs

Table 6.1 gives the Internal Rate of Return (IRR) and Net Present Value (NPV) outputs of the model taking into consideration a 25 and 40 year investment horizon. It can be seen that across sites and between the 25 year and 40 year investment horizons there is a large variation in both IRR and NPV. In broad terms the higher the IRR and NPV the better the investment is likely to be.

| | | | | Average Annual | | | |
|---|---|---|---|---|---|---|---|
| Site | Development Year | Life | Capital Cost | Revenue | Op + Main Costs | IRR | NPV |
| 57 | 2016 | 25 | £ 7,455,494 | £ 1,032,785 | £ 686,159 | 1.14% | -£5,674,868.34 |
| 57 | 2016 | 40 | £ 2,349,247 | £ 1,302,265 | £ 720,022 | 3.84% | -£4,616,436.21 |
| 21 | 2016 | 25 | £ 26,586,739 | £ 1,149,204 | £ 750,998 | -3.66% | -£23,598,536.29 |
| 21 | 2016 | 40 | £ 13,083,369 | £ 2,039,008 | £ 761,164 | 1.21% | -£21,994,054.49 |
| 20 | 2016 | 25 | £ 8,713,480 | £ 1,149,204 | £ 690,422 | 1.60% | -£6,366,252.97 |
| 20 | 2016 | 40 | £ 4,297,240 | £ 1,993,281 | £ 723,304 | 5.59% | -£3,621,719.08 |
| 8 | 2016 | 25 | £ 7,880,245 | £ 2,563,752 | £ 687,598 | 13.45% | £7,835,325.70 |
| 8 | 2016 | 40 | £ 3,887,623 | £ 2,834,037 | £ 721,539 | 13.94% | £10,553,299.21 |
| 56 | 2016 | 25 | 5,230,783 | £ 1,179,684 | £ 804,943 | 5.65% | -£896,444.29 |
| 56 | 2016 | 40 | £ 3,887,623 | £ 2,834,037 | £ 721,539 | 13.94% | £10,553,299.21 |
| 6 | 2016 | 25 | £ 22,999,939 | £ 3,538,412 | £ 705,233 | 7.15% | -£1,073,053.73 |
| 6 | 2016 | 40 | £ 6,445,470 | £ 4,617,092 | £ 760,130 | 8.79% | £5,614,663.58 |
| 12 | 2016 | 25 | £ 18,279,798 | £ 3,775,542 | £ 722,844 | 8.98% | £4,167,909.54 |
| 12 | 2016 | 40 | £ 8,999,899 | £ 5,843,812 | £ 758,669 | 10.82% | £14,537,439.97 |
| 5 | 2016 | 25 | £ 13,083,439 | £ 3,538,412 | £ 660,891 | 11.15% | £8,151,597.43 |
| 5 | 2016 | 40 | £ 6,445,470 | £ 4,617,092 | £ 714,963 | 12.26% | £14,804,105.63 |

**Table 6.1 – IRR and NPV Model Outputs**

A comparison of M20 corridor sites is provided in the next section. It is noted from the above table that the M2 corridor sites (57, 21, 20) do not show very positive financial outcomes at this stage of the analysis. However, changes in pricing point (say increasing the parking fee from £15 to £20 or £25) has a significant effect. For example an uplift in fee to £25 for site 57 yields over a 40 year horizon a positive NPV and IRR of 7.75%. Similarly an uplift in demand, say for example from drivers utilising the M20 route but willing to divert the reasonably short distance to the M2/A2 corridor sites near Dover, would again change the financial outcomes. For these sites it should be noted that the demand model does not account for 'switching' to an alternative corridor in search of good overnight parking.

Figures 6.1-6.8 show the results of each site in terms of revenue, costs and cash flow. Construction costs have not been included on the charts.

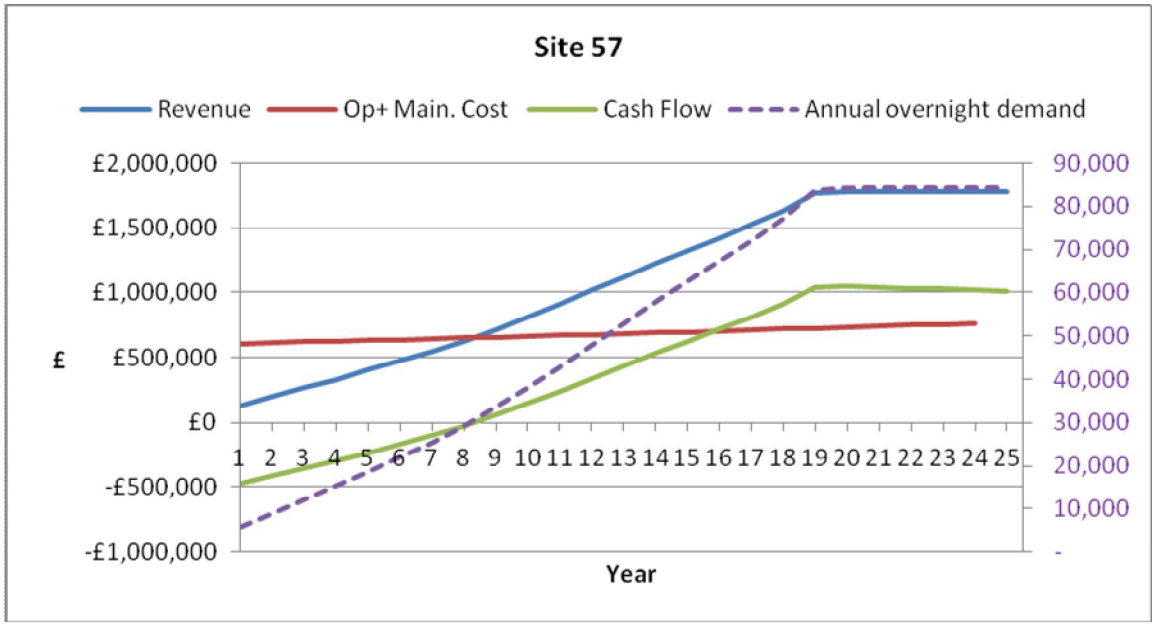


**Figure 6.1 – Site 57**

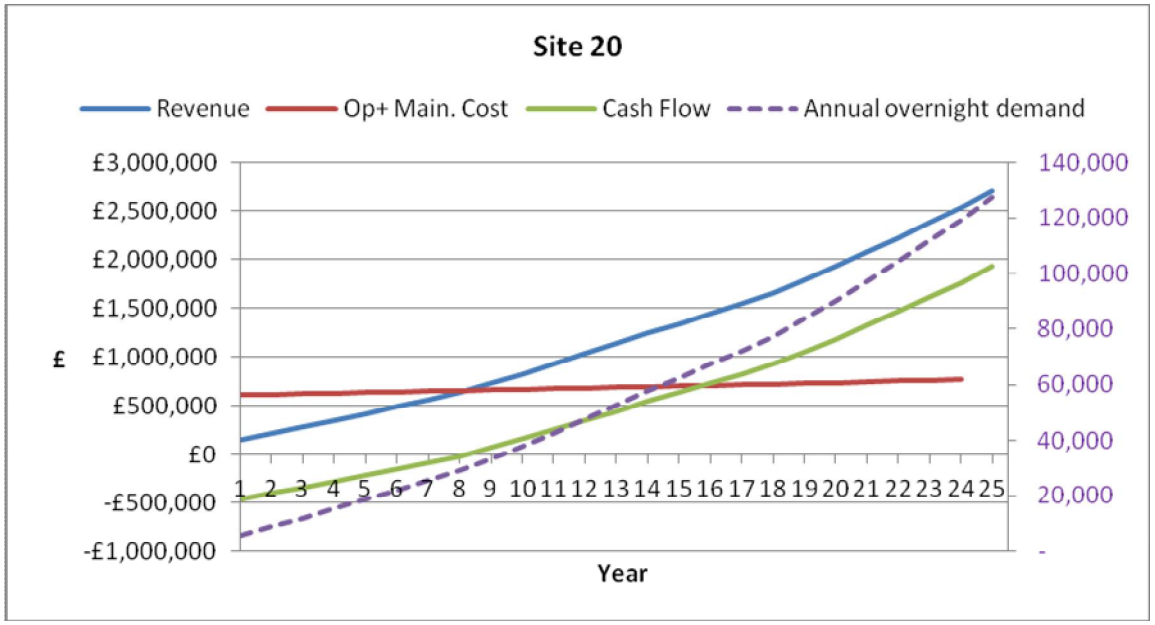


**Figure 6.2 – Site 20**

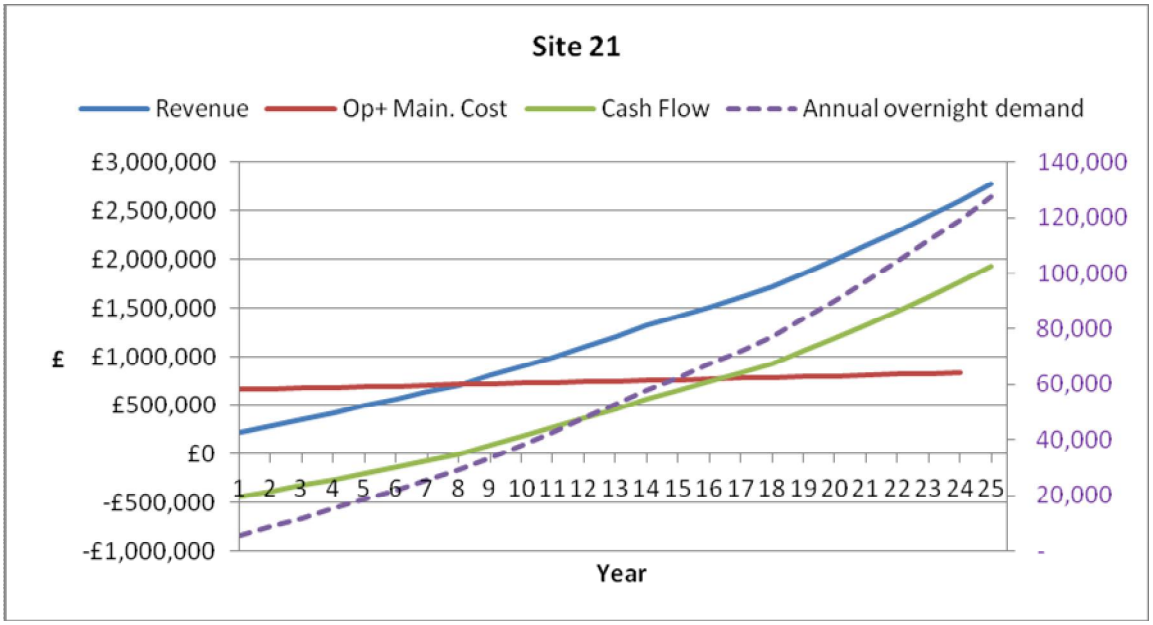


**Figure 6.3 – Site 21**

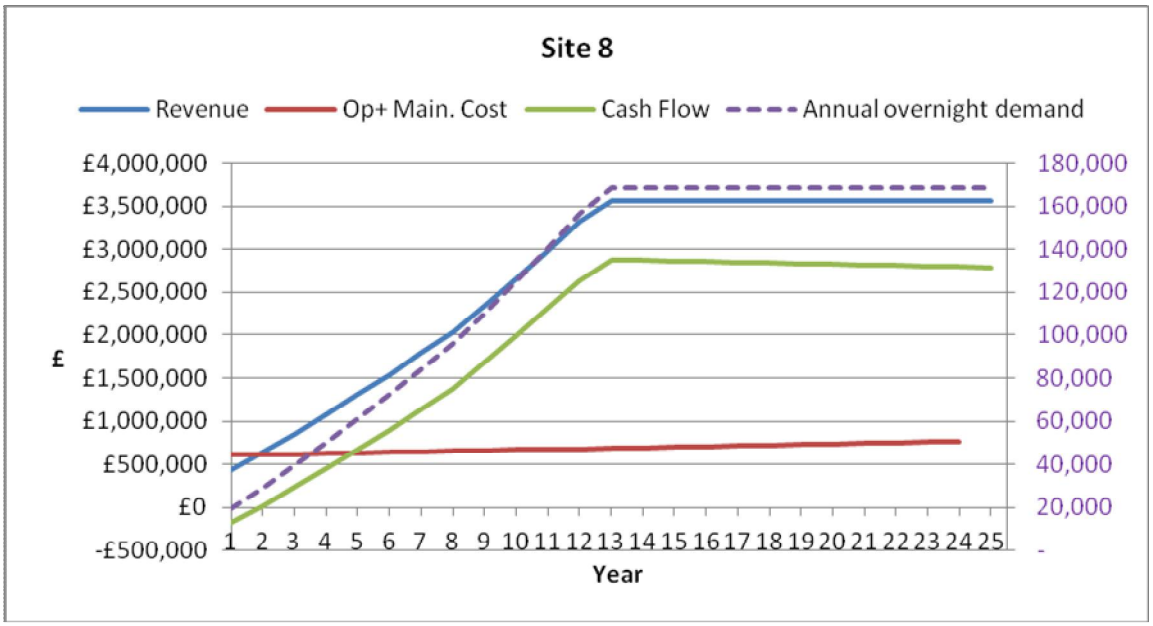


**Figure 6.4 – Site 8**

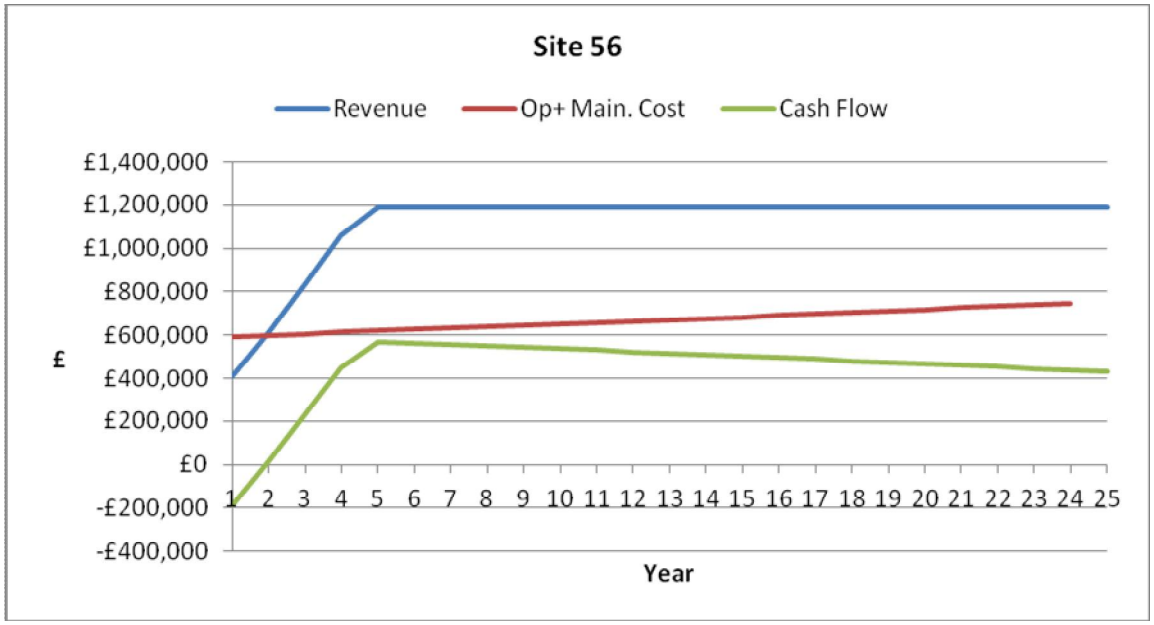


**Figure 6.5 – Site 56**

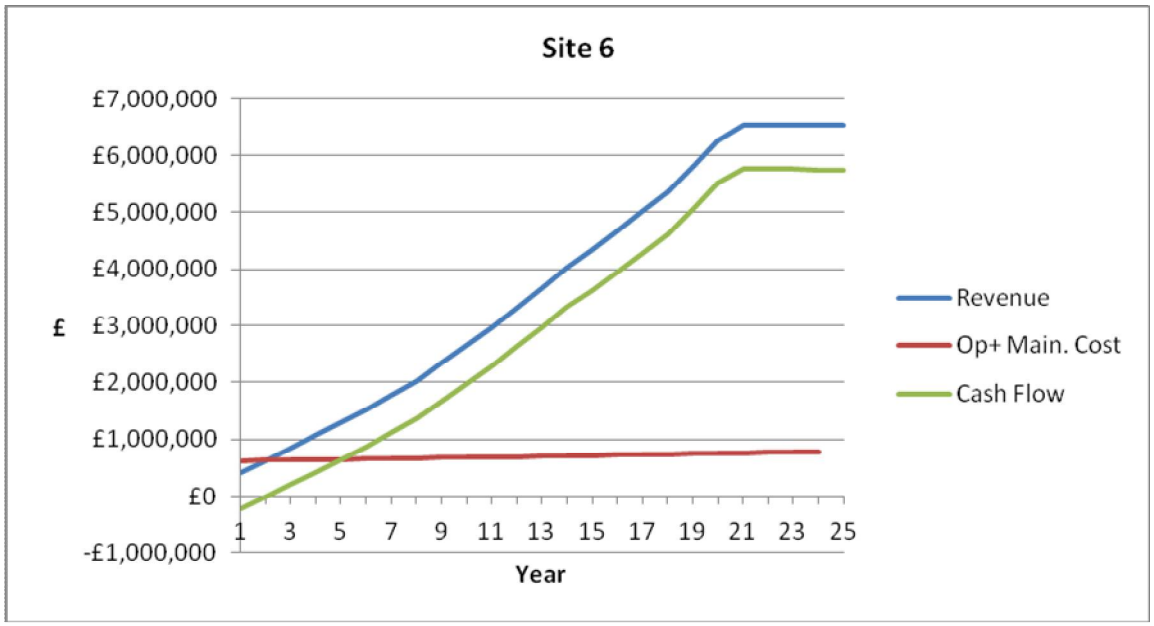


**Figure 6.6 – Site 6**

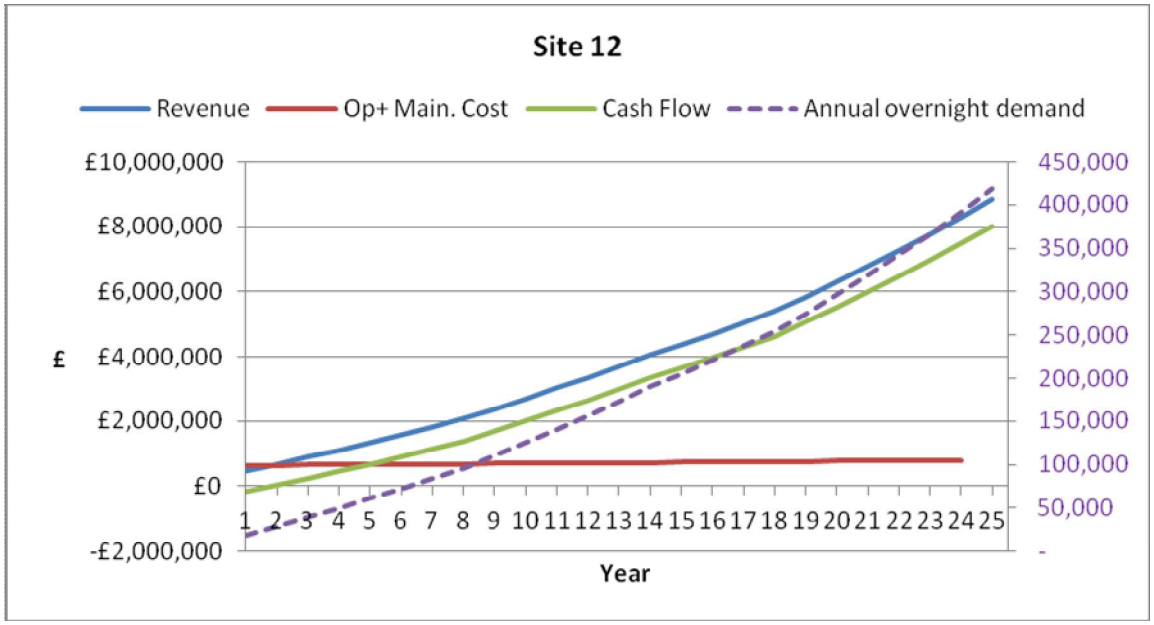


**Figure 6.7 – Site 12**

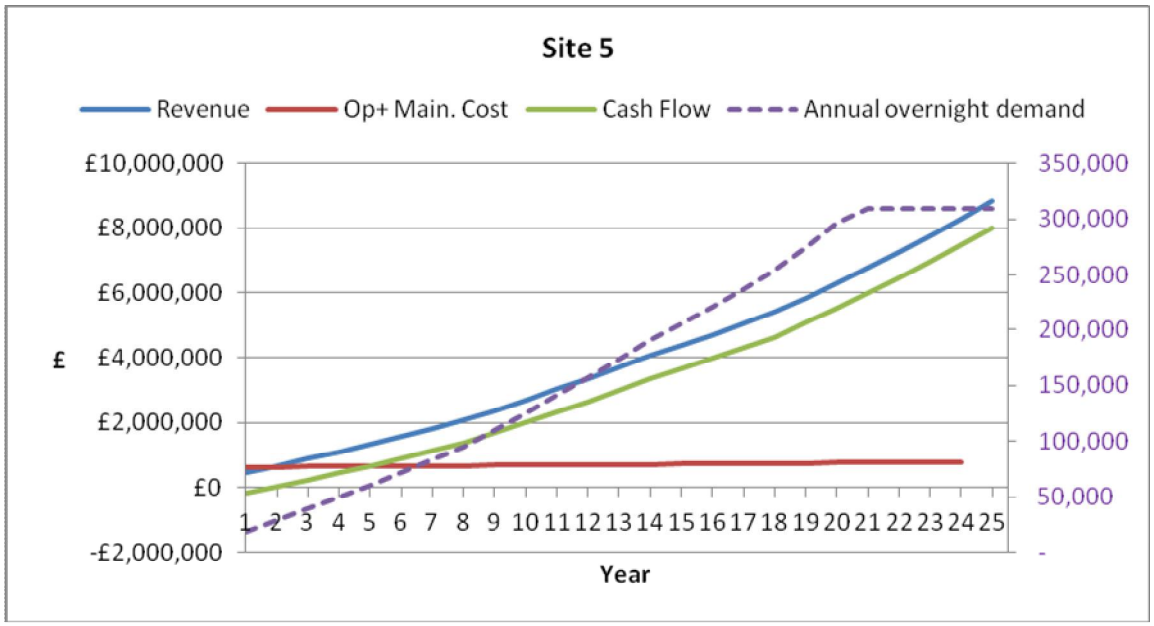


**Figure 6.8 – Site 5**

### 6.3 Single Site Recommendation for the M20 corridor

The study team has been directed by KCC to identify a single M20 corridor site that may be taken forward as the prime site for further investigation.

Having undertaken the overall site assessment process to determine preferred sites on the two corridors in terms of transport and site characteristics, environmental and planning considerations and having performed the financial assessment to determine the most attractive sites in a commercial sense it is possible to provide some commentary on what may be considered to be the most appropriate single site to consider for possible development. This can be viewed as the 'priority site' meriting KCC's further careful attention as well as the first of a series of developments as part of a strategy to secure truck parking capacity as demand builds to the 2060 horizon.

In the process of recommending a single site we rely on the outcomes of the original site assessment ranking detailed in full in the Site Assessment Report and the financial modelling (specifically Internal Rate of Return and Net Present Value) set out in this report, and we apply the study team's professional judgement based on our understanding the current and future situation in Kent with respect to the issues of high volumes of international freight traffic transiting the County. In this respect we provide a further qualitative narrative to help support our recommendation based around the following wider issues for consideration:

| Qualitative Aspect | Comment |
|---|---|
| Environment aspects – are there no significant aspects? | The absence of significant and specific concerns on environmental aspects such as effect on the setting, proximity to ancient woodland and so on is a very positive attribute for a site. |
| Scale-ability – can the site be expanded in the future? | The degree to which the sight many be 'built-out' over a period of time, depending on actual demand, capacity provided by other sites and so on.<br><br>Current and future Motorway Junction capacity is also an important consideration here. |
| Use for Operation Stack – could the site have a possible role in a Stack event? | A larger site can have potential to provide space for trucks during a Stack event, providing a further pre-assembly or buffer zone delaying or preventing a phase II event being called. To maximise its use for this it would be best located directly on the M20 west of the Eurotunnel Terminal. |
| Proximity to existing sites – is the site co-located with an existing one? | A site that is adjacent to an existing facility has specific advantages in that the construction of new facilities may not be immediately needed and indeed the current operators may be interested in developing the site.<br><br>In addition separate but co-located sites may be advantageous in terms of competitive pricing and where one park is full the truck driver does not have to travel far to the alternative site. |

**Table 6.2 – Wider Issues for Consideration**

Additionally, the availability of the actual land to buy or lease must ultimately play a significant part in determining the development potential of a site. This has not been a feature of the study team's current commission and therefore is not commented on. The Council's powers of compulsory purchase may come into play here, but this will be determined by the ultimate operational model adopted.

6.3.1 Single Site Ranking and Supporting Narrative

Table 6.3 sets out the ranking of sites according to the order of the overall site assessment ranking, the IRR and the NPV. Please note that this ranking does not correlate with the site assessment ranking as it also takes into consideration the outcomes of the financial model (IRR and NPV).

| Rank order | Overall assessment ranking | IRR | NPV |
|---|---|---|---|
| 1st | Site 8 – Westenhanger (site behind STOP 24) | Site 8 - Westenhanger (site behind STOP 24) | Site 5 - Site Adjacent to Maidstone MSA, Hollingbourne |
| 2nd | Site 56 - Lympne Industrial Estate | Site 5 - Site Adjacent to Maidstone MSA, Hollingbourne | Site 8 – Westenhanger (site behind STOP 24) |
| 3rd | Site 6 - Site adjacent Ashford Int'l Truck Stop | Site 12 - East of Stanford (site opposite M20 from STOP 24) | Site 12 - East of Stanford (site opposite M20 from STOP 24) |
| 4th | Site 12 - East of Stanford (site opposite M20 from STOP 24) | Site 6 - Site adjacent Ashford Int'l Truck Stop | Site 56 - Lympne Industrial Estate |
| 5th | Site 5 - Site Adjacent to Maidstone MSA, Hollingbourne | Site 56 - Lympne Industrial Estate | Site 6 - Site adjacent Ashford Int'l Truck Stop |

**Table 6.3 – Site Ranking by Overall Site Assessment, IRR and NPV**

Whilst in reality the actual differences in any one site's overall rank and financial outcome may not be huge, the table does provide a useful comparison 'snapshot' to help determine a single site. It can be seen in terms of financial outcome sites 8 and 5 might be judged to be of equal standing. Indeed site 5 is large, adjacent to the existing motorway MSA with the potential to assist with a Stack operation. However, there may be concerns about the effect on the setting of the North Downs AONB and the site is within 1Km of a local wildlife site and ancient woodland.

Site 56 Lympne Industrial Estate is well ranked in the overall general assessment. It does have some archaeological interest but does enjoy outline planning permission for B1,2 and 8 uses. The site is large but being somewhat off the 'mainline' may have limited uses in a Stack situation. The site is less well regarded in terms of its financial outcomes with a negative NPV in the 25 year time horizon.

Site 6 adjacent to the current Ashford Truck stop is mid-placed in the overall assessment ranking and somewhat lower down the financial scale. For the purposes of our modelling we have judged this plot of land to be costly to acquire. However the site should not be ignored as the current operator of Ashford Truck stop may be interested in expanding operations at this or another site. If this is done on site then expansion costs would be less than building a new site from scratch.

Finally, our appraisal exposes site 8 Westenhanger near to Stop 24 as the favoured option both in terms of the general and the financial assessment. It is large and may benefit from being able to share facilities with the existing Stop 24. It is well positioned on Junction 11 for both Dover and Eurotunnel traffic and could therefore play a role in Stack. Furthermore, when capacity is exhausted, site12 on the opposite site of the M20 could provide the next parking opportunity in what could become a clustered zone of parking facilities.

## 6.4 Summary

In this section we have sought to identify the financial attributes of the 8 selected sites, using Internal Investment Return and Net Present Value as key metrics. We show revenue, costs and cash flow against demand over a 25 year period. Utilising the outcomes of the financial assessment, the ranking process of the earlier overall site assessment process and through the application of profession judgement against a range of relative parking related issues, AECOM considers that site 8 Westenhanger at M20 Junction 11 represents the single site on the M20 corridor to be taken forward as the prime site for further

investigation. Further work on site specific demand modelling and corresponding financial modelling including grant and loan scenarios is detailed in the Phase 2 Kent Lorry Parks Feasibility Study Report.