Kent International Gateway – Rail Report

Final Report

by

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1. INTRODUCTION

MDS Transmodal have been retained by AXA and DMI Properties since 2004 to provide advice on the development of a new rail linked logistics park near Hollingbourne (Kent International Gateway). The main purpose of this document, the *Rail Report*, is to 'present the case' for Kent International Gateway (KIG) by demonstrating that it is an appropriate site for hosting rail linked logistics facilities. The document is broadly structured as follows:

- Describing the policy case for rail linked logistics parks in general and for the Kent International Gateway development in particular (Section 2);
- Presenting a criteria based approach to identifying and assessing potential sites for rail linked logistics facilities together with the rationale behind the criteria (Section 3);
- An assessment of the Kent International Gateway site using the criteria based approach, demonstrating that it fully meets the criteria for an appropriate site (Section 4);
- The production of forecasts of traffic likely to be generated by the development (Section 5); and
- An assessment of potential alternative sites in the wider South East region using the criteria based approach (Section 6).

In assessing the KIG site against the criteria, this document presents a detailed analysis covering the 'planning' and 'commercial' need criteria, namely:

- Outlining the policy background that promotes rail linked sites;
- An analysis of market need, demonstrating that there is clear and strong demand for the proposed development; and
- Showing that this need cannot be met through existing capacity or at other potential rail linked sites.

Assessments of the KIG site against the remaining criteria are detailed in a number of accompanying 'technical' reports/documents. A summary of such assessments are provided in this document at the relevant location, along with a reference to the accompanying technical report, in order to present the complete assessment, thereby demonstrating that the KIG site fully meets the criteria for an appropriate site for rail linked logistics facilities.

1.2 The Logistics Market: Background Context

The logistics supply chain essentially consists of four different types of organisation. These are:

- Manufacturers/producers – produced finished goods for sale to either a retailer or supplier
- Suppliers – these organisations essentially buy finished goods before selling them on to retailers. However, suppliers are increasingly the UK distribution arm of an overseas manufacturer/producer.
- Retailers – organisations that sell goods to the general public either sourced direct from a manufacturer/producer or from a supplier
- Logistics operators – the organisations who undertake the movement and handling of goods on behalf of the above three organisations

Linking the first three organisations is the fact that they actually own the goods they ship out or receive in. Logistics operators are simply 'custodians' of goods while they are being moved and handled on behalf of the other three organisations.

The 'hub' of most medium to large sized logistics operations is the distribution centre, of which there are basically two types. *National Distribution Centres (NDC)* act as inventory holding points for imported and nationally sourced goods, before re-distribution to other stages in the supply chain. They are termed 'national' because they serve the whole of the UK from the one site. They are normally associated with suppliers to the retail industry, particularly importers of consumer goods e.g. electrical goods, beers/wines/spirits and clothing, who require facilities to consolidate goods from multiple origins (increasingly deep sea container ports) before re-distribution to either a Regional Distribution Centre (RDC) or direct to an end user (retail outlet).

Regional Distribution Centres (RDC) are similar to NDCs in that they receive, hold and then re-distribute goods to other stages in the supply chain, normally multiple retail outlets. However there are a number of important differences. They have a regional hinterland e.g. South East. More importantly their primary role is to consolidate and re-distribute goods in shorter periods of time, rather than acting as inventory holding locations. Consequently dwell times are much shorter at an RDC. Normally, goods are received in 'bulk' from suppliers' NDCs or direct from manufacturers, and then split into smaller consignments for re-distribution in mixed loads i.e. with other smaller consignments, often within 24-48 hours. RDCs will therefore receive inward goods from a larger number of origins, where as a NDC will generally have fewer sources of supply. They are therefore normally associated with retailers.

Some retailers will also have NDCs alongside a network of RDCs. A NDC associated with a retailer is generally holding slower moving lines (seasonal items such as garden furniture,

Christmas trees etc.) or goods with long supply lead times (such as DVD players manufactured in Taiwan).

Generally, flows of goods along the supply chain will follow one of four patterns:

- Manufacturer/Port to Supplier's NDC to Retailer's RDC to retail outlet
- Manufacturer/Port to Retailer's NDC to Retailer's RDC to retail outlet
- Manufacturer/Port to Retailer's NDC to retail outlet
- Manufacturer/Port to Retailer's RDC to retail outlet

The transport of goods between manufacturers/ports, NDCs and RDCs is normally undertaken using 'pallets'. These are flat wooden frames upon which goods can be stacked 1-2m high. A standard pallet measures 1.2m x 1.0m. The use of pallets enables goods to be transferred between HGV/container and storage racks in NDCs/RDCs efficiently and quickly using forklift truck equipment. Deliveries of goods from NDC/RDC to retail outlets is often undertaken using 'roll cages'. These are metal cages with wheels into which goods can be stacked. They generally measure about 0.8m long x 0.7m wide and are around 1.8m tall, through retailers will often use bespoke equipment to match the products handled. The ability to wheel roll cages to/from HGVs allows efficient and speedy deliveries at store. Clothing retailers will also used wheeled clothes rails.

Where possible, logistics operators will transport goods along the above described supply chains in full HGV sized loads (most efficient method of transport). At NDCs, therefore, goods will be received in 'bulk' from manufacturers in such unit loads, increasingly in 40ft maritime containers from the deep sea origins or 13.6m/45ft intra European containers. Similarly, flows from a NDC direct to a retail outlet will generally only occur when there is sufficient traffic to fill a full size HGV. Otherwise, goods are shipped from NDCs to RDCs in full HGV loads, where they split into smaller consignments for re-distribution in mixed loads of HGV size i.e. with other smaller consignments, often within 24-48 hours.

1.3 The Case for Rail Linked Logistics Parks

The case for rail linked logistics parks, ahead of road only connected developments, can essentially be made using economic and service quality arguments. Briefly, access to reliable and cost competitive rail freight services is becoming a key commercial requirement of the logistics industry. The development of rail linked logistics parks is a crucial component in meeting this requirement. In addition, the development of rail parks satisfies the aims and objectives set out in policy at a national and regional level. New warehousing should be rail linked, rail linkage promotes modal shift and can also deliver significant wider environmental benefits e.g. reduced congestion, lower emissions etc.

Road haulage is the dominant mode of transport in the general cargo and Fast Moving Consumer Goods (FMCG) sectors. The road haulage industry has, to date, provided the

cost efficiency, quality and flexibility required by the logistics market, primarily a result of road haulage being an open, competitive private sector industry.

The relative costs of transporting goods by road, however, has been increasing, and this trend is likely to continue over the medium to long term. This is due to a combination of EU/Government policy initiatives and other factors such as rising fuel prices, congestion and shortages of qualified HGV drivers. In the longer term, distance based road charging, which takes into account congestion and the wider environmental costs of road transport, is likely to further erode the competitive position of the road haulage sector.

As a result, distributors of general cargo and FMCG will need to adopt more cost effective transport solutions over the medium/long term in order to remain competitive. On a practical basis, this means logistics operators continuing to use road haulage as the main mode of transport, as it will remain the most practical and cost effective form of transport for most flows of goods, particularly for local collection and delivery, but with the ability to utilise other modes when it provides a more practical and cost effective option. In most cases this means utilising rail freight services for some transport requirements. As a result, the logistics market is demanding/requiring greater access to reliable and cost competitive rail freight services, and this demand/requirement is likely to grow over the medium to long term.

Evidence for this is provided by a number of sources. Firstly, the maritime container sector has seen large growth rates over the past decade in the use of rail, particularly on flows from the deep sea ports to the English Midlands and north of England. Secondly, a number of major retailers have begun to contract rail services to transfer goods from NDCs in the Midlands to their RDCs in Scotland e.g. Asda and Tesco. Our freight forecasts, presented and analysed in Section 4, suggests growing rail freight volumes going forward.

Private sector freight operators, however, will only be attracted to rail where it can provide a cost competitive service of comparable quality to competing modes, primarily road transport. A network of facilities is required and two inter-linked conditions are crucial to achieving this, namely:

- The ability to operate full length trains between rail terminals; and
- The development of large logistics warehousing (RDCs/NDCs) at the same location as (or close to) rail terminal facilities to minimise road collection and delivery costs.

The case for appropriately planned rail linked logistics parks is that they satisfy both of these conditions, thereby allowing rail freight to provide the competitive services demanded by distributors of cargo (in terms of cost and quality).

Rail freight operates at its most economic when goods are moved in full length trains between rail terminals. This is because a large proportion of rail freight's costs are fixed, meaning that the cost per unit moved falls as the length of the train increases. The ability to

operate full length trains therefore enhances the rail mode's cost competitive position compared with road transport.

The changing nature of the origins of goods provides increasing opportunities to operate full length trains, thereby satisfying the first of the conditions outlined above. Essentially greater volumes of goods are originating from fewer locations. In particular, growing levels of containerised imports at the expense of domestic production is resulting in greater volumes of goods being concentrated at a handful of ports on the south and east coasts of England. Similarly, trends within the retail sector towards greater consolidating of goods collected 'ex-works' at 'consolidation centres' should also result in a further concentration of goods at fewer locations. This concentration consequently aids the 'economics' of rail freight, as it generates the required volumes to operate full length train services.

In this respect, the development of large logistics parks will have an important role to play in furthering the attractiveness of rail freight. Their development will result in a further concentration of goods at one location, thereby enabling logistics train operators to assemble/operate full length train services.

The second crucial condition which needs to be satisfied in order to render rail freight cost competitive against road transport is the ability to locate NDCs and RDCs on the same sites as rail terminal facilities. Distributors in the general cargo/FMCG sectors tend to organise their supply chains around NDCs and RDCs. Where a NDC/RDC is not located at a rail linked site, a road haul is required between a rail terminal and the warehouse. Even over short distances of a few kilometres, this can add around £100 per unit to the overall door to door transport costs.

At a rail linked site, however, use of the public highway is avoided and the road-rail transfer costs are consequently significantly lower. Where the rail connection is by means of an intermodal terminal, yard-tractors operating on rebated diesel can undertake the transfer of goods between rail terminal and RDC/NDC. In the case of directly rail connected warehouses, goods can be discharged from rail wagons using forklift truck equipment and transferred straight into storage.

This position can be demonstrated through modelling and comparing the costs of moving a standard unit load by road and intermodal rail freight over varying distances under different operating scenarios. These modelled cost comparisons show that, as a general rule of thumb, rail freight moved in full trainload quantities, including grant funding, is cost competitive with road haulage in the following circumstances:

- For flows from a non rail connected origin to a non rail connected distribution centre (a road haul is required at both ends of the journey), rail freight becomes cost competitive at distances over 400km

- For flows from a rail connected origin e.g. container port, to a non rail connected distribution centre (eliminating one road haul), rail freight becomes cost competitive with road transport at distances over 200km
- For flows from a rail connected origin e.g. container port, to a rail connected distribution centre (no road hauls), rail freight generally is always cost competitive compared to road transport over any distance given adequate volume to fill a daily train.

The above essentially presents the case for rail linked logistics parks. A key commercial requirement of the logistics industry is greater access to reliable and cost competitive rail freight services, and that locating large scale NDCs/RDCs on the same site as a rail terminal facilities satisfies the two conditions required for producing such rail freight services, namely:

- Rail linked logistics parks provide greater opportunities to operate full length trains; and
- Rail linked logistics parks combine NDCs/RDCs at the same site as rail terminal facilities.

Satisfying these conditions aids service quality and removes costs from the supply chain, thereby enhancing rail's competitive position and creating modal choice. In addition, having rail terminal facilities on the same site as NDCs/RDCs means there is no requirement to build in any 'buffer time' for congestion when ensuring that 'just in time' (JIT) time slots are made, which further adds to costs. Essentially, the goods are already on site. This further enhances the quality of the rail freight service. As a result, there is demand from the logistics market for the development of rail linked logistics parks because they meet a key commercial requirement, namely access to cost competitive rail freight services. An overall 'market need' for such facilities can therefore be identified.

Rail Linked Distribution Parks – Intermodal or Direct Rail Links?

There are effectively two types of rail linked distribution park. Firstly, NDC/RDCs can be located on the same site as an intermodal terminal. Goods arriving in an intermodal unit (e.g. container) at the terminal by rail are transferred to the NDCs/RDCs on the same site via internal road shunts. By avoiding the need to use the public highway the road-rail transfer costs are significantly lower.

Secondly, NDCs/RDCs can be directly rail linked through the provision of a siding along one side of a warehouse. This type of rail connectivity relies on the use of conventional box wagons. Box wagons are shunted into the warehouse siding, and the goods then transferred directly from the wagons to storage by forklift truck equipment, again avoiding the need for a local road haul.

The provision of a rail link by means of an intermodal terminal option, however, is by far the more important form of rail connectivity that is demanded by the market. This is driven by two main factors: operational flexibility and the growth of imports.

Conventional box wagon rail services have three main disadvantages. Firstly, they require dedicated rail connected facilities at both ends of the journey, consequently they are operationally inflexible. Secondly, the operator is unlikely to find backloads and the wagons are usually repositioned empty back to the shipper. The shipper therefore has to pay for a round trip, with the return leg of the journey being empty. Thirdly, to operate box wagons economically, they need to be run in full train lengths. As a result, they are only suitable when large volumes need to be moved between two rail connected warehouses. General cargo/FMCG related supply chains are normally based around despatching and receiving smaller but more frequent shipments. Consequently the use of box wagons is fairly niche in nature, and in the retail sector suitable cargoes are essentially limited to 'bulky' commodities moved in large quantities, such as bottled mineral water or white goods.

These disadvantages are overcome with intermodal rail freight. It allows non-rail connected shippers to utilise rail freight as a transport mode for undertaking long distance overland trunk hauls. Initial collection and/or final delivery can be undertaken by road transport. When a sea leg is part of the overall journey, intermodal units can be transferred quickly and efficiently between train and ship. As intermodal units are designed for general cargo, the transport operator has the ability to reposition the empty intermodal unit after delivery and seek a return load. Consequently the shipper has to pay one way only and utilisation is significantly better than conventional rail freight. In addition, many intermodal train services are run on a liner basis, whereby shippers book individual slots on the train rather than contracting a full train. This means that intermodal is generally more suited to the small frequent shipments associated with retail supply chains.

Clearly, rail linked sites which are capable of receiving goods by intermodal rail freight are the market's preferred option of rail connectivity. It should be noted that the train services contracted by Tesco and Asda between NDCs in the England Midlands and Scotland are intermodal rather than box wagons.

Consequently, the type of rail linked distribution park the logistics market will require over the medium to long term will be those which include NDCs/RDCs and intermodal terminal facilities on the same site. However logistics sites which also provide the means whereby individual buildings can be rail linked for conventional wagons if the occupier requires this service will gain additional advantages.

1.4 The KIG Development

A set of maps in Appendix 5 demonstrates the proposed layout of the KIG site; namely:

- Map 1: Broad layout of the KIG site;
- Map 2: Railway layout north of the railway line;
- Map 3: Intermodal Terminal; and
- Map 4: Sketch Map of Track Layout.

The site is divided into two parts by the Ashford-Swanley railway line which runs through the site on a broad east-west access. In total there will be eight warehousing units providing 344,669 square metres of floor space, as follows (internal floor space not including associated offices);

- R1 Rail Connected 119,937m^2;
- R2 Rail Connected 42,456m^2;
- Unit A (non rail connected) 6,689m^2;
- Unit B (non rail connected) 21,368m^2;
- Unit C (non rail connected) 25,548m^2;
- Unit D (non rail connected) 22,297m^2;
- Unit E (non rail connected) 65,032m^2; and
- Unit F (non rail connected) 41,342m^2.

A 6.5ha intermodal terminal will also be constructed to the north of the railway line. In effect, therefore, all the units at KIG will be 'rail served' as they will be capable of receiving/despatching intermodal units by rail via the terminal without use of the wider public highway network (by means of yard tractors operating on rebated diesel). In addition, two of the units will be provided with railway sidings alongside (R1 and R2 north of the railway), thereby allowing the receipt/despatch of goods in conventional box wagons.

Referring to Map 4, this shows that two sets of reception sidings are to be provided at KIG. For trains arriving from the Channel Tunnel, trains would depart the mainline and then enter the 'North Exchange Line'. Similarly, trains arriving from the north/London direction would depart the mainline and then enter the 'South Exchange Line'. Both exchange lines are capable of handling 750m length trains.

The KIG development would be expected to play mainly a national role, providing facilities for NDCs (importers, suppliers and retailers). However, it is anticipated that the site will also a regional role (RDCs for retailers). It is expected that the site will have a particularly effective role in intercepting cargo imported from mainland Europe, cargo which currently passes through Kent and around London by road. The M20/M2 corridor through Kent is the busiest international freight corridor in the UK. By locating warehousing along it, hauliers

from the Channel ports will be able to discharge cargo into warehouses immediately east of where serious road congestion begins on the motorway, and return immediately to the Continent. The warehouses will therefore receive cargo from a range of origins, store goods, sort them and then assemble unit loads for despatch to retailers RDCs nationally. Goods may dwell for over a month waiting for (particularly retailers) to call for their delivery. Despatches for the Greater South East will probably continue to move by road, but goods for the Midlands and North will be able to move economically by rail because the length of haul will be over 200km, and one end of the journey will be rail connected.

The site will also be attractive for goods arriving by rail via the Channel Tunnel, particularly from southern Europe given the longer hauls available that suit rail and where to justify trainload volumes from a given region, only a single point of destination within Britain is possible. Such goods will be integrated with those arriving by road via the Channel ports and can then be forwarded by rail to Northern Britain on leaving the warehouses. In either case, KIG will act as an aggregation point for both Channel Tunnel rail and the RoRo ferry ports.

It follows that the ideal location for such a development is midway between the Channel ports and London. In fact, we shall demonstrate that no other suitable sites are available (Section 6). While Dover does have plans for a modest railhead on its quays, there is no room whatsoever for warehousing around the Port. Similarly, there is no room at Eurotunnel's terminal at Cheriton. There are sidings in Ashford for aggregates but the land immediately around that site is earmarked for residential and mixed development. A large enough site could not be created outside the flood plain.

2. POLICY BACKGROUND

This section of the document describes the policy case for rail linked logistics parks in general and for the Kent International Gateway development in particular. Various transport and planning policy documents, at both a national and regional level, provide support for an increase in the amount of freight that is moved by rail in general and, in particular, sets out policy with respect to new logistics facilities in terms of their location and form/structure.

2.1 National Policy

2.1.1 The Future of Transport

Published by the Department for Transport (DfT) in July 2004, *The Future of Transport* White Paper set out a long-term strategy for a modern, efficient and sustainable transport system backed up by sustained high levels of investment. The White Paper looks at the factors that will shape travel and transport over the next thirty years and sets out how the Government will respond to the increasing demand for travel, maximising the benefits of transport while minimising the negative impact on people and the environment. The document superseded the *New Deal for Transport* White Paper published in 1998. Beyond general broad support for 'modal shift' i.e. support for rail freight, there is little in the document directly concerning the location and form/structure of new distribution facilities. The Government will continue to encourage freight traffic to be shifted from road to rail where feasible and where appropriate, financial support will be offered. The document states that sustainable freight transport should focus on approaches which offer the best outcomes for our economy, society and the environment.

2.1.2 Sustainable Distribution, A Strategy

Sustainable Distribution, A Strategy (1999) was one of the 'daughter' papers to the New Deal for Transport White Paper, and it remains official national policy with regards to sustainable distribution. It describes the Government strategy to secure the sustainable distribution of freight in the United Kingdom. The key points include:

- Specific measures to promote sustainable transport of goods, generally through fiscal measures,
- Greater emphasis on planning for freight distribution at both regional and local levels and revised planning guidance to encourage the shipment of more goods by rail and waterborne transport.
- Encouraging the use of rail freight by providing incentives through grant schemes such as FFG and by setting up the SRA, which had a duty to promote rail freight until its abolition in 2006.
- Encourage the use of waterborne freight, particularly by extending the FFG scheme to coastal and short sea shipping.

Chapter 5 of the Paper deals specifically with planning and its role in promoting sustainable distribution. Again the Paper states that it is the Government's intention to issue revised planning guidance to support an integrated transport policy. The purpose of this is to:

- Encourage more freight to be carried by rail. Local authorities in preparing development plans will be expected to consider, and where appropriate protect, opportunities for rail connection to existing manufacturing, distribution and warehousing sites and allocate new sites for suitable new developments which can be served by rail; and

- Encourage local authorities through their development plans to give better protection to those sites and routes (both existing and potential) which could be critical in developing infrastructure to widen transport choices, such as interchange facilities allowing road to rail transfer (Para 5.2).

The key phrases stated in the above documents above are ‘where appropriate’, 'where feasible' and ‘suitable new developments’. Policy is not expecting all new distribution developments to be served by rail links, only those developments where a rail connection would be appropriate.

As a result of the changes to the railway industry resulting from the Railways Act 2005, the Secretary of State for Transport (Alistair Darling) made a statement to Parliament in July 2005. Mr Darling confirmed that "with the repeal of Section 206 of the Transport Act 2000, the *SRA's 2001 Rail Freight Strategy* will cease to be in force". The purpose of the statement was therefore to re-state clearly the Government’s objectives for rail freight. Given this position, the statement can therefore be considered as the Government’s current policy in terms of rail freight, pending the publication of future policy documents (expected in Summer 2007).

There was little in the statement directly concerning the location and form/structure of new distribution facilities. However, Mr Darling stated that the Government wanted to see private sector investment in major rail freight facilities, such as intermodal terminals, continue. While it is not appropriate for the Government to promote individual schemes, the Government will act to ensure decision makers are better informed, particularly in the application of planning guidance. The Government would consider changes to planning guidance where required. The Government will work to ensure that regional and local planning decisions reflect Government priorities relating to the sustainable movement of goods.

2.1.3 Strategic Rail Freight Interchange Policy

Even though the SRA has been abolished (early 2006) and the SRA's *Rail Freight Strategy*, as stated above, is no longer Government policy, the DfT issued an open letter in October

2005 stating that much of the SRA's *Strategic Rail Freight Interchange Policy* (published in 2004) still remains relevant with respect to the location and form of new rail linked distribution facilities: The DfT stated that

> *"The SRA will cease to exist from early 2006 and has already relinquished its role in the planning process. This renders parts of the document (Strategic RFIs) technically out of date. However, the interchange policy was based on the Government's existing policies for transport, planning, sustainable development and economic growth, and much of the material contained in chapters 4, 5, 6, and 7, is still relevant. For this reason we will retain the document on our website as a source of advice and guidance."*

The *Strategic Rail Freight Interchange Policy* set out to inform relevant stakeholders of the need for, role, function and operating characteristics of Strategic Rail Freight Interchanges (RFIs). While all rail freight interchanges are important in supporting rail freight flows (e.g. private siding and single commodity facilities), this policy is aimed at developing strategic facilities, which will achieve growth in the general cargo/logistics market.

In Section 4 of the policy document the SRA used the expression "Rail Freight Interchange (RFI)" to refer to rail linked distribution parks. This may have reflected the fact that the SRA only had a remit to consider rail rather than freight distribution in general. It would be more accurate to define such sites as the grouping together of logistics buildings into one site sharing an intermodal terminal located within the park. Some of the warehouses located at such rail linked distribution parks could also be directly rail served, enabling goods to be transferred directly to storage from rail wagons. Such locations will cater for national and regional distribution centres, and consequently large logistics service providers, manufacturers and retailers will occupy them. They will therefore cater for large-scale distribution activities which happens to be rail linked.

Section 4 also details the scale and locational requirements for such sites. The SRA argued that they should be of at least 40 hectares, and a valuable characteristic of each site will be the ability to accommodate expansion. They also need to be large enough to handle full-length 775m trains with appropriately configured on-site rail infrastructure and layout. They need to be located relative to the markets they will serve. However, as they will generally be 24-hour operations, they should not be located immediately adjacent to areas which may be sensitive to noise. They should be located with good access to the primary road network, and 'high quality links to the rail network are essential' (para 4.23). This means that the railway line serving them must have available capacity to run train services, the ability to handle full length trains and a loading gauge able to accommodate intermodal units on standard platform wagons.

Section 7 considers their delivery. The document states that Regional Planning Policy and Regional Transport Policy must set the policy context for the guidance of local level polices.

Regional planning policy should identify suitable areas where they could or should be developed. Key factors in considering sites should include:

- Suitable road and rail access – available capacity, adequate loading gauge, good motorway access
- Ability for 24/7 working
- Expansion potential
- Proximity to workforce
- Proximity to markets
- Ability to contribute to identified areas of gaps in provision

The document also identified a need for between 3 and 4 inter-modal interchanges terminals to serve London and South East England.

2.1.4 White Paper: Delivering a Sustainable Railway

The recent rail white paper ('Delivering a Sustainable Railway' July 2007) confirmed the Government's support for rail freight growth and the measures necessary to achieve it. The white paper described a broad expectation on the part of Government that Network Rail would facilitate a doubling of passenger and freight traffic by rail by 2030 (i.e. create the requisite capacity) (para 11.9). In the short term (i.e. to 2014/15), Government intends to allocate £200 to help to create a 'Strategic Freight Network' (SFN); mainly to add capacity at key pinch points (funding over and above the current TIF bids to enhance loading gauge) (para 9.26).

This measure is designed to:

> "give rail freight operators, customers and terminal developers a more stable environment for planning for increased use of rail" (para 9.32)

The SRN will identify and agree.

> "acceptable freight routings to help freight trains avoid congested parts of the network" (para 9.31)

It would:

> "both complement, and be integrated with, the existing rail network. It would provide an enhanced core trunk network capable of accommodating more and longer freight trains, with selective ability to handle wagons with higher axle loads and greater loading gauge"

Given that any terminal must itself be directly connected to a part of the network which shares those enhanced attributes to enjoy the corresponding benefits, the definition of the SFN effectively limits terminal development to the SFN itself. It is self evident that the SFN will include the Maidstone to Ashford route (via Hollingbourne) because of its existing status as the freight route to the Channel Tunnel, with existing enhanced loading gauge and guaranteed capacity.

The white paper confirms the Government's support for Channel Tunnel rail freight services, stating that:

> "The Government plans to ensure that the British network can interface with the European Union planned freight network, which operates to a considerably larger gauge".

Confirming that

> "The Tunnel has significant spare capacity and could comfortably accommodate a substantial increase in freight"
>
> (para 8.18)

The White Paper also 'draws upon' the forecast made by the industry and using the GB Freight Model ('used by the DfT to forecast freight growth') of a 30% growth in rail freight between 2005 and 2015, based mainly on expansion in intermodal and Channel Tunnel traffic (figure 9.2). The same model has been used to estimate freight volumes for K.I.G.

The Statements in the White Paper are, therefore, entirely consistent with an aspiration to expand rail freight through the location of warehousing at KIG, alongside a route which is bound to form part of the SFN.

2.1.5 Freight Route Utilisation Strategy (FRUS)

The FRUS was published by Network Rail in March 2007. It sets out a strategy of addressing and providing additional freight path capacity across the national network, and it is expected to inform the DfT's High Level Output Specification (HLOS) for the railway industry to be produced in summer 2007.

The FRUS lists 25 inland terminal developments which are at various states of preparation (Table B10). Of these, 7 are in the Greater South East, namely:

- Hollingbourne (Kent International Gateway, KIG) (DMI/AXA);
- Shipton-upon-Cherwell (Kilbridge Properties);
- Radlett (Helioslough);
- Barking (TfL);

- Cricklewood (Hammerson);
- Howbury Park (Prologis); and
- Steventon (Thames Water)

The FRUS makes no direct comment upon the viability of each of these projects, and does not quantify their scale. However, taken together and referring to the proposals being made by the different developers, they probably represent only around 1.5 million square metres of development, which (see table 2) falls far short of our estimate of regional need.

The FRUS is only intended to advise on need to 2014. Insofar as network capacity is concerned, the report draws attention to the lack of capacity faced between the Haven Ports and the West Coast Main Line (exacerbated by passenger developments on the North London Line and through Crossrail) (Table 5.2) and between Southampton and the Midlands (Table 5.3). Table 5.6 shows that the development of London Gateway (Shellhaven) will further exacerbate this position.

No such capacity issues are raised along the Channel Tunnel to West Coast Main Line corridor, upon which KIG lies.

Insofar as loading gauge is concerned, the FRUS confirms that the 'Megafret wagon' (page 62) is able to carry 2.9m/9'6" tall containers within W9 loading gauge on 15.64m length platforms, whereas they can only be carried in inefficient 'well' wagons within W8 loading gauge (see Appendix 1 of this document for details on loading gauge and wagon types). The FRUS also notes the decline in the population of 20ft (6.1m) length containers, which is likely to encourage the use of Megafret wagons (i.e. the case for the existing standard wagon, which has an 18.3m platform designed to carry 1x20ft and 1x40ft containers, will deteriorate). The FRUS, because it is focussed on events to 2014, does not pay significant regard to Channel Tunnel and domestic flows. However, it is most important to note that these markets use 13.6m length containers (45ft), which cannot efficiently use the standard 18.3m platform wagons, upon which W10 is predicated. These units fit much more efficiently on W9 compatible Megafret wagons.

The future selection of wagons is likely to be heavily influenced by the need of domestic and intra-European traffics, for which W9 loading gauge is both the minimum required for full interoperability but also a totally adequate scale for all intermodal traffic except piggyback.

The FRUS does not deal with piggyback options, but does deal with the option of using the CTRL for freight. Current understanding is that the CTRL may be available for freight on some, but not all, nights of the week. Its enhanced loading gauge (UIC GB+, see section 6.2) would allow piggyback trains to reach Barking.

There are no other sites proposed in the UK that could provide an alternative option for such traffic because only the CTRL will have an adequate loading gauge. However, the

modification of a handful of bridges between an access point to the CTRL at Ashford and Hollingbourne would allow KIG to also accommodate piggyback traffic and complement both the CTRL and Barking, creating a crucial diversionary route for such traffic.

2.2 Regional Policy: The South East Plan

The draft South East Plan details the Region's proposed planning and transport policies up to 2026. It has been prepared by the South East Regional Assembly and sets out the changes needed to improve the quality of life in the region. Key topics included in the Plan include housing, transport, employment and the environment.

An early draft of the Plan was published for public consultation in early 2005. The final draft of the full Plan was approved by the Regional Assembly at the start of March 2006 and it was formally submitted to Government at the end of that month. The final draft has been subject to a period of further public consultation (March to June 2006), and it has also been tested by an independent panel appointed by the Secretary of State (the 'Examination in Public' (EIP), which ran from 28th November 2006 to 30th March 2007). Following the panel's report and recommendations, the draft Plan should receive Government approval in early 2008. The Plan will then become the Regional Spatial Strategy for the South East (replacing the existing strategy, which was published as Regional Planning Guidance in March 2001).

The South East Plan looks forward to 2026 and sets out strategies for improving life in the region over that timescale. For example

- It highlights priorities for improving transport;
- It reviews the number of new houses needed in the region each year;
- It sets targets for recycling waste to reduce the need for landfill; and
- It recommends ways to improve health and the environment.

Government is also keen to decentralise planning from central Government to regional level and sees regional planning as delivering a clear strategy that will cross individual local authority boundaries and affect the whole region providing a bridge between national policy and local planning.

2.2.1 Communications and Transport: The Regional Transport Strategy (Section D4 of the South East Plan)

'Communications and Transport' is one of the chapters of the South East Plan and it will form the **Regional Transport Strategy** (RTS) for the South East of England. It is based on the existing RTS published by the Secretary of State in July 2004, which had a policy framework applicable to 2016. The new RTS rolls the policy framework forward to 2026.

This long-term regional framework for the development of the regional transport system provides the context within which other relevant regional strategies (e.g. those of the South East of England Development Agency, the Highways Agency, and the Rail industry) should be developed.

2.2.2 Ports

The importance of the region's ports is acknowledged as playing a vital role in supporting the UK economy however it is clear that they are dependent on the quality of the landside infrastructure. The port of Southampton and its infrastructure and development needs are seen as worthy of further consideration. The location of port infrastructure is seen as providing the opportunity to encourage short-sea shipping as a real alternative to land transport, and in Policy T10 it is expressly stated that encouragement should be given to investment in landside infrastructure that supports short-sea shipping connections linking the region into the wider European network via the region's ports.

2.2.3 Freight

It is recognised that the majority of freight movements are made by road and this will continue to be the case, however rail freight is seen as having an important role to play in a number of markets and there is seen to be a need to protect routes on the rail network that benefit freight movements and to address bottlenecks on the network that adversely affect rail freight.

The work carried out by the (now defunct) SRA is referred to which identified a need for between 3 and 4 inter-modal interchanges terminals to serve London and South East England. Areas of search for potential sites should be identified in partnership between rail and road operators, local authorities and the logistics industry.

The following Policies are particularly relevant and self explanatory. They are therefore included in their entirety.

Policy T11 (Freight and Site Safeguarding)

Relevant regional strategies, Local Development Documents and Local Transport Plans should include policies and proposals that:

- Safeguard wharves, depots and other sites that are, or could be, critical in developing the capability of the transport system to move freight, particularly by rail or water
- Safeguard and promote sites adjacent to railways, ports and rivers for developments, particularly new intermodal facilities and rail related industry and warehousing, that are likely to maximise freight movement by rail or water

- Encourage development with a high generation of freight and/or commercial movements to be located close to intermodal facilities, rail freight facilities, or ports and wharves.

Policy T12 (Rail Freight)

The railway system should be developed to carry an increasing share of freight movements. Priority should be given in other relevant regional strategies, Local Development Documents, and Local Transport Plans, providing enhanced capacity for the movement of freight by rail on the following corridors

- Southampton to West Midlands
- Dover/Channel Tunnel to and through/around London
- Great Western Main Line
- Portsmouth to Southampton/West Midlands

Policy T13. (Intermodal Interchanges)

The Regional Assembly should work jointly with DfT Rail and Network Rail, DPT Rail, Highways Agency, Freight Transport Association and local authorities, to identify broad locations within the region for up to three intermodal interchange facilities. These facilities should be well related to:

- Rail and road corridors capable of accommodating the anticipated level of freight movements
- The proposed markets
- London

It follows that the South East Plan will expect large warehousing developments to be located on sites which can be served by either (or both) of wharves and intermodal rail facilities. Given that intermodal terminals require access to W9 loading gauge to accommodate modern 2.9m/9'6" high containers on wagons approved to operate between the Continent and the UK, RSS can be interpreted as requiring (insofar as is possible) the regional need for large warehousing to be located along those railway routes with a minimum of W9

loading gauge, adequate rail network capacity and access to the motorway network to minimise the impact of freight generated on the quality of the amenity enjoyed by the general population.

2.2.4 Technical Note 3

The Communications and Transport chapter of the South East Plan (i.e. the RTS) refers to a supporting 'Technical Note 3' which sets out a detailed analysis of the region's transport system and highlights some of the challenges that face the region in the future.

These include

- The South East's gateway function means that it plays a pivotal role in the wider transport system of both North-West Europe and the UK with access to/from the region's ports and airports a key issue not only for SE England but also for the rest of the UK

- The proximity to, and economic relationship with London, means that the transport system plays a critical role in supporting economic and social activity in the wider South East, extending well beyond the region's boundaries.

- In the more economically buoyant parts of the region severe congestion, particularly on the road and rail networks, give rise to unreliable and protracted journeys that reduce business performance and productivity for the region as a whole.

- Analysis of future pressures on the transport system… will support the rebalancing of the transport system away from its current dependence on the car and lorry…

The Transport Strategy and policies are focussed on a set of core principles, which include

- Road pricing and charging
- The gateways, airports and ports
- Freight

Technical Note 3 also makes the following points with respect to freight movements.

2.2.5 Rail Infrastructure Bottlenecks

The section of the national railway network linking Southampton to Reading and from there north to Didcot and Oxford is under increasing pressure. There are limited paths available for passenger services, combined with a need for freight paths from the Solent ports to the Midlands and beyond. SEEDA, Network Rail, Ports Industry and partners are leading work

into considering the gauge clearance of this route to cater for W10. However work is also likely to be needed to increase overall capacity.

2.2.6 Freight

The Regional Assembly is working in partnership with the Freight Transport Association and other partners to produce a non-statutory Regional Freight Strategy to augment the freight policy and implementation frameworks of the South East Plan.

The majority of freight terminals are located on the south coast between Wool and Southampton and include international container traffic from Southampton Docks and Millbrook, aggregates from Wool, steel from Poole and oil from the refineries at Fawley and Furzebrook. Other freight flows include oil from Alton and aggregates from Woking.

2.2.7 Spatial and Travel Patterns in South East England (see Section 4)

Mention is made of the Channel Tunnel Rail Link, and the work underway on the regional spoke between Oxford - High Wycombe and Oxford - Milton Keynes being carried out by the East West Rail Consortium, although the focus is on passenger traffic rather than freight.

2.2.8 The Economy (Section D4 of the South East Plan)

The economy section of the South East Plan is limited in its coverage of freight transport issues. However, it is acknowledged that the South East is projected to experience a decline in manufacturing and growth in business services, leisure activities, retail, restaurant and hotels. Data from 'Experian Business Strategies' is quoted showing that overall employment in the region is projected to increase from around 4.1 million to 4.8 million (a growth of some 16.7%) between 2001 and 2026. However transport and communications employment (which in 2001 made up some 252,000 people) is projected to increase to 306,000 by 2026 a rise of some 22%.

In 'Supporting Regionally Important Sectors and Clusters' points are made regarding interventions, which may include

- The provision and safeguarding of land in appropriate locations which may include...proximity to existing sector concentrations…good transport links..

- The improvement and exploitation of other assets in the local area, which may include…strong transport links.

2.2.9 Policy RE5

In Policy RE5: (Addressing Intra-Regional Economic Disparities) it is stated that:

> Guided by sustainable development principles, local partners will promote the economic potential of the international gateways of the Ports of Southampton, Portsmouth, Dover, the Medway Ports, the Channel Tunnel and Southampton Airport to maximise business opportunities in the surrounding areas.

2.3 Regional Policy: The Regional Economic Strategy 2006-2026

A Framework for Sustainable Prosperity

The South East of England Development Agency (SEEDA) has prepared the Regional Economic Strategy (RES). The document states that one of its priorities to invest in the long-term sustainable growth of key ports, particularly the major ports of Southampton, Dover and Thamesport (all of which handle substantial volumes of containerised goods which need to use distribution centre type facilities). The results of this action should be to deliver rail freight gauge improvements on the Southampton – Midlands route.

Essential investments in connectivity are given as, maximising the potential of the Channel Tunnel Rail Link, Shellhaven, the expansion of Southend Airport, Crossrail and in the longer term a Lower Thames Crossing. Maximising the potential of the Channel Tunnel Rail Link is seen as essential to the successful growth of Ashford, it is also seen as vitally important that the capacity in the two junctions of the M20 that serve the town is enhanced.

Under 'Smart Growth' actions is the need to 'invest in integrated, intermodal transport hubs of national and international economic significance. Specific priorities are Ashford, Ebbsfleet, Reading, Oxford, Milton Keynes, Gatwick, Heathrow, Thames and Medway Ports, Dover Port and Southampton.

2.4 Policy background summarised

In summary, both national and regional policy recognise the specific requirements of the distribution sector and encourages development at locations with good accessibility to both road and rail infrastructure. Whilst a movement from road to rail freight is encouraged, it is accepted that the largest proportion of freight movement will continue to be by road. Accordingly, new sites, where possible, should have the potential for rail freight in addition to high quality road access.

3. THE CRITERIA BASED APPROACH TO ASSESSING RAIL LINKED LOGISTICS PARKS

This section of the report describes the criteria based approach which is utilised for assessing the suitability of sites as locations for rail linked logistics parks. Briefly, the criteria are based on:

- Planning policy with respect to the location, form and structure of strategic distribution sites; and
- The qualities and characteristics an individual site must posses in order to render them commercially attractive to the logistics market.

The criteria have been published in a number of national policy documents (SRA Freight Strategy and Strategic Rail Freight Interchange Policy). They have been used in 'need cases' produced to support successful planning applications for a number of developments similar to that proposed at Hollingbourne. The criteria have also been tested at a number of planning inquiries.

3.1 The Criteria

A site which is appropriate for hosting a large rail linked logistics park must have:

1) A 'market' need for the proposed facilities which cannot be met through existing capacity or at alternative locations;
2) Good quality access to the highway network. Good quality access is defined as being served by the national motorway network or major non-motorway routes;
3) Good quality rail access. Good quality access is defined in terms of a generous loading gauge which is capable of accommodating the full range of intermodal units on standard platform wagons, available capacity to run freight train services and which permits full operational flexibility;
4) At least 50 Hectares of development land available, together with a suitable configuration which allows large scale warehousing, intermodal terminal facilities and appropriate railway wagon reception facilities;
5) Allow 24 hour operations and no restrictions on vehicle movements; and
6) Good access to labour.

The following sub-sections describes the rationale underlining each of the criteria. Section 4 of this document subsequently 'tests' the proposed Kent International Gateway development against the criteria. Other alternative sites have also been assessed in a similar manner (Section 6).

3.2 Market Need

As with any planning application, the developer of a new rail linked logistics park has to justify the proposed development by demonstrating a 'need' case. A need case will essentially comprise two components:

- Demonstrating that there is a 'market need' for the proposed development i.e. there is demand from the logistics market for the new facilities
- Demonstrating that existing capacity and other sites are unable to meet the required planning and market need, hence the need for the new facilities at that particular location (the immediate wider region – South East – in the case of rail linked logistics developments)

In addition, as the proposed development is essentially an 'investment', it is important that any developer satisfies himself that the proposed venture is commercially viable and a return can be made on the investment.

3.3 Good Highway Access

Road transport will remain the dominant mode as for most goods flows it will remain the most practical and cost effective form of transport. This means that the majority of cargo arriving and departing distribution centres located on rail connected logistics sites will be by road transport. At a rail linked site comprising NDCs, around 50% of inbound goods currently could be expected to arrive by rail (balance by road) because of the distance between the point of production and the NDCs. Around 25% could depart by rail given, again, the distances involved and the fact that in the future, many RDCs would themselves be rail linked (these figures should not be viewed as maximum limits but as current expected 'market shares' on the basis that rail services work to their full potential. Higher rail freight 'market share at some time in the future is therefore possible). Sites containing RDC floor space will generate additional road traffic movements due to the faster turnover of stock at such facilities. At such sites, the comparative figures are 25% of inbound goods could arrive by rail (balance by road), and all departing goods leave by road. Our forecasts for this document (Section 5) suggests around 1,700 in-bound and out-bound HGV trips daily to/from KIG.

In addition to this, any intermodal terminal facility will also be serving manufacturers and distribution activities located off site by road. This does not necessarily mean that it would increase traffic, however, as much of the road based freight would already be on the network and would be intercepted by the new facility thereby significantly shortening its journey.

For this reason, a commercially attractive site for NDCs/RDCs and intermodal terminal facilities must have good access to the highway network. This should be defined as being served by the national motorway network or a major non-motorway route.

3.4 Good Rail Access

Various factors associated with the quality of rail connectivity will determine whether a site is an appropriate location for rail linked distribution facilities. Being located adjacent to a railway line is only part of the equation, and an appropriate site will be one where the adjoining railway line offers:

- Good operational flexibility
- Has a loading gauge capable of handing the full range of intermodal units on standard platform wagons
- Has available freight capacity

Operational Flexibility

A suitable site is one where full length train services can access the site directly from all directions, both in terms of the final access from the mainline into the terminal (and vice versa) and the approach routes from the main trunk rail routes. Similar to some motorway interchanges, train movements between different railway lines at junctions and between mainlines and terminals can be restricted to certain directions due to the layout/alignment of the tracks together with the number/type of crossovers and chords installed at the junction. If direct access is not possible, it results in freight trains having to pass a junction and then change direction (by means of a locomotive 'run round') so that they can enter the junction in the right direction. Alternatively a train could take a long diversionary or circuitous route so that the junction is approached in the right direction. These add both time and costs to a rail freight service, thereby affecting its competitive position. In addition, there are also capacity issues if a main line has to be used for a locomotive run round.

Loading Gauge

The physical definition of the maximum height and width in cross section of a railway line is called its *loading gauge*. The size of the loading gauge of a particular section of track will determine the size of rail freight wagon (or combination of intermodal platform wagon plus intermodal unit) that can be conveyed on that section of line. The size of the loading gauge is determined by lineside features such as overbridges, tunnels, overhead power lines, signal gantries and platform edges. The physical dimensions of a rail freight wagon or intermodal wagon/intermodal unit combination must be within the loading gauge profile to ensure that it will not collide with any of these lineside features. Obviously the higher the bridges and tunnels etc., the larger the freight wagon that can be conveyed.

Reference at this stage should be made to Appendix 1, which describes the different loading gauge profiles available on the British network, together with the types of intermodal units and intermodal platform wagons combinations which can be accommodated through each loading gauge profile. The information in Appendix 1 shows that:

- The W6 and W7 loading gauges cannot accommodate 2.9m/9'6" 'high cube' maritime containers and can only accommodate standard maritime containers (2.59m/8'6") on special low deck height wagons ('well' wagons and 'Lowliner' wagons); and
- The W8 loading gauge can accommodate 'high cube' maritime containers, but only on special low deck height wagons.

This is particularly important as high cube containers are increasing in popularity, and are likely to become the dominant size unit in international container shipping over the next decade, particularly on the high volume Far East-European trade routes. Various factors associated with the special low deck height wagons renders them un-economic and operationally inflexible on high volume corridors e.g. flows to/from the deep sea ports.

In terms of rail connectivity, therefore, the information provided in Appendix 1 clearly shows that the **W9 loading gauge** is the minimum gauge which can accommodate the full range of intermodal units on standard platform wagons (high cube containers and European 'swap bodies' on Megafret Wagons) without the need to use the cost inefficient or operationally inflexible low deck height wagons in large numbers. The **W10/W12 loading gauges** can accommodate the full range of units on all standard platform wagons with a deck height up to 1.0m i.e. Freightliner, Multifret and Megafret wagons. An appropriate site is therefore one where the adjoining railway lines and the approach routes are gauge cleared to at least **W9,** and preferably to **W10 and W12** (or lines earmarked for enhancement to W10/W12). It is around such sites that rail freight operators will develop their own service strategies, and property developers will wish to develop rail linked distribution parks.

Available Freight Path Capacity

An appropriate site for rail linked distribution facilities will be one where the adjoining railway lines have sufficient train path capacity available which allow frequent and flexible train services to operate to and from the site. This includes available capacity on the final access from the mainline into the terminal (and vice versa) and the approach routes utilised from the main trunk rail routes. The availability of at least one freight path per off-peak hour per direction can be regarded as offering sufficient freight train path capacity.

3.5 Site Size and Configuration

The size of a site and its configuration is an important factor for two main reasons:

- It contributes towards the viability of rail freight services to and from that site; and
- Sites need to be big enough to accommodate the large scale distribution centres that are be required by the market, together with a number of other support activities.

A commercially attractive rail linked site is considered to be one which is large enough and flexible in its configuration to provide the following:

- An intermodal terminal;
- At least 50ha of developable land, thereby allowing the development of at least 200,000m^2 of warehouse floor space (40% of site footprint), and individual plots which permit very large units;
- Internal rail reception sidings capable of receiving trains up to 750m trailing length; and
- An appropriate estate road layout.

Sub-section 1.2 demonstrated the benefit of co-locating distribution warehousing and intermodal terminals on the same site (or within 1km). In practice (and up to a point) the larger the site the greater its likely efficiency as a rail freight interchange, with greater potential for users to assemble full length trains.

In addition to the cost of rail freight compared to road haulage, rail as a mode will only be attractive to the occupiers of the distribution buildings on a logistics site if the site is able to attract frequent full length rail freight services to/from a wide range of locations. As a minimum, this means at least a daily train service to/from 5 different locations (Channel Tunnel, 2 major ports and 2 long haul regional centres (e.g. North West and North East), with twice daily services to/from some locations (around 8 train services in total). Essentially a 'critical mass' in terms of site size exists, above which the logistics site will generate the requisite number of daily train services. This critical mass is in the region of 200,000m^2 of floor space, as demonstrated in the tables presented below. This implies sites should be at least 50 hectares (ha) in size, on the basis that warehouse floor space occupies 40% of a site footprint.

The first part of the table below shows generally accepted figures in terms of the relationships that exist between site size and floor space, and between floor space, warehouse throughput and road and rail modal splits (for modern high bay type warehousing). These relationships form the basis upon which the calculations in the lower part of the table were undertaken, which demonstrate the relationship between site size and the number of train services.

Site 1 is an example of a site of 10 ha. This equates to around 40,000m^2 of floor space. The calculation shows that it will probably generate just under 2 inbound train services per day, and just over 1 daily outbound train service. Site 2, however, is 50ha in size and is able to accommodate around 200,000m^2 of distribution centre floor space. The calculation shows that on this 50ha site, the distribution centres alone would be able to generate around 8 inbound trains per day if concentrated on NDC activity. While the former site could not offer a comprehensive range of rail fed destinations, the latter could.

Table 1: Site Size and Train Generation

Pallets per sq m	1.5
Tonnes per pallet	0.8
Annual stock turns pa	12
Inbound by rail	50%
Outbound by rail	25%
Floor space % of footprint	40%
Pallets per unit load	25
Units per train	30
Operating days pa	300

Site 1		**Site 2**	
Hectares	10	Hectares	50
NDC - sq m	***40,000***	***NDC - sq m***	***200,000***
Pallet capacity	60,000	Pallet capacity	300,000
Pallet throughput pa	720,000	Pallet throughput pa	3,600,000
Unit loads inbound pa	28,800	Unit loads inbound pa	144,000
Unit loads outbound pa	28,800	Unit loads outbound pa	144,000
Unit loads inbound road	14,400	Unit loads inbound road	72,000
Unit loads outbound road	21,600	Unit loads outbound road	108,000
Unit loads inbound rail	14,400	Unit loads inbound rail	72,000
Unit loads outbound rail	7,200	Unit loads outbound rail	36,000
Trains inward per day	1.6	Trains inward per day	8.0
Trains outward per day	0.8	Trains outward per day	4.0

An appropriate site is also one which is able to accommodate very large individual warehouses of at least 50,000m^2 floor space, though recent trends in the retail sector suggests that units up to 100,000m^2 are being increasingly demanded by the logistics market.

Where the role of the terminal is likely to include a high proportion of NDC activity, the minimum scale will clearly rise because the turnover of stock would be lower. A site solely devoted to NDC activity would, logically, be of around 400,000m^2; a site devoted two thirds to NDC activity would imply around 300,000m^2, and so forth.

The ability to accommodate reception sidings is also an important feature of a competitive logistics site. Reception sidings effectively act as a place to 'park' trains off the mainline

before and after cargo handling at an intermodal terminal or rail-connected warehouse. Reception sidings are required at a rail freight terminal for four main reasons:

- Due to pathing and timetabling constraints, trains will normally arrive at a rail freight terminal well before they are required for cargo handling. Hence they require somewhere to 'park' while they wait their turn in the actual cargo handling part of the rail terminal.

- Once a train has been loaded/unloaded and is ready for departure, it requires somewhere to await the arrival of a mainline locomotive. Completion of cargo handling can be well before the mainline locomotive arrives,

- The cargo handling sidings, either at the intermodal terminal or rail-connected warehouse, are unlikely to be long enough to accommodate the whole train. The emerging standard on the rail network for intermodal trains is 630m trailing length (30 x 'freightliner' wagons (60ft deck length) or 17 'Megafret' wagons). In the longer term, the aspiration is for 750m trailing length intermodal trains. Trains will therefore need to be 'sectioned' at some point before they can be accommodated in cargo handling sidings (e.g. intermodal terminal), where tracks are generally 400-500m in length.

- As a reception siding would not normally belong to Network Rail, the terminal operator is not reliant on mainline locomotive traction providers to undertake shunting or sectioning of trains, and can undertake these operations themselves by employing the use of their own 'off mainline' shunting equipment. This improves the efficiency and throughput capacity of a terminal.

Distribution centres generally operate 'time window' systems for the inward delivery of goods. A vehicle delivering to such a facility will be allocated a time slot during which the goods must be delivered, and in many cases the time slot can be as tight as plus or minus 10 minutes. If a haulier misses the allocated time slot, deliveries can be rejected or the vehicle may have to wait a considerable period of time before the load will be handled. In view of journey time un-reliability issues, many hauliers consequently allocate additional time into their operating schedules in order to ensure that vehicles do arrive on time and meet the allotted time slot. As a result, vehicles often arrive early for deliveries. Consequently there is a need for drivers to park their vehicles and wait until allotted delivery times. Commercially attractive logistics sites will therefore be sites, which are designed with an appropriate and efficient road layout so that they can handle all generated HGV traffic in an environmentally sensitive manner (i.e. avoid the need for HGVs to park on the internal road network, causing possible congestion or queuing onto the public road network).

3.6 Neighbouring Land Uses

Distribution activity needs to operate 24 hours per day, seven days per week. However there are noise and visual impacts associated with distribution. Where possible, deliveries by HGV are often undertaken during the night when traffic congestion is minimal. Distribution centres therefore need to be accessed during night time hours. Rail freight facilities, parking areas for road trailers or areas where containers are stacked need to be illuminated during the hours of darkness for both practical and safety reasons. Large flood lights therefore need to be erected. Many freight trains also run at night when conflicts with passenger services are minimised. Rail freight facilities at a logistics site will therefore need to receive, despatch and handle trains at night time. All of these activities, and others which occur, cause noise and visual pollution.

3.7 Labour Supply

Distribution activity is relatively labour intensive. Despite the automation of many logistics functions, most distribution warehouses still rely on manual labour for many of their activities. These include:

- Using a forklift truck to move pallets of cargo from an inbound HGV/railway wagon to pallet racks in the correct storage area in the warehouse
- Inputting data covering inbound cargo into the warehouse's inventory management systems (often undertaken using hand held barcode reading devices)
- Picking goods from storage to the correct order and consolidating them with other goods ready for loading to outbound HGVs/railway wagons
- Recording the outbound movement of goods on the inventory management system
- Loading pallets onto outbound HGVs/railway wagons

In addition to these tasks, there are the usual administrative jobs associated with large labour intensive industries e.g. Payroll, Human Resources. Drivers for the delivery HGVs based at the warehouse will also be required. Intermodal terminals require gantry crane operators, yard tractor drivers, HGV drivers and security staff. As a general rule of thumb, employment densities at NDCs are around 100-150 square metres per employee. Therefore a logistics site incorporating 200,000m^2 of distribution floor space will require up to 2,000 warehousing staff. RDC activities are more labour intensive, probably in the region of 70-100 square metres per employee.

Consequently a commercially attractive logistics site will be one which is located with a good quality labour supply within a reasonable 'travel to work' distance.

4. ASSESSMENT OF KENT INTERNATIONAL GATEWAY

This section assesses the KIG site using the criteria based approach described in the previous section. It clearly demonstrates that the site meets all the criteria fully and to a high level, meaning it can therefore be considered an important location for a large rail linked logistics park. In particular, this section undertakes a detailed analysis of market need (first criteria), showing that there is clear and strong demand from the logistics market for the proposed development. A summary of the site's 'fit' with the remaining criteria is also presented. Detailed analysis with respect to these criteria is presented in a number of accompanying technical documents/reports, and reference is made to these documents at the relevant location.

4.1 Market Need

Taking into account the issues presented in Section 1.3, a general 'market need' for large scale rail linked logistics parks can be identified due to demand from the logistics market. Their development meets a key commercial requirement of the market, namely access to reliable and cost competitive rail freight services. In this respect, the proposed KIG development meets the identified general market need in that it will provide a substantial amount of distribution centre floor space which will be served by rail. The warehousing will be served either from the intermodal terminal or by direct rail linkages should occupiers require such facilities.

Given emerging policy in the South East Plan that major cargo generators such as warehousing should be rail (or water) linked, the key need that requires quantification is that of warehousing rather than rail handling capacity. We have therefore undertaken a further analysis to ascertain the specific 'market need' for large scale rail linked logistics parks in the 'Greater South East' region.

In brief, this analysis is based on a forecast of future demand in the South East Region for large scale logistics warehousing to 2016 and 2026 (reflecting the timescales of the South East Regional Plan) together with the associated land requirement (i.e. a forecast of new build warehousing which can be expected in the region to 2016 and 2026). These forecasts have been undertaken on the basis that demand for warehouse floor space is linked to cargo volume. This in turn is driven by the changing patterns of production, consumption and trade. Even taking into account future efficiency gains, in terms of tonnes handled per square metre of floor space, future growth in traffic volumes will lead to increasing demand for distribution centre floor space. The analysis, however, has also accounted for new warehousing developments, which are replacements for existing distribution centre capacity.

The full methodology adopted for the forecasting exercise, the forecast traffic volume growth and the consequent new build floor space calculations undertaken are presented in full in Appendix 2. The table below presents the total (gross) warehouse new build which can be

expected in the Greater South East up to 2026 together with the associated land requirements.

Table 2: Forecast Total (Gross) New Warehouse Build and Land Requirements in Greater South East up to 2026

	000s square metres	
	2016	2026
Total Warehouse New Build	**1,977**	**3,938**
of which:		
Replacement of existing capacity	1,324	2,649
Growth Build to handle traffic growth	652	1,289
Land Requirement* (ha)	**494**	**984**

** On the basis that all new build, including replacement capacity, is located on new sites*

The forecasts estimate that the total (gross) warehouse new build in the Greater South East up to 2026 will be approximately 3.94 million square metres. Should all of the new build locate on new sites, the future land requirement up to 2026 will be 984 hectares on the basis that warehouse floor space occupies 40% of a plot footprint. Given a mean site size of 75ha, this implies a need for 13 new sites across the Greater South East. As demonstrated in Section 2.2, regional planning policy encourages this demand to be located close to intermodal facilities, rail freight facilities, or ports and wharves.

To expect all this forecast new build, though, to locate at new rail connected sites in the Greater South East such as that proposed at KIG is an unrealistic position. In particular:

- A supply of land already exists at sites allocated for B8 use (e.g. existing general industrial sites) and at sites 'in the pipeline;
- Not all warehouse occupiers will require or demand a site with access to the rail network; and
- Suitable rail linked sites are in short supply.

However, it is also important to understand that:

- In many cases new build floor space will not ‘fit’ onto existing plots at general industrial sites or on 'recycled' brownfield land. Essentially the size and configuration of existing sites will often be unsuitable for the large buildings increasingly demanded by the market. This is particularly the case when a large new building is replacing two or more smaller facilities;

- Policy is encouraging new warehousing to be rail linked (national policy and Regional Plan) and this means a requirement for new sites, given that existing sites are located either away from railway lines or are unsuitable for rail connection (e.g. insufficient loading gauge, lack of capacity, size of site too small); and
- The logistics market, particularly operators of large distribution centres, are demanding facilities located alongside rail terminal facilities.

As a result, new rail linked logistics sites with large plots will be required for a significant proportion of the forecast gross new build warehousing. Given this position, we have consequently estimated the proportion of the forecast total new build which is likely to require a plot at a new rail linked logistics site.

In our view, new rail linked logistics sites will be required in the region to accommodate future new build floor space which is in units greater than 25,000m^2. This view takes into account the following:

- Distribution centres greater than 25,000m^2 will require the large plot sizes offered at new logistics developments. Recent new buildings suggests that the market is increasingly demanding facilities in excess of 50,000m^2 (12.5ha plot). Plots of this size are generally not available at existing general industrial sites or on 'recycled' brownfield land, meaning that new logistics sites will be required.
- It is warehousing above 25,000m^2 that will benefit from or be of a nature to be attracted to rail terminal facilities. This is be deduced by the size of facilities which have located at major rail linked logistics sites such as Daventry International Rail Freight Terminal (DIRFT). At DIRFT, seven of the new distribution centres are greater than 25,000m^2.

We have therefore considered the proportion of forecast future new build floor space which is likely to be in units greater that 25,000m^2. As noted in Appendix 2, MDS Transmodal have recently undertaken similar forecasting exercises for both the East Midlands and the West Midlands regions. In both regions an assessment of recent new build trends indicated that 61% of new warehouse floor space is in units greater than 25,000m^2. It has therefore been assumed that this proportion can be regarded as representative for any largely urban region. We have consequently applied the marginally lower figure of 60% for the Greater South East.

The table below shows the total demand for new warehouse floor space in the region together with the proportion which is likely to require a plot at a new rail linked logistics site (i.e. 60% of demand).

Table 3: Forecast Demand for New Build Units >25,000m^2 up to 2016 and 2026 and Land Requirements

	000s square metres	
	2016	2026
Total Warehouse New Build	1,977	3,938
of which:		
In units greater than 25,000sq m (60%)	**1,186**	**2,363**
	Hectares	
Land Requirement	**297**	**591**
Number sites - mean 50ha per site	6.0	12.0
Number sites - mean 75ha per site	4.0	8.0
Number sites - mean 100ha per site	3.0	6.0

On this basis, around 2.4 million square metres of new build floor space may be required in the Greater South East up to 2026 on new rail linked sites. We can therefore conclude a 'market need' for 8 rail linked logistics parks across the Greater South East Region over the next 20 years on the basis of a mean site size of 75ha. This means that KIG is able to meet around 16% of the future regional need (375,000 square metres).

4.2 Good Quality Highway Access

The KIG site will have a dedicated entrance directly from the A20. This entrance itself will be located approximately 0.5km from Junction 8 of the M20. Effectively the development will have direct access to the national motorway network. A Highway Impact Assessment has been undertaken and is reported in an accompanying technical document. This document demonstrates that, in terms of road access, the KIG site meets the criteria in full and can be considered, against this criteria, to be an appropriate site for hosting rail linked logistics facilities.

4.3 Good Quality Rail Access

A *Railway Connectivity and Site Layout* report, an accompanying technical document, has been prepared which analyses in detail all the relevant railway access issues. This document demonstrates that, in terms of rail connectivity, the KIG site meets the criteria in full to a very high standard. It can therefore be considered to have good railway access. From this perspective, it is an appropriate site for hosting rail linked distribution facilities. In particular the railway access report shows that:

- The site is served by the main Swanley-Ashford line which is already gauge cleared to the W9 loading gauge. The KIG site is therefore able to accommodate the full range of intermodal units, specifically 2.9m/9'6" tall 'high cube' maritime containers and 13.6m/45' length intra-European intermodal containers, on 'Megafret' wagons' and without the need to use the cost inefficient or operationally inflexible low deck height wagons;
- The KIG site could also handle piggyback trailer operations to and from mainland Europe via the Channel Tunnel. The Channel Tunnel Rail Link to Ashford is already gauge cleared to piggyback standards, and only two structures between Ashford and KIG are foul of the requisite gauge. It is likely that these lineside structures could be enhanced relatively easily and cheaply, for example by means of track lowering;
- The KIG site possesses excellent rail connectivity from an 'operational flexibility' perspective. The site offers direct access to/from the south (Channel Tunnel) and the all major origins/destinations in Britain, without the need to change direction (by means of a locomotive 'run round') or utilise a long diversionary or circuitous route;
- An analysis of available freight capacity to/from KIG suggests that at least one available freight path per off-peak hour per direction is available to serve the site (the minimum requirement).
- KIG is to be developed with an open access intermodal terminal capable of handling 750m length trains. In addition, a number of the proposed warehouse units can also be constructed with dedicated sidings for conventional box wagon traffics (should occupiers require such facilities). Logistics sites which also provide directly rail linked buildings for conventional wagons in addition to intermodal terminal facilities will gain additional advantages.

4.4 Site Size and Configuration

The *Railway Connectivity and Site Layout* report also provides an assessment of the site size and proposed layout. The report demonstrates that KIG meets this particular criteria to a high degree, namely:

- KIG will have reception sidings capable of receiving trains from both directions;
- The railway layout permits efficient and operationally flexible train movements to, from and within the site;
- KIG will have an intermodal rail freight terminal; and
- KIG is 112ha total size, provides around 345,000 square metre of floor space and individual plots which permit very large units.

In terms of size and configuration, therefore, the KIG site meets the criteria in full and to a very high standard. From this perspective, the site can be considered an appropriate site for hosting rail linked distribution facilities.

4.5 Neighbouring Land Uses

An Environmental Impact Statement has been prepared for the KIG site. This shows that the KIG development will be able to permit 24 hour operations and no restrictions on vehicle movements without significant impact on neighbouring land uses. Accordingly, the KIG site meets the criteria in full, meaning it can considered an appropriate site for hosting rail linked distribution facilities.

4.6 Labour Supply

A s*ocio-economic assessment* has been prepared and is reported in an accompanying technical document. This document demonstrates that, in terms of labour supply, the KIG site is located with a sufficient quality labour supply within a reasonable 'travel to work' distance. The KIG site therefore meets the criteria in full and to a very high standard. From this perspective too, the site can be considered an appropriate site for hosting rail linked distribution facilities.

5. TRAFFIC FORECASTS FOR KENT INTERNATIONAL GATEWAY

Loaded Units to/from NDCs at KIG

The relationship between floor space and volume throughput at NDCs is broadly as follows:

- At any one time, each square metre of floor space holds 1.5 pallets;
- Stock turns over 12.5 times per annum (i.e. dwell time of 4 weeks);
- 25 pallets per standard unit load; and
- 300 operating days per annum.

We have assumed that two-thirds of the floor space at KIG will be associated with national distribution operations (i.e. NDCs), equating to 245,000m^2 of floor space. On the basis of the above, the NDCs at KIG can be expected to receive 613 in-bound unit loads per day, divided as follows:

- 61 unit load equivalents direct to warehousing by conventional rail wagons (10%);
- 153 unit loads by intermodal rail freight via the KIG intermodal terminal (25%); and
- 399 unit loads delivered by road transport via the public highway network (65%).

Similarly, the NDCs at KIG would generate 613 out-bound unit loads per day, as follows:

- 107 unit loads destined for RDCs in other regions, by intermodal rail freight via the KIG intermodal terminal (17.5%);
- 50 unit loads to RDCs on the KIG site (7.5%); and
- 456 units loads destined for RDCs in other regions, despatched by road transport via the public highway network (75%).

Loaded Units to/from RDCs at KIG

The relationship between floor space and annual volume throughput at RDCs is broadly as follows:

- At any one time, each square metre of floor space holds 1.5 pallets;
- Stock turns over 25 times per annum (i.e. dwell time of 2 weeks);
- 25 pallets per standard unit load; and
- 300 operating days per annum.

The remaining floor space at KIG (one-third) will be associated with regional distribution operations (i.e. RDCs), equating to 122,000m^2 of floor space. On the basis of the above, the RDCs at KIG can be expected to receive 610 in-bound unit loads per day, distributed as follows:

- 107 unit loads by intermodal rail freight via the KIG intermodal terminal (17.5%);
- 50 unit loads from NDCs on the KIG site (7.5%); and
- 453 unit loads delivered by road transport via the public highway network (75%).

Similarly, the RDCs at KIG would generate 610 out-bound unit loads per day destined for retail outlets in the immediate region, all by road transport via the public highway network .

Empty Units and Backloads to/from NDCs

With regard to HGVs finding backloads and empty re-positioning, we have made the following assumptions:

- 40% of the HGVs delivering loaded unit loads to the NDCs will also collect a backload from the NDCs for delivery to RDCs in other regions (40% of 399). This equates to 160 loaded out-bound HGV movements, out of the total of 456 loaded out-bound movements from the NDCs to the highway network (35%);
- Consequently, 60% of the HGVs delivering loaded unit loads to the NDCs will leave KIG empty. This equates to 239 empty out-bound HGV movements to the public highway network (i.e. 60% of 399);
- 25% of the loaded out-bound unit loads from the NDCs and destined for RDCs in other regions will return to KIG empty. This equates to 115 empty in-bound HGV movements from the public highway network.

Empty Units and Backloads to/from RDCs

- All loaded HGVs departing from the RDCs and destined for retail outlets in the immediate region will return empty to KIG. This equates to 610 in-bound empty HGV movements from the public highway network;
- 40% of the HGVs delivering loaded unit loads to the RDCs will also collect a backload from the NDCs for delivery to RDCs in other regions. This equates to 181 loaded out-bound HGV movements, out of the total of 456 loaded out-bound movements from the NDCs to the highway network (40%)
- Consequently, 60% of the HGVs delivering loaded unit loads to the RDCs will leave KIG empty. This equates to 272 empty out-bound HGV movements to the public highway network (i.e. 60% of 399);

Intermodal Terminal

The KIG intermodal terminal will have a capacity of 200,000 lifts per annum. This equates to 334 unit loads moving by rail into the terminal each day and 333 unit loads moving by rail out from the terminal each day (667 total by rail into/out per day). This indicates that the intermodal terminal will generate the 393 out-bound movements per day, as follows:

- 153 loaded units loads to NDCs on the KIG site (see above);
- 107 loaded units loads to RDCs on the KIG site (see above);
- 73 loaded unit loads to distributors in the wider region, by road transport via the public highway network; and
- 60 empty unit loads to exporters/producers in the wider region, by road transport via the public highway network (see below).

It is assumed that the shunting equipment used to move unit loads from the intermodal terminal to NDCs/RDCs also return to the terminal with a unit load, either swapping one loaded unit for another or collecting an empty unit. On that basis, the intermodal terminal can be expected to receive 393 in-bound movements per day, as follows:

- 107 loaded unit loads from the NDCs on the KIG site;
- 60 loaded unit loads from exporters/producers in the wider region, by road transport via the public highway network;
- 46 empty unit loads returning from the NDCs on the KIG site (assuming that 107 out of 153 unit loads delivered to NDCs are re-loaded with cargo);
- 107 empty unit loads returning from the RDCs on the KIG site; and
- 73 empty unit loads returning from distributors in the wider region, by road transport via the public highway network.

Total HGV Gate Movements

Given the above position, total HGV traffic movements to and from the public highway network at KIG can be summarised as follows:

In-bound Traffic

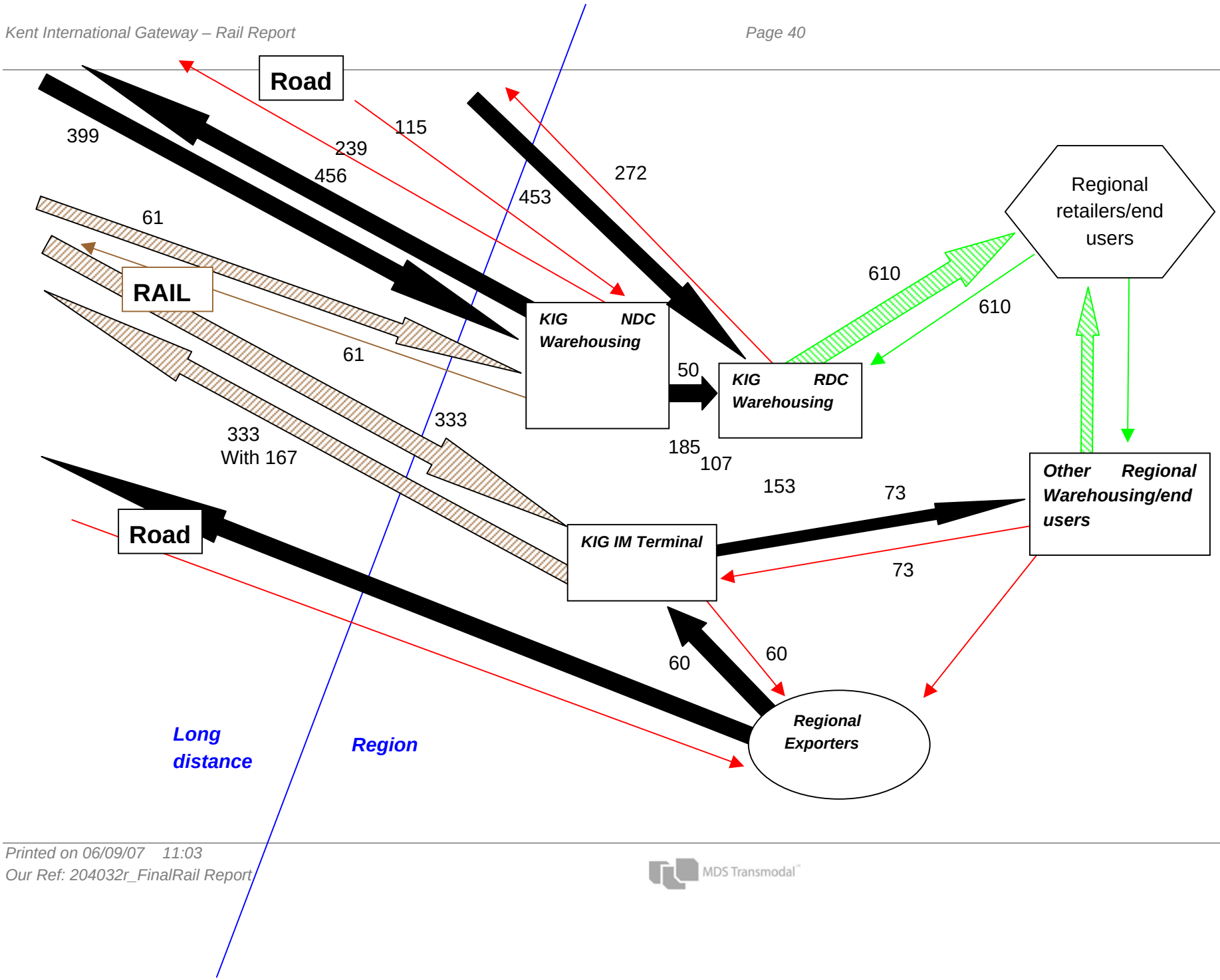
- 399 loaded HGVs in-bound to the NDCs;
- 453 loaded HGVs in-bound to the RDCs;
- 60 loaded in-bound unit loads from exporters/producers in the wider region to the intermodal terminal;
- 73 empty in-bound unit loads returning after local delivery from the intermodal terminal;
- 610 empty in-bound HGVs returning after local deliveries from the RDCs; and
- 115 empty HGVs incoming to the NDCs to collect cargo for distribution nationally from the NDCs
- **Total: 1,710 In-bound HGV Movements**

Out-bound Traffic

- 456 loaded HGVs out-bound from the NDCs;
- 610 loaded HGVs out-bound from the RDCs undertaking local deliveries;

- 73 loaded out-bound unit loads from intermodal terminal to distributors in the wider region;
- 60 empty out-bound unit loads to exporters/producers in the wider region, collecting cargo for out-bound flows via intermodal terminal;
- 239 empty HGVs after delivery to NDCs; and
- 272 empty HGVs after delivery to RDC
- **Total: 1,710 Out-bound HGV Movements**

The diagram below summarises the above analysis.


Road
399
239
456
115
453
272
61
RAIL
61
333
333
With 167
KIG NDC Warehousing
50
KIG RDC Warehousing
610
610
Regional retailers/end users
185
107
153
73
73
Other Regional Warehousing/end users
Road
KIG IM Terminal
60
60
Regional Exporters
Long distance
Region

KIG Rail Movements and Directions

The Intermodal terminal will handle 334 unit loads moving by rail into the terminal each day (all loaded) and 333 unit loads moving by rail out from the terminal each day, of which half (167) will be loaded (667 total by rail into/out per day). This produces a total capacity of 200,000 units per annum. In addition, there will be 61 unit load equivalents moving direct to the NDC warehousing by conventional rail wagons (i.e. not through Intermodal terminal) and then returning empty.

The NDCs will predominantly be occupied by distributors importing cargo from Europe. Consequently, all 214 loaded in-bound unit loads by rail for the NDCs will be from mainland Europe via the Channel Tunnel (61 units by conventional wagons and 153 units via the intermodal terminal).

It is expected that all the in-bound loaded unit loads by rail destined for the RDCs will be from British origins (107 unit loads, all via the Intermodal Terminal). It is likely that the in-bound unit loads by rail via the Intermodal Terminal and destined for distributors in the wider region (73 units) will be split 50:50 between European imports through the Channel Tunnel and GB-sourced.

In terms of out-bound unit loads moving by rail via the Intermodal terminal, it is expected that half will be loaded and half will be empty. Our estimates suggest that 107 of the 167 loaded units will be from the NDCs, with 20% of these destined for Europe via the Channel Tunnel and 80% for RDCs in the rest of Britain. The remaining 60 loaded outbound units, from exporters/producers in the wider region, we have assumed a 50:50 split of destinations between Europe via the Channel Tunnel and Britain.

Therefore in summary:

In-bound:

- 153 loaded units through Channel Tunnel via the Intermodal Terminal for NDCs;
- 36 loaded units through Channel Tunnel via the Intermodal Terminal for distributors in the wider region.
- **Total of 189 loaded units** through Channel Tunnel via the Intermodal Terminal

and:

- 107 loaded units from British origin and moved via the Intermodal Terminal for the RDCs
- 37 loaded units from British origin and moved via the Intermodal Terminal for distributors in the wider region
- **Total of 144 loaded units** from British origin and moved via the Intermodal Terminal

and:

- **61 loaded unit loads** (equivalent) in-bound through the Channel Tunnel in conventional wagons and destined for the NDCs.

Out-bound:

- 21 loaded units through the Channel Tunnel via the Intermodal Terminal from the NDCs (20% of 107);
- 30 loaded units through Channel Tunnel via the Intermodal Terminal from exporters/producers in the wider region;
- 138 empty units through the Channel Tunnel via the Intermodal Terminal.
- **Total of 189 units out-bound** through Channel Tunnel via the Intermodal Terminal

and:

- 86 loaded units to British destinations via the Intermodal Terminal from the NDCs;
- 30 loaded units to British destinations via the Intermodal Terminal from exporters/producers in the wider region
- 28 empty units to British destinations via the Intermodal Terminal.
- Total of 144 out-bound units via the Intermodal Terminal

and:

- **61 empty unit loads** (equivalent) out-bound through the Channel Tunnel (empty conventional wagons from the NDCs).

Assuming 30 unit loads per train, this equates to:

- 6.3 trains per day from Europe through Channel Tunnel to the Intermodal Terminal
- 2.0 trains per day from Europe through Channel Tunnel direct to the NDCs (conventional trains)
- **Total: 8.3 trains** per day from Europe through the Channel Tunnel

- 6.3 trains per day to Europe through the Channel Tunnel from the Intermodal Terminal
- 2.0 trains per day to Europe through the Channel Tunnel direct from NDCs (conventional trains)
- **Total: 8.3 trains** per day to Europe through the Channel Tunnel

- **4.8 trains** per day from British origin to Intermodal Terminal
- **4.8 trains** per day to British destination from the Intermodal Terminal

6. ALTERNATIVE SITE SEARCH AND ASSESSMENT

The first criteria stipulates that there must be a market need which cannot be met at other alternative (and more appropriate) locations. We have therefore undertaken an 'Alternative Site Assessment', the purpose of which was to ascertain whether there are other sites in the 'Greater South East' with locational qualities of a comparable or superior level to those of KIG i.e. sites of a similar or higher standard which could potentially meet the need for rail linked logistics parks in the South East. The sites identified are not necessarily rail linked at present but their suitability for inclusion in the short-list of potential sites is dependant on the practicability of a straightforward link to an adjacent rail line of suitable loading gauge.

Area Covered

The area of investigation was deemed to be the 'Greater South East of England', covering the counties which comprise the Government Office South East region together with London, Hertfordshire, Bedfordshire and Essex. This is effectively the area considered by the logistics market to be the South East region.

Methodology Adopted

The initial work was carried out on the ‘Landranger’ series of Ordnance Survey Maps (1:50,000 scale). This was thought to represent, on a reasonable scale, major road and rail routes and adequately shows potential sites. In terms of identifying new individual sites (or a group of adjacent fields which, when combined, could form a site suitable for rail linked B8 use), a two stage process was adopted, namely:

- The production of a 'long list' of sites. These are sites which are located near a railway line and major road interchange which, on first appearances, could potentially meet the site assessment criteria; followed by
- Assessing the 'long list' using the criteria based approach to produce a 'short list' of potentially suitable sites

In assessing the 'long list' of sites with regards to their potential suitability, the criteria based approach was adopted at a fairly high level, as follows:

i) At Least 50 Hectares of Development Land Available

Only individual sites larger than 50ha, or a group of adjacent fields which when combined could form a site larger than 50ha were considered for inclusion on the short list.

ii) Good Rail Access

This means that the site should be located adjacent to or a short distance from a rail line of generous loading gauge (at least W8 or above), the ability to handle full length trains, and available capacity to run freight train services.

In order to ensure safe carriage of maritime intermodal ISO containers this study could have reasonably been limited to the rail corridors served by W9 or W10 rail routes. However, to broaden the net to include routes which are capable of upgrade at reasonable cost, we have also included routes shown as W8 gauge (the minimum requirement for intermodal traffics). A line may be classified through its entire length as W8 but this could have been determined by a single lineside structure. Alteration/removal of the structure could result in the relevant loading gauge can be increased. There is also the possibility that further accurate surveys could re-designate certain routes. It is for this reason that rail routes limited to a W8 loading gauge were also included, although they must be capable of upgrade. Loading gauges have been derived from Network Rail's Route Directory and the recently produced Freight Rail Utilisation Strategy.

In general, sites were included which were adjacent to relevant rail lines. Although sites have been proposed at a distance of almost 2km from a rail line (the site proposed for Port Salford in Greater Manchester for instance) this is regarded as an absolute maximum and the majority of sites identified were well within this range.

iii) Good Quality Access to the Highway Network

Only sites located a short distance from a motorway or grade-separated dual carriageway were included on the short list. The maximum road distance to a major road was deemed to be 5km.

In certain areas, where only ‘A’ roads occur this criteria was relaxed to include two-lane ‘A’ roads in order to ensure the compilation of a comprehensive long list.

iv) A Suitable Configuration

This should allow large scale high-bay warehousing, intermodal terminal facilities, appropriate railway wagon reception facilities and parking facilities for all goods vehicles using the site.

In terms of shape, the initial OS map survey considered only sites of regular shape which, which were generally square or rectangular. Odd-shaped sites, which would require awkward rail layouts and storage facilities, were regarded as sub-optimal and discounted.

v) Located away from Incompatible Neighbours

This allows for 24-hour operations and no restrictions on vehicle movements, minimising the impact on the local environment. The need for HGVs to pass through significant built-up areas (especially residential settlements on or adjacent to a site) was regarded as a reason to discount locations.

vii) Has Good Access to Labour

Other factors, which were considered for inclusion at this stage, included the availability of an appropriately skilled and sufficient labour force. Major distribution facilities can employ well in excess of 1,000 staff and in order to derive a robust 'short' short-list this has to be taken into account. It was however decided that the research needed to determine labour availability etc could be left to a later stage of the site selection process.

vii) Topography

The Site Should be on flat terrain so that a rail system can be established that does not encounter gradients greater than 1:500 as suggested in Railway Group Standards. Sharp curves of radius less than 120m are also to be avoided, (again as recommended by Railway Group Standards). However, with a site size of more than 50 hectares there is little chance of this being a constraint.

Where a potential site has been identified and the adjacent line is shown to be in a cutting or on an embankment, the gradient criteria are very unlikely to be satisfied.

A square site of 50 Hectares will have sides of approximately 750 metres in length. A maximum gradient on-site of 1:500 implies that the maximum allowable rise (and fall) on the site should not exceed 1.5 metres. The possibility of carrying out extensive earthworks has not been ignored however, and the short list has included some sites where this 1.5 metre rise within the site has been exceeded.

ix) Rail Access Across Roads

In order to ensure the site is operationally viable it should be ideally located with a rail line on one side and an access road on one of the other sides, so that there is no need for the rail line to access the site by crossing a road. Where a site was identified on the long list and rail access would need to cross a major road or motorway it has been discounted. If, however, the site only required the apparent minor re-alignment of a road, or rail access only crossed a minor road and/or there was alternative road access then this did not necessarily discount the site.

x) Watercourses

Although the presence of a watercourse through a site was not sufficient to discount it, if it was obviously a major watercourse or if there were more than one, then there was deemed to be sufficient potential engineering reason to discount it.

Site Identification and Assessment

The study initially identified 120 sites that, on first appearances, could meet the site assessment criteria (the long list). We believe this to be a definitive list of sites which are potentially suitable for accommodating large scale rail linked logistics facilities, and we are not aware of any other possible locations. Having applied the site assessment criteria as described above, the following conclusions can be drawn with regards to whether other sites are able to meet the identified market need to a comparable or higher standard.

- A total of 87 sites (out of 120) on the long list do not meet the criteria and can therefore be considered inappropriate for hosting large scale rail linked logistics facilities. Taken overall, many of the sites identified were discounted for more than one reason and it was the exception that a site was discounted under a single criteria. Appendix 4 records these sites together with a summary of their assessment against the criteria.

- A 'short list' of 33 potentially suitable sites was subsequently identified which meet the criteria to at least the minimum required standards. These sites could potentially contribute towards meeting the identified regional need for rail linked facilities. Appendix 3 details the 33 'short list' sites and summarises their assessment against the criteria. The assessment has been undertaken at a fairly high level. At this stage, therefore, the 33 'short list' sites should be considered as sites which meet the criteria based on the high level assessment, meaning that they warrant further consideration before a definitive conclusion can be drawn with regards to their overall suitability.

- One clear conclusion, however, can be drawn. It can be seen from the short list that KIG is the only site on the Dover Straits-London corridor which meets the criteria and is not already zoned for a different form of built development. Consequently we can conclude that that KIG is the only location on this corridor which is suitable for hosting large scale rail linked logistics facilities. The Dover-London corridor has been identified within regional policy where modal shift will be promoted in general and where priority should be given for providing enhanced capacity for the movement of freight by rail (Policy T12).

7 CONCLUSIONS

The table below summarises the assessment of the KIG site against the criteria for assessing the suitability of sites as locations for rail linked distribution parks.

Criteria	Summary of Assessment	Rating
Policy Supply	• A clear case, in planning policy terms, can be made for the proposed development as it meets the aims and objectives set out in planning policy at national and regional level; and • The emerging SE Plan supports new warehousing being rail linked.	Very Good
Market Need	• A general 'market need' for rail linked distribution parks. The logistics market is demanding/requiring greater access to cost competitive rail freight services and the ability to locate distribution centres on rail linked sites; and • A quantified market need for new warehousing on rail linked sites - around 2.4 million square metres of new build large scale floor space can be expected in the Greater South East by 2026, a need for 8 sites (75ha mean size)	Very Good
Good Rail Access	*Operational Flexibility* • Direct access to/from Channel Tunnel; and • Direct access to/from all major origins/destinations in Britain; *Loading Gauge* • Ashford-Swanley line is gauge cleared to W9 *Capacity* • Capacity available for at least 1 train per hour per direction on all routes to/from site. *Rail Terminal Facilities* • Intermodal terminal to be an integral part of the KIG development; and • Some of the warehouses will also be provided with direct rail sidings.	Very Good
Good Road Access	• Direct road access to the M20;	Very Good
Size and Configuration	• 112 hectares in size; and • Will provide 345,000m^2 of warehousing.	Very Good
Access to Labour	• The KIG site is located with a sufficient quality labour supply within a reasonable 'travel to work' distance	Very Good
Located Away from Housing	• The KIG development will be able to permit 24 hour operations and no restrictions on vehicle movements without significant impact on neighbouring land uses	Very Good

Overall, we conclude that:

- There is a strong market need for the proposed development at KIG;
- The development fully meets the criteria fully and to a very high standard, meaning that it can be considered an appropriate site for rail linked distribution facilities;
- Future demand is sufficiently robust to warrant the need for KIG in addition to other developments which may be proposed for the Greater South East region.

Our assessment of alternative sites suggests that while there are other locations in the Greater South East which appear to meet the criteria, and therefore could potentially contribute towards meeting the identified regional need for rail linked facilities, KIG is the only site on the Dover Straits-London corridor which meets the criteria. It is the only location in the corridor which combines suitable rail access (W9 loading gauge, available capacity), and direct access to the motorway network at a large enough site capable of hosting modern logistics warehousing. Consequently we can conclude that that KIG is the only location on this corridor which is suitable for hosting large scale rail linked logistics facilities. The Dover-London corridor has been identified within regional policy where modal shift will be promoted in general and where priority should be given for providing enhanced capacity for the movement of freight by rail (Policy T12).

APPENDIX 1

APPENDIX 1: NETWORK RAIL LOADING GAUGES

The physical definition of the maximum height and width in cross section of a railway line is called its *loading gauge*. The size of the loading gauge of a particular section of track will determine the size of rail freight wagon (or combination of intermodal platform wagon plus intermodal unit) that can be conveyed on that section of line. The size of the loading gauge is determined by lineside features such as overbridges, tunnels, overhead power lines, signal gantries and platform edges. The physical dimensions of a rail freight wagon or intermodal wagon/intermodal unit combination must be within the loading gauge profile to ensure that it will not collide with any of these lineside features. Obviously the higher the bridges and tunnels etc. the larger the freight wagon that can be conveyed.

There are six different sizes of loading gauge on the British railway network. These are listed below (from smallest to most generous) together with the dimensions of each loading gauge profile in terms of above rail height at the top left and right corners and width at station platform level.

- W6 gauge (smallest) – above rail height 3.40m, width 2.50m
- W7 gauge – above rail height 3.47m, width 2.50m
- W8 gauge – above rail height 3.62m, width 2.50m
- W9 gauge – above rail height 3.72m, width 2.60m
- W10 gauge – above rail height 3.90m, width 2.50m
- W12 gauge (largest and not yet available) – height 3.90m, width 2.60m

The W6 gauge – height above rail 3.40m, width at station platform level 2.50m. This is the standard loading gauge on the British network, and it can accommodate most passenger rolling stock together with all conventional freight wagons such as steel flatbeds, box wagons (with 'arched roofs') and trade car carriers. The only intermodal unit that can be carried within the W6 loading gauge are standard maritime containers (2.59m/8'6") carried on low deck height Lowliner or 'well' wagons (see below). Swap bodies and high cube containers cannot be conveyed.

The W7 gauge – height above rail 3.40m, width at station platform level 2.50m. The W7 gauge was originally designed to accommodate 2.43m/8' tall containers (now obsolete), and can convey standard maritime containers (2.59m/8'6") on Megafret wagons (see below). However the gauge cannot accommodate any intermodal units on the standard deck height wagons operated by both Freightliner and GBRf. Effectively the W6 and W7 gauges are therefore restricted to handling conventional wagons only.

The W8 gauge – height above rail 3.62m, width at station platform level 2.50m. A W8 gauge network was developed by British Rail during the 1960s and was designed to convey the then newly introduced standard maritime container (2.59m/8'6") on a standard platform

wagon (deck height 1.036m or below). As a consequence a network of routes to all the major container ports are gauge cleared to at least W8. However to carry 2.90m (9'6") high cube containers (which are now expected to dominate deep-sea markets) on the W8 gauge requires the use of the low deck height wagons, which as discussed below have significant drawbacks in terms of operating costs, availability and rail competitiveness.

The W9 gauge – height above rail 3.72m, width at station platform level 2.60m. The W9 gauge was developed in the early 1990's to accommodate the expected introduction of intermodal services through the Channel Tunnel to mainland Europe. As a consequence a number of key routes through Kent to London, and onwards to the north of England and Scotland along the WCML and ECML are gauge cleared to at least W9 loading gauge. W9 gauge also allows the carriage of 2.90m (9'6") high cube containers on 'Megafret' wagons and therefore avoids the need for using Lowliner or 'Well' wagons (see below). It is therefore the minimum gauge at which intermodal services can operate without the loading gauge imposing serious cost or operational flexibility penalties on rail freight operating costs.

The W10 gauge – height above rail 3.90m, width at station platform level 2.50m. The only routes gauge cleared to W10 at present are the West Coast Mainline (WCML), a number of important branches from the WCML to intermodal terminals and the Great Eastern Mainline from Felixstowe to the WCML in London. W10 loading gauge is important because it allows the large fleet of existing Freightliner and GBRf wagons of 0.98m deck height to carry 2.90m (9'6") containers .

The W12 gauge – height above rail 3.90m, width at station platform level 2.60m. No route is currently cleared to W12 gauge, however it is obviously the more generous and flexible than W10 gauge as it will allow the movement of standard maritime containers, high cube containers and Channel Tunnel Swap Bodies on most types of wagon. The only routes currently gauge cleared to convey 'piggyback' standard trailers in Britain are the Channel Tunnel and the Channel Tunnel Rail Link. However specially designed low level trailers can be conveyed on some loading gauges.

Intermodal Unit Dimensions

In general there four common types of intermodal unit. These are:

- *ISO maritime containers*: the standard intermodal unit developed in the 1960s by shipping lines – height 2.59m (8'6"), width 2.44m (8') and length 12.19m (40') and 6.10m (20')
- *ISO 'high cube' containers*: the additional height over a standard container provides a greater loading capacity. The deep sea shipping lines are progressively replacing standard containers with high cubes containers. Consequently they are likely to

dominate deep sea container shipping in the near future – height 2.90m (9'6"), width 2.44m (8') and length 12.19m (40')

- *Swap Bodies*: a variety of sizes but the most common being the 'Channel Tunnel' swap body – height 2.77m, width 2.55m and length 13.6m
- *'Piggyback' trailers*: a variety of sizes, the most common being a standard semi-trailer used in road transport operation – height 4.00m, width 2.5m (2.6 reefer) and length 13.6m

Intermodal Platform Wagons Used on Network Rail

The main types of intermodal platform wagons used on the British network are shown in the table below. The 'Freightliner' platform wagon (deck height of 0.98m) is the most common type in use on the network today and the company has recently expanded its fleet. GBRf has also recently purchased a fleet of platform wagons with a similar deck height. Both Megafret and Multifret wagons, a standard European wagon design, are also in general use with EWS and GBRf. Freightliner, Multifret and Megafret wagons can together be considered 'standard intermodal wagons'. The Lowliner and 'Well' wagons are specially designed wagons with a lower deck height so that they can convey 2.90m (9'6") high cube containers on W8 cleared routes. However they are available in fewer numbers compared to the other wagons.

Wagon Type	Deck Height	Capacity	Comment
Freightliner	980mm	3 TEU i.e. 1x40ft + 1x20ft or 3x20ft	Standard British platform that can operate on the British network only i.e. not through the Channel Tunnel
Multifret	945mm	4 TEU i.e. 2x40ft or 4x20ft 2 x 13.6m swap body	Standard European platform that can operate in Britain and through the Channel Tunnel
Megafret	825mm	4 TEU i.e. 2x40ft or 4x20ft 2 x 13.6m swap body	Standard European platform that can operate in Britain and through the Channel Tunnel
Lowliner	720mm	2 TEU i.e. 1x40ft	Low deck height wagon. Can only be used on the British network i.e. not through the Channel Tunnel
'Well' Wagon	712mm	2 TEU i.e. 1x40ft	Low deck height wagon. Can only be used on the British network i.e. not through the Channel Tunnel

For example, a 2.59m tall ISO maritime container on a Freightliner platform wagon of deck height 0.980m would have an overall height of 3.57m, meaning such a combination could be accommodated on a W8 loading gauge or above. A 2.90m tall high cube maritime container

on the same wagon (combined height 3.87m) can only be accommodated on a W10/W12 clear route.

Loading Gauge and Intermodal Unit/Platform Wagon Combinations

Two factors will determine whether an intermodal unit/platform wagon combination will 'fit through' a particular loading gauge profile;

- the height and width of the intermodal unit
- the deck height of the platform wagon being used to convey the intermodal unit

Taking into account the dimensions of intermodal units, intermodal platform wagon heights and loading gauge profiles shown above, the table below summarises the loading gauges available on the British network and the intermodal units they can accommodate.

Loading Gauge	Intermodal Units and Wagon Combinations Accommodated
W6	8'6" standard maritime containers on Lowliner or 'Well' wagons only
W7	8'6" standard maritime containers on Megafret, Lowliner or 'Well' wagons only
W8	8'6" standard maritime containers on all wagons 9'6" high cube containers on Lowliner or 'Well' wagons
W9	8'6" standard maritime containers on all wagons 9'6" high cube containers on Megafret, Lowliner or 'Well' wagons Channel Tunnel intermodal units on Megafret or Multifret wagons
W10	8'6" standard maritime containers on all wagons 9'6" high cube containers on all wagons Channel Tunnel intermodal units on Megafret or Multifret wagons
W12	8'6" standard maritime containers on all wagons 9'6" high cube containers on all wagons Channel Tunnel intermodal units on all wagons

The table shows that the only intermodal unit that can be carried within the W6 loading gauge are standard 2.59m/8'6" maritime containers, and only then on the specially designed low deck height 'Lowliner' or ‘well’ wagons. Swap bodies and 2.90m/9’6” high cube containers cannot be conveyed at this gauge. This is particularly important as high cube containers are increasing in popularity, and are likely to become the dominant size unit over the next decade.

Operating experience to date suggests that there are a number of issues regarding 'Lowliner' and ‘well’ wagons in terms of:

- Reliability – small wheels have been employed to lower the deck height. This has resulted on poor reliability

- Cost – their poor reliability has resulted in high maintenance cost. Their reduced carrying capacity compared to other wagons e.g. 2 TEU compared to 3 TEU on a Freightliner wagon despite the fact that the wagon is at least as long. This one third reduction in capacity further raises operating costs per unit.
- Availability – all the Lowliner Wagons are on a long term lease to Freightliner, and therefore not available to other intermodal operators
- Operating flexibility – in the case of the 'Well' wagon, units can only be 'top lifted', which restricts the wagon to ISO maritime containers only. They are also restricted to the British network and not certificated to operate through the Channel Tunnel to mainland Europe. This means that they cannot be used for international intermodal operations.

In comparison, Freightliner, Megafret and Multifret wagons are more reliable, have lower lease and operating costs, are available in large numbers and have larger carrying capacities, resulting in much lower operating costs. Consequently low deck height wagons not the 'wagon of choice' of intermodal operators. The cost implications of the 'Lowliner' and 'well' wagons means they cannot be considered economic for large traffic volumes (i.e. conveying a full range of intermodal units) which are anticipated on major corridors such as the Scotland – North West – Midlands – South East axis.

In terms of rail connectivity therefore, the **W8 loading gauge** is effectively the minimum gauge which should be considered for rail linked sites. Terminals or sites with access to a W8 loading gauge are able to handle standard maritime containers (2.59m/8'6") on standard platform wagons (i.e. Freightliner, Multifret and Megafret wagons), albeit supplemented by the use of low level wagons for some intermodal units (2.9m/9'6" containers).

However, the information provided above clearly shows that the **W9 loading gauge** is the minimum gauge which can accommodate the full range of intermodal units on standard platform wagons (2.9m/9'6" containers on Megafret wagons), and without the need to use the cost inefficient or operationally inflexible low deck height wagons in large numbers. The **W10/W12 loading gauges** can accommodate the full range of units on all standard platform wagons with a deck height up to 1.0m i.e. Freightliner, Multifret and Megafret wagons. An appropriate site is therefore one where the adjoining railway lines and the approach routes are gauge cleared to at least **W9,** and preferably to **W10 and W12** (or lines earmarked for enhancement to W10/W12). It is around such sites that rail freight operators will develop their own service strategies, and property developers will wish to develop rail linked distribution parks.

APPENDIX 2

APPENDIX 2: WAREHOUSE DEMAND FORECASTS AND LAND REQUIREMENTS: METHODOLOGY AND CALCULATIONS

A2.1 Current Freight Flows

The starting point for the forecast of future demand in the South East Region for large scale logistics warehousing was an analysis of current traffic flows in the counties of the 'Greater South East'. For the purposes of this analysis, the 'Greater South East' has been defined as the counties included within the South East Government Office region (i.e. Berkshire, Buckinghamshire, Oxfordshire, East Sussex, West Sussex, Surrey, Hampshire, and Kent) with the addition of Bedfordshire, Hertfordshire, Essex and Greater London. The inclusion of these counties enables a robust view of cargo flows in the area to be undertaken and takes account of the obvious inter-relationships between the GOSE region, Greater London and the counties north and east of London. The MDS Transmodal Great Britain Freight Model (GBFM) has been utilised to undertake this analysis.

The first task was to:

- Establish the current volume of goods delivered in the South East, excluding port traffics for export, for both road and rail freight; and
- Establish the current volume of goods delivered directly to distribution centres in the South East.

Given that goods delivered to a warehouse are eventually despatched from a warehouse, the analysis has concentrated on inward flows to the region. The outputs from the GBFM can be divided into different commodity groups. Recognising that some types of goods are not handled at distribution centres, the volume of goods delivered in the counties of the South East (tonnes lifted) for those commodities which at some stage in the supply chain will pass through a warehouse were identified and quantified. Goods which are not handled at distribution centres, i.e. bulk materials such as coal, petroleum products, aggregates and waste, were therefore excluded from the analysis.

The table below summarises the current (2005) volume of goods destined for the 'South East', excluding port traffics for export, by region of origin (Government Office regions) for those commodities which at some stage in the supply chain will pass through a warehouse (from here onwards called 'unitised goods').

Table A2.1: Volume of Unitised Goods Delivered in the 'Greater South East' 2005, by Government Office region, by Road and by Rail (millions tonnes lifted)

	000s Tonnes Lifted		
Origin Region	Road	Rail	Total
East Midlands	8,739	0	8,739
East of England	41,629	403	42,031
Greater London	37,223	30	37,253
North East	1,835	29	1,865
North West	5,584	302	5,886
Scotland	807	68	875
South East	73,744	789	74,532
South West	6,779	31	6,809
Wales	2,870	202	3,073
West Midlands	7,463	7	7,470
Yorks&Humb	5,085	583	5,667
Total	**191,758**	**2,444**	**194,202**
Modal Share	***99%***	***1%***	

Source: MDS Transmodal GB Freight Model

The figures in the table above, however, do not establish the volume of unitised goods, which are delivered directly to large distribution centres in the Greater South East. The GBFM's baseline data for road transport flows is derived from the DfT's Continuing Survey of Road Goods Transport (CSRGT). The CSRGT effectively records goods each time they are 'lifted' as they pass from manufacturer or port to distribution centre to retail outlet. There is therefore an element of double and triple counting. The total volume of unitised goods delivered in the Greater South East, as described in the table above, is therefore the sum of the following types of freight flows:

- Factory to factory
- Factory/port to distribution centre (NDC or RDC)
- NDC to RDC
- NDC or RDC to retail outlet (end user)

In order to establish the current volume of unitised goods being delivered directly to large distribution centres in the region, a further 'filter' has been applied to the road traffic flow data given in the table above, to eliminate the double/triple counting.

MDS Transmodal have recently undertaken a similar 'filtering' exercise for both the East Midlands and the West Midlands regions. This was undertaken by allocating total cargo

flows to postcode district (PCD) using data on employment type in each PCD, on the basis that employment type can serve as a robust proxy for land use category. Goods destined for PCDs showing high levels of employment in transport services or warehousing were deemed to be deliveries direct to a distribution centre, conversely deliveries to PCDs with high levels of manufacturing employment were likely to be inter-factory deliveries.

The results of this analysis for the East Midlands showed that 41% of total unitised goods delivered in the region were destined for large distribution centres. Similarly, for the West Midlands the analysis showed that 45% of total unitised goods were made up of movements to distribution centres. As there is only a slight variation between the two regions it has been assumed that this proportion can be regarded as representative for any largely urban region. In order to be cautious, we have assumed a marginally lower figure of 40% for the Greater South East because of the particular popularity of the Midlands for the establishment of distribution centres.

The inward rail freight flows to the Greater South East in the commodity categories selected are exclusively containerised imports or domestic intermodal flows. Given the nature of this traffic, it is reasonable to assume that 100% of these flows will be direct to a distribution centre, either on the same site as the rail terminal or (more normally at present) via a road haul.

Taking the above into account, we have consequently estimated the current (2005) volume of unitised goods destined for the Greater South East together with the proportion of those goods which are being delivered directly to distribution centres in the region. On this basis, around 79 million tonnes of goods are currently delivered directly to large distribution centres in the Greater South East region. This is shown in the table below.

Table A2.2: Unitised Goods Delivered to the Greater South East 2005

	000s Tonnes		
	Total Delivered to South East	Total Delivered to Warehouse in South East	%
Road	191,758	76,703	40%
Rail	2,444	2,444	100%
Total	**194,202**	**79,147**	41%

Source: MDS Transmodal GB Freight Model

A2.2 Existing Warehouse Floor Space in Greater South East

The next stage of the analysis was to estimate the existing stock of large distribution centre floor space in the Greater South East region. This has been undertaken using generally accepted 'conversion factors' which relate annual tonnage throughput with floor space at large scale 'high bay' type warehouses. These are presented in the table below for both NDCs and RDCs. At NDCs, due to the type of commodities handled and their origins (imports, seasonal goods and products with long lead times), we would expect longer dwell times (mean of 4 weeks compared with a 2 week mean at RDCs) and a slightly less efficient use of the floor space available. Warehousing in the Greater South East region is predominantly RDCs, however the northern part of the region around Milton Keynes also includes a number of major NDCs (southern part of the so called 'Golden Triangle'). We estimate that RDC floor space accounts for around 75% of the region's warehouse stock. Consequently, the final column in the table shows the floor space/volume throughput factors we have used in this analysis, based on a 'weighted average' of 75% RDC floor space.

Table A2.3: Floor Space and Volume Throughout Relationships at RDCs and NDCs

	NDC	RDC	SE England
Tonnes per pallet	0.6	0.8	0.75
Pallets per sq m	1.0	1.5	1.38
Stock turns pa	12	26	22.5
Floor space utilisation	85%	85%	0.85

Using these factors and applying them to the total volume of unitised goods delivered directly to large distribution centres in the Greater South East, we estimate that there is currently around 4 million square metres of floor space at large distribution centres in the Greater South East region. This is shown in the table below.

Table A2.4: Estimated Existing Warehouse Floor Space in Greater South East

	000s Tonnes		
	Total Delivered to South East	Total Delivered to Warehouse	%
Road	191,758	76,703	40%
Rail	2,444	2,444	100%
Total	**194,202**	**79,147**	41%
Total Floor Space in Region*	**4,012,997 sq m**		

** 0.75 tonnes per pallet, 1.38 pallets per sq m and 22.5 stock turns pa*

A2.3 Forecast Freight Flows

The next stage of the analysis was to:

- Forecast future volumes of unitised goods delivered in the Greater South East, excluding port traffics for export, for both road and rail freight; and
- Establish the volume of forecast traffic which is likely to be delivered directly to distribution centres in the Greater South East.

Again, the MDS Transmodal GBFM has been utilised to undertake this analysis. The forecasts have been undertaken for the years 2016 and 2026 (reflecting the timescales of the South East Regional Plan), and they are consistent with the national rail and national port forecasts recently undertaken by MDS Transmodal for the DfT. They therefore include the same underlying baseline assumptions in terms of market conditions, modal costs and infrastructure enhancements. The baseline assumptions, which have been applied, include:

- Goods vehicle driver wages will increase by 2% per annum;
- Intermodal terminal costs reducing by £5 per lift by 2015 and staying the same thereafter;
- No increase in mean train length or other productivity gains;
- The rail freight grant scheme for maritime containers is reduced by £9 million per annum (no grant over 400km) by 2015 and staying the same thereafter;
- A reduction in Channel Tunnel charges; and
- The amount of rail connected floor space per region is the same as that allocated to each region in the national rail freight forecasts recently produced for the Rail Freight Group (RFG) and the Freight Transport Association (FTA)

The forecast also assumes that each region's warehouse stock and new build rates will continue in line with current trends and market share. Consequently, each region will continue to attract unitised traffic in line with current trends and market share.

The tables below summarise the forecast volumes of unitised goods delivered in the Greater South East, and the tonnages expected to go directly to distribution centres, on the basis that the current 40% share for road movements will remain constant for both 2016 and 2026.

Table A2.5: Forecast Unitised Goods Delivered in the Greater South East. For Forecast Years 2016 and 2026

2016	**000s Tonnes Lifted**		
Origin Region	Road	Rail	Total
East Midlands	9,464	104	9,568
East of England	49,047	2,954	52,000
Greater London	36,825	569	37,394
North East	2,005	47	2,053
North West	6,493	632	7,125
Scotland	394	495	889
South East	80,122	2,729	82,851
South West	7,223	210	7,433
Wales	3,330	434	3,764
West Midlands	8,155	154	8,308
Yorks&Humb	5,270	357	5,628
Total	**208,329**	**8,683**	**217,012**
Modal Share	***96%***	***4%***	
Total to Distribution Centres+	**83,332**	**8,683**	**92,015**

2026	**000s Tonnes Lifted**		
Origin Region	Road	Rail	Total
East Midlands	9,880	446	10,326
East of England	55,122	5,479	60,600
Greater London	35,852	1,463	37,314
North East	2,626	69	2,695
North West	7,541	979	8,520
Scotland	408	588	996
South East	86,287	4,396	90,683
South West	7,675	346	8,021
Wales	3,346	533	3,879
West Midlands	8,740	340	9,080
Yorks&Humb	5,934	570	6,504
Total	**223,411**	**15,209**	**238,620**
Modal Share	***94%***	***6%***	
Total to Distribution Centres+	**89,364**	**15,209**	**104,573**

+ On basis of 40% of road traffic and 100% of rail traffic to distribution centres i.e. 2005 market share
Source: MDS Transmodal GB Freight Model

Table A2.6 Growth in Unitised Goods Delivered in the Greater South East v 2005

Total Traffic	000s Tonnes	
	2016	2026
Road	16,571	31,653
Rail	6,239	12,765
Total	**22,811**	**44,418**
Direct to Distribution Centre		
Road	6,629	12,661
Rail	6,239	12,765
Total	12,868	25,426
% Growth v 2005	***16%***	***32%***

Source: MDS Transmodal GB Freight Model

Our forecast is, therefore, that the total traffic destined for a distribution centre in the Greater South East will rise by 32% (104.6/79.1 million tonnes) between 2005 and 2026.

A2.4 Development of Forecasts for New Build Warehousing in Greater South East

In order to forecast the total warehouse new build which can be expected in the region, it is first necessary to appreciate that new warehouse building is a result of two factors:

- The replacement of existing floor space capacity; and
- A need for additional floor space in order to handle a growth in traffic volumes (growth build)

Research by the Cranfield Institute found that over the decade since 1995, around 60% of strategic distribution centres built have replaced other warehousing/distribution warehouses which have subsequently closed. Therefore, over the period of 20 years, a large proportion of new floor space expected to be built in the Greater South East up to 2026 will simply be to ‘stand still' (i.e. will be built anyway regardless of traffic growth), with the balance being built to handle a growth in traffic volumes. Logistics operators will replace existing floor space for a number of reasons. This will include existing facilities becoming 'life expired' (many developers write down their warehouse stock over a 25 year economic life – replacement of warehouses is required at around 30 years) and 'economies of scale' gains which can be achieved through merging operations based at multiple sites at one new location. For example, an operator may have two operations based at 'old' warehouses in

the region of 20,000m^2 and 30,000m^2, which are combined at a new facility of 60,000m^2. The total gross new floor space built is 60,000m$^{2;}$ of which 50,000m^2 is 'standstill' new build while 10,000m^2 is growth build (net growth).

It is also important to understand that in many cases replacement floor space will not ‘fit’ onto existing plots at general industrial sites or on 'recycled' brownfield land (due to size and configuration). This is particularly the case when large new buildings are replacing two or more smaller facilities. In the example above the growth build element (net growth) is only 10,000m^2, however a new plot capable of accommodating 60,000m^2 will be required. As a result, new specialist B8 sites, strategic logistics sites, will be required for much of the 'standstill' build. In addition, the policy of encouraging new warehousing to be built on rail-linked sites also implies a requirement for new sites, given that many existing sites are located away from railway lines.

Given this position, the forecasts of total warehouse new build which can be expected in the region up to 2026 have been undertaken in two phases, namely:

- An estimation of the proportion of the existing regional warehouse stock which will need to be replaced by 2016 and 2026; and
- A forecast of the growth build element resulting from traffic growth.

Replacement Build

On the basis that modern high bay warehousing becomes 'life expired' at around 30 years, over the next 10 years (to 2016) approximately one-third (33%) of the existing warehouse stock in the region will require replacement. Similarly, we would expect over the next 20 years (to 2026) that approximately two-thirds (66%) of the existing warehouse stock in the region will require replacement. On the basis that currently there is around 4 million square metres of floor space in the region, this means that by 2026 we can expect around 2.6 million square metres of new warehouse floor space to be built in the Greater South East region simply to replace existing stock. This is shown in the table below.

Table A2.7: Estimated Replacement Build to 2016 and 2026.

	square metres		
	2005	2016	2026
Existing warehouse floor space	4,012,997		
Replacement Build		1,324,289 (33% of existing)	2,648,578 (66% of exiting)

Growth Build

The need for additional warehouse floor space results from of a growth in traffic volumes. Consequently, the growth build element (of the total future new build) can be calculated by equating the forecast growth in unitised tonnes delivered to distribution centres in the region (from our traffic forecasts) as a need for additional floor space. This can be undertaken using the 'conversion factors' which relate annual tonnage throughput with floor space at large scale 'high bay' type warehouses. The table below therefore shows the forecast 'growth build' element which can be expected in the region for 2016 and 2026.

Table A2.8: Forecast Growth New Warehouse Build in Greater South East 2016 and 2026

+ 2005 percentage delivered direct to warehouse
** 0.75 tonnes per pallet, 1.38 pallets per sq m and 22.5 stock turns pa*

2016	**000s Tonnes**		
	Total Delivered to South East	Total Delivered to Warehouse+	%
Road	208,329	83,332	40%
Rail	8,683	8,683	100%
Total	**217,012**	**92,015**	42%
Growth in tonnes to warehouses v 2005	12,868	000s tonnes	
Additional floor space to accommodate traffic growth*	**652,434**	**sq m**	
Growth tonnes per growth floor space	20		
Total Floor Space in Region	**4,665,431**	**sq m**	

2026	**000s Tonnes**		
	Total Delivered to South East	Total Delivered to Warehouse+	%
Road	223,411	89,364	40%
Rail	15,209	15,209	100%
Total	**238,620**	**104,573**	44%
Growth tonnes to warehouse v 2005	25,426	000s tonnes	
Additional floor space to accommodate traffic growth*	**1,289,189**	sq m	
Growth tonnes per growth floor space	20		
Total Floor Space in Region	**5,302,186**	**sq m**	

Therefore by combining the estimation for the replacement build with the forecast for the 'growth build' element, the total warehouse new build which can be expected in the region by 2016 and 2026 can be calculated. This is shown in the table below.

Table A2.9: Total New Warehouse Build in the Greater South East 2016 and 2026

	square metres	
	2016	2026
Replacement Build*	1,324,289	2,648,578
Growth Build+	652,434	1,289,189
Total New Build	**1,976,723**	**3,937,767**
New Build per annum	**197,672**	**196,888**

** Life of 30 years, meaning that 33% of existing stock is replaced over next 10 years and that 66% of existing stock is replaced over next 20 years*
+ Result of forecast unitised traffic growth in region

In summary we would expect total gross warehouse new build in the Greater South East to be in the order of 3.94 million square metres between 2005 and 2026. Out of this total around 2.6 million square metres will be replacement build and around 1.3 million square metres will be growth build.

It should be noted that the replacement figure broadly corresponds to the afore mentioned research carried out by the Cranfield Institute, which found that 60% of strategic distribution centres built since 1995 have replaced other warehouses, which subsequently closed.

On the basis that all of this new warehousing will be built on new sites (on the basis that new warehousing will not 'fit onto plots at brownfield or recycled land and that almost none of the land available at present is rail linked) this equates to a land requirement of **984 hectares**. This is assuming that the floor space of a warehouse is approximately 40% of a total plot footprint and allowing an extra 7.5% of warehouse area for intermodal terminals. This gives a net 37% site utilisation.

A2.5 Past Demand and Future New Build Warehousing

We have undertaken a 'sense check' on the above results by undertaking a further forecasting exercise based on an alternative approach. This has examined past new build rates together with our forecast unitised traffic volumes.

In 2004, King Sturge carried out a Regional Logistics Study (Stage One) for Advantage West Midlands (RDA) which included an analysis of the take up of large new distribution warehouses (of around 10,000 square metres and above) for the West Midlands and neighbouring regions. The results for the Greater South East are shown in the table below.

Table A2.10: New Build Take up in the Greater South East 1995-2003

Year	Square metres
1995	100,849
1996	120,000
1997	142,277
1998	117,259
1999	177,811
2000	10,550
2001	165,078
2002	73,205
2003	36,241
Total	**943,270**
Average per year	**104,808**

Source: King Sturge Regional Logistics Study Stage One, Advantage West Midlands 2004
The King Sturge definition of the South East Region for this table includes the counties of Essex, Hertfordshire, Bedfordshire and Greater London in addition to the counties included under the Government Office region, it therefore coincides with the 'Greater South East' definition used elsewhere in this study.

The King Sturge market data records new build warehouse take-up rates in the Greater South East for units greater than around 10,000 square metres. Analysis of this data shows that between 1995 and 2003, a total of 0.94 million square metres of new distribution centre floor space was built in the region. This equates to a mean new build rate of approximately 105,000 square metres per annum. The data in this analysis includes units both speculatively developed and purpose built. It is important to note that these figures reflect 'gross new build' and not the 'net change' in the region's total warehouse stock. They also account for new warehousing being built in the South East to replace existing stock in other regions, and vice versa.

However, the data for the years 2000, 2002 and 2003 appears to be incomplete (and not representative of the longer term trend). On this basis and removing these years from the assessment, this equates to a mean new build rate of just over 137,000 square metres per annum in the Greater South East.

The traffic forecasts presented above indicate that unitised goods going to distribution centres in the Greater South East will increase from 79.1 million tonnes in 2005 to 104.6

million tonnes in 2026, an increase of around 32%. This implies that a similar increase in distribution centre floor space will also be required over this period.

Given that average new build for sheds is around 137,000 square metres per year (revised King Sturge figures) and that sheds require demolition/replacement after 30 years, we can assume that the warehouse stock in the Greater South East in 2005 amounts to at the very least 30 years worth of building at 137,000 square metres per year. On this basis, the existing warehouse stock in the region can be calculated as being approximately **4.11 million square metres** (i.e. 30 years x 137,000 square metres)**.** This is broadly similar to the figure estimated earlier, which is based on existing traffic flows into the region (just over 4 million square metres).

The forecasts for unitised goods delivered to distribution centres in the South East indicates a growth in tonnes delivered of 32% from 2005 to 2026. The stock existing in 2005 (i.e. 4.11 million square metres) will therefore have to increase by 32% to 2026 to cope with this increase. This suggests that the region's warehouse stock will increase to **5.43 million square metres** by 2026 (i.e. 4.11 million square metres X 1.32). Again, this is a broadly similar to the result estimated earlier based on forecast traffic flows (5.3 million square metres).

The revised King Sturge mean annual new build figures suggests that around 1.37 million square metres of warehousing has been built over the past 10 years (10 years x 137,000 square metres pa). This can be subtracted from the 5.43 million square metres required in the region in 2026 to give an indication of what needs to be built between 2005 and 2026 (given a 30 year life for warehousing). This is shown in the table below.

Table: Estimated New Build Based on Past New Build Trends

	Millions Square Metres
Total Square metres required in 2026	5.43
Minus square metres built between 1996 and 2005	1.37
Total Build requirement between 2005 and 2026	**4.06**

Again, this is a broadly similar to the forecast new build expected in the region which was calculated by taking into account existing and forecast traffic flows (3.9 million square metres).

A substantial proportion of the 4.06 million square metres which needs to be built will be replacement build for old warehouses built between 1975 and 2005. This leaves us with the question as to how much shed space was built between 1976 and 1996 (and will need replacing over the next 20 years). If the King Sturge average of 137,000 square metres per

year had, in fact, been maintained over the previous 20 years, making 2.74 million square metres in total (i.e. 20 years X 137,000), then we would conclude that of the 4.06 million square metres that needs to be built then around 60% (or 2.74 million square metres) is replacement build. This corresponds to the research carried out by the Cranfield Institute mentioned in the previous section, which found that 60% of strategic distribution centres built since 1995 have replaced other warehouses, which subsequently closed.

APPENDIX 3

ALTERNATIVE SITE SEARCH AND ASSESSMENT: SHORT LIST

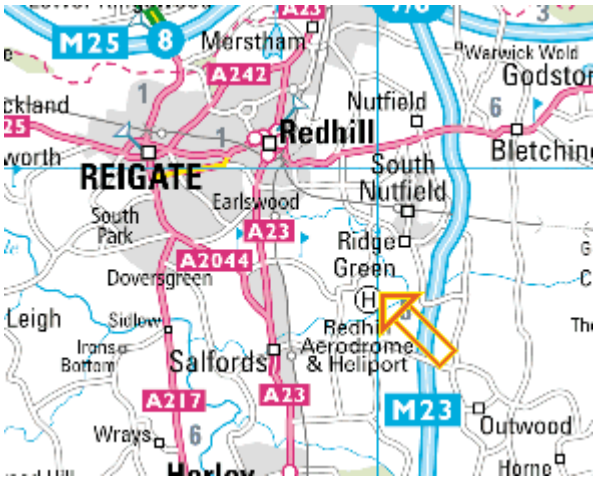
Alternative Site Search: Location Maps of Short List Sites

JBH 115

Colnebrook

JBH 87

Redhill Aerodrome

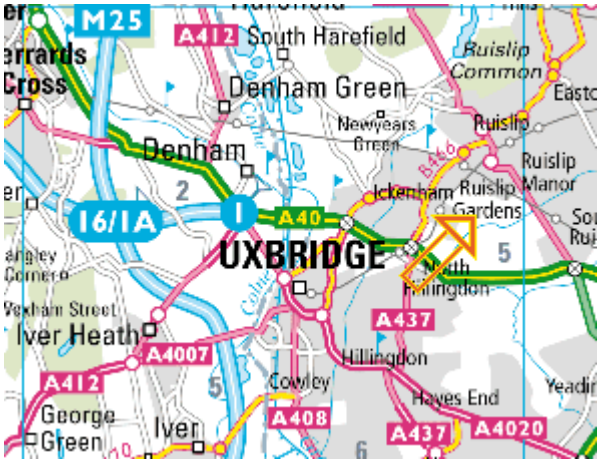


JBH 86

Frogmore

JBH 85

Ruislip Gardens

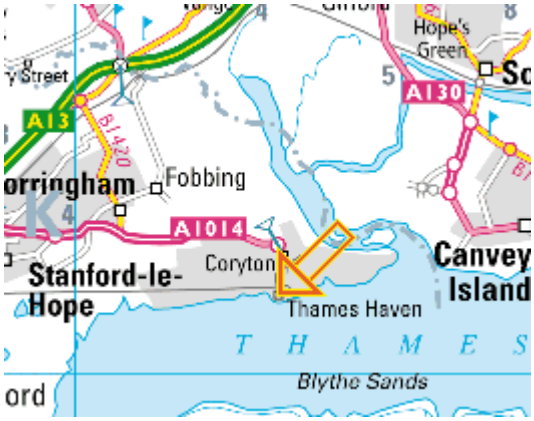


JBH 82

Howbury Grange

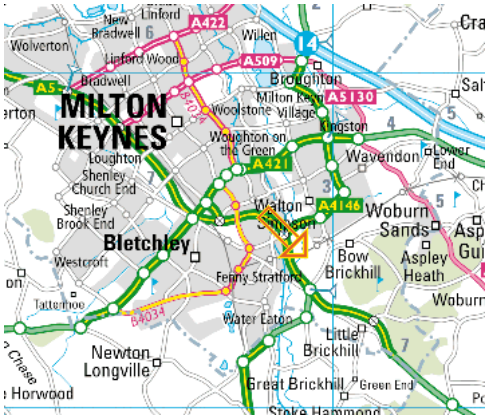
JBH 78A

Shellhaven Oil Refinery



JBH 73

Crossroads Farm, Bow Brickhill



JBH 72

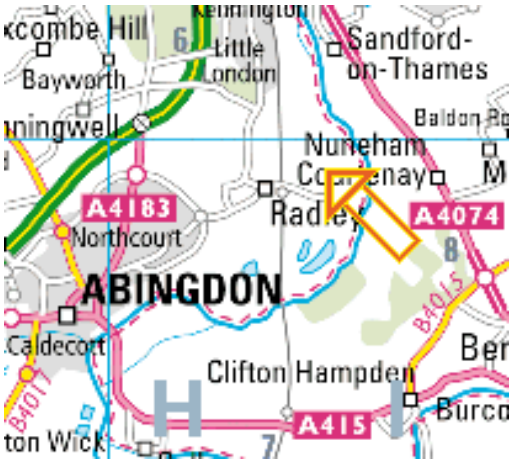
Home Farm

JBH 71

Chipping Farm, Brookfurlong Farm, Barndon Farm, Oddington Grange, Holts Farm

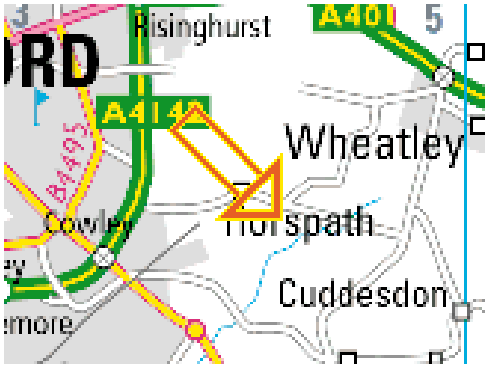
JBH 70

Lower Radley, Abingdon



JBH 69

Cowley Works

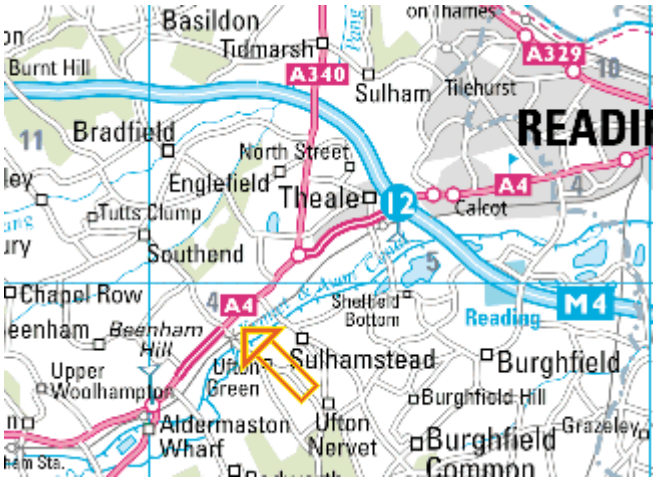


JBH 65

Manor Farm

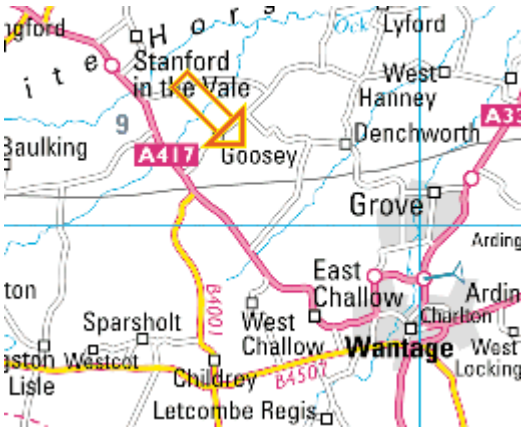
JBH 63

Tyle Mill, Sulhampstead



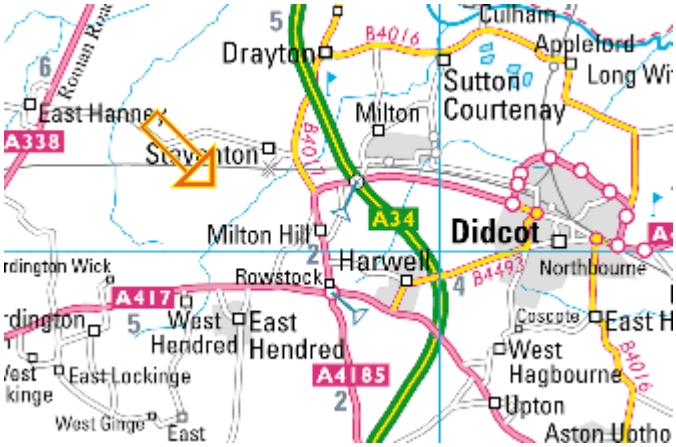
JBH 58

Church Farm, Goosey



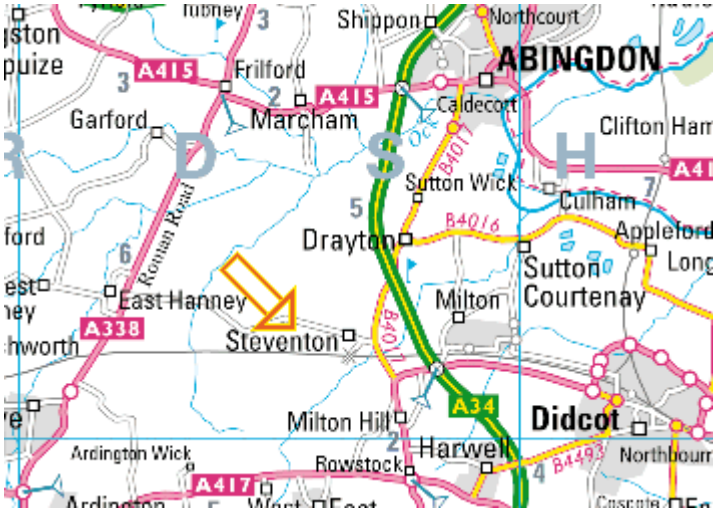
JBH 57

Hill Farm, Steventon



JBH 56

Goose Green, Steventon

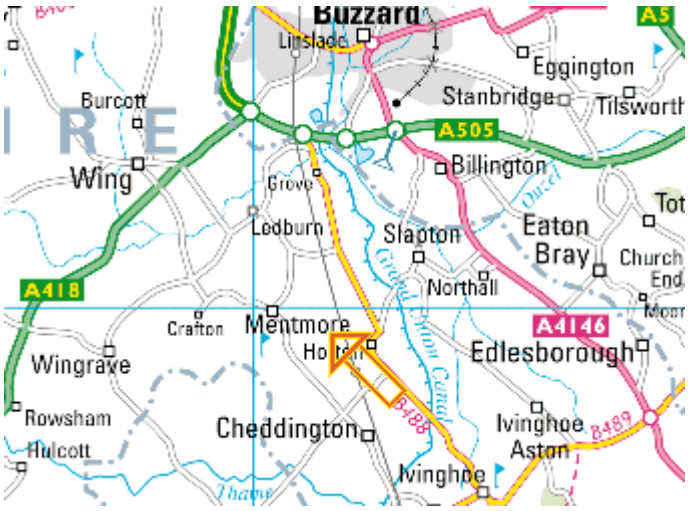


JBH 52

Burnthouse Bridge, Burgfield

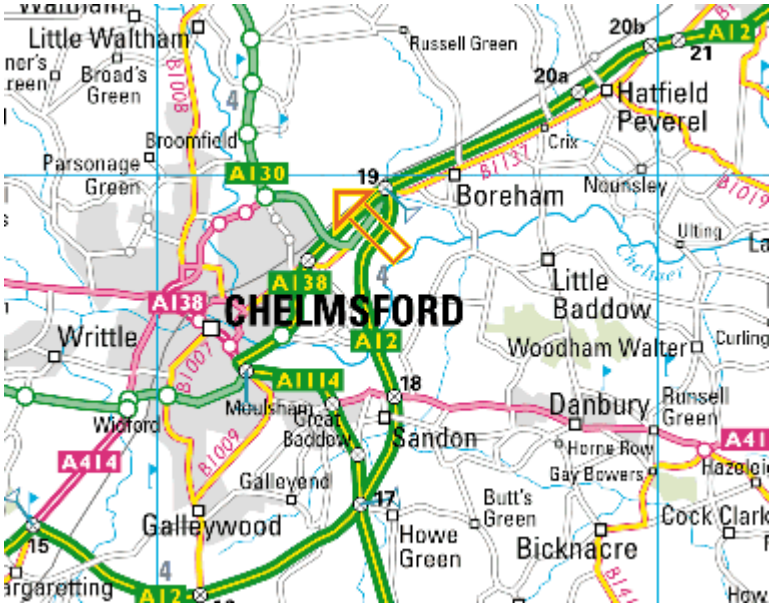
JBH 45

Mentmore, Leighton Buzzard



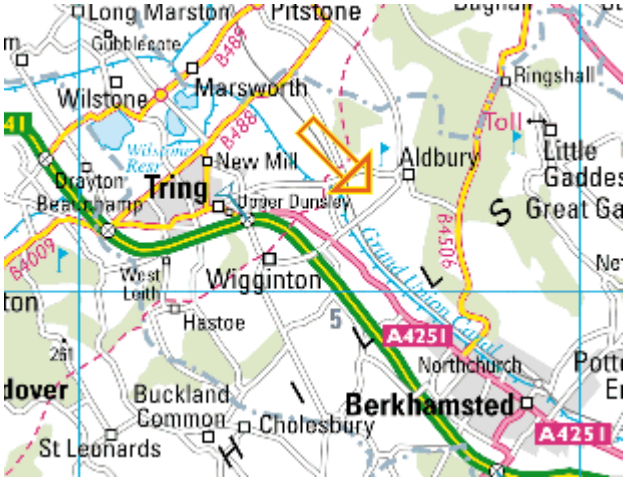
JBH 32

Old Lodge Farm, Chelmsford



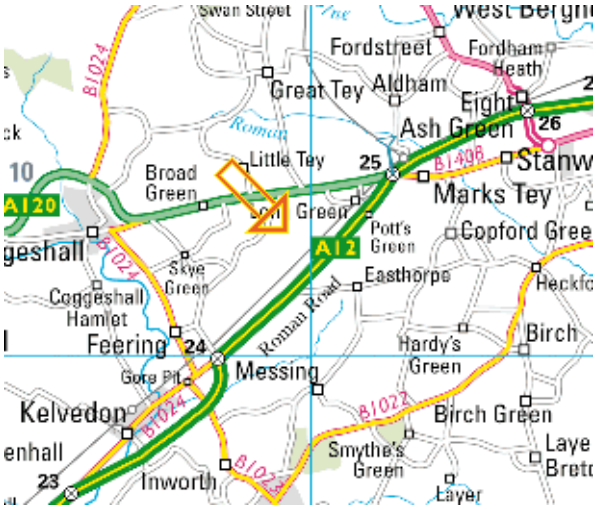
JBH 43

Aldbury, Tring



JBH 27

Godbolt's Farm, Marks Tey



JBH 25

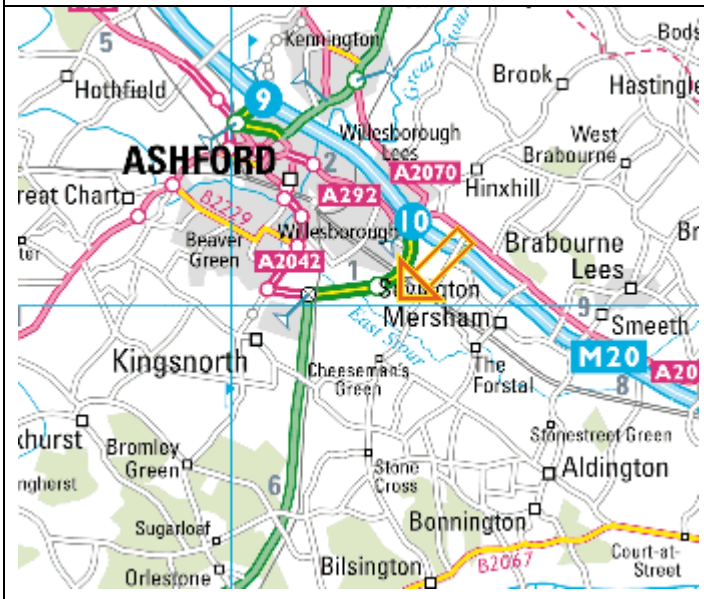
Dagenham Dock and Container Terminal

JBH 4A

Bilham Farm

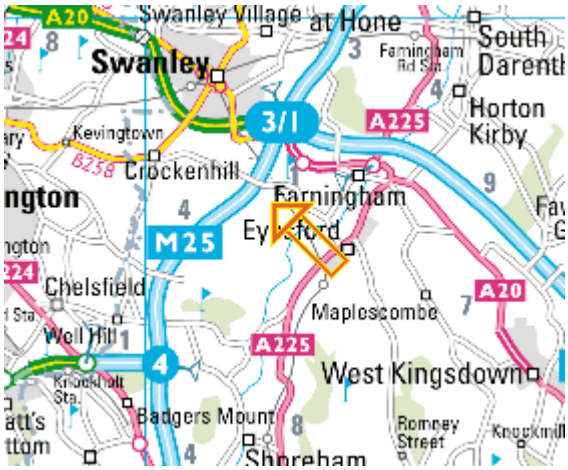
JBH 4

Sevington Freight Depot



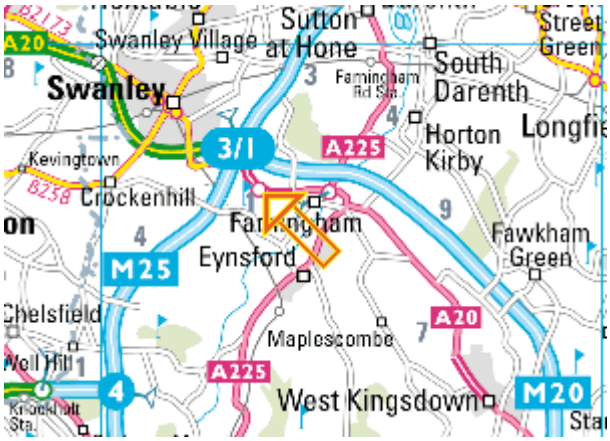
JBH 13

Hulberry Nr Farningham



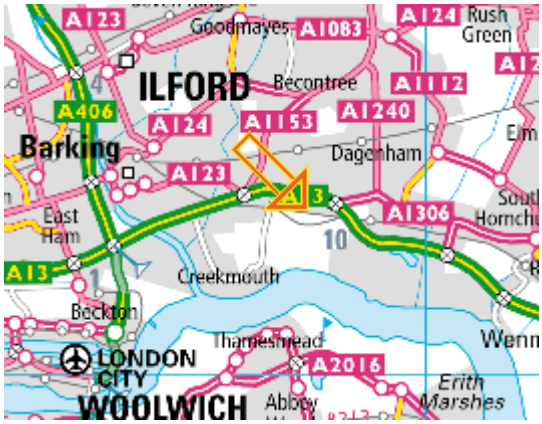
JBH 13A

Farningham



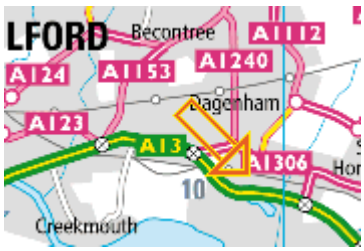
JBH 25a

Freightliner Terminal



JBH 25b

Ford Dagenham



JBH 14

Crouch Farm

JBH 8

Allington Farm, Hollingbourne

71a

Shipton-on-Cherwell Nr Woodstock

Alternative Site Search: Assessment of Short List Sites

Site Ref No	JBH 115
OS Landranger Sheet No	176
Grid Ref	TQ025778
Site Location	**Colnbrook**
Rail line	Colnbrook Branch Line – from Greater Western Mainline
Railway Connectivity	Branch line required
Loading Gauge	W8
Road Connectivity	A4 is adjacent to site, junction 5 of M4 is 1.0km distant
Land Available	70 hectares could be available
Planning Status	LPA – Slough Local Plan – Green Belt LDF – Core Strategy: Preferred Options Document – Strategic Gap
Closest Settlement	Brand Hill is adjacent to site
Suitable for further consideration	Yes
Gradient Issues	No gradient issues – Flat land
Watercourse Issues	Various lakes and watercourses
Comments	2km spur would be needed and have to bridge lakes and watercourses to access site
Active promoter?	

Site Ref No	JBH 87	JBH 86
OS Landranger Sheet No	187	166
Grid Ref	TQ300475 and TQ293488	TL155035
Site Location	**Redhill Aerodrome**	**Frogmore (Radlett)**
Rail line	Redhill to Tonbridge Line	Midland Mainline (Radlett to St Albans stretch)
Railway Connectivity	No existing rail junction	No existing rail junction
Loading Gauge	W9	W7
Road Connectivity	7.0km via 'B roads' to access the M25/M23 junction	A414 (grade sparated) forms northern boundary to the site and is 1.5km from M10
Land Available	70 hectares available between watercourses a further 45-50 hectares available at TQ 293488	50 hectares around old quarry site
Planning Status	LPA – Reigate and Banstead Borough Council Local Plan - Policy Em 12 states The Borough Council will normally resist any development at Redhill Aerodrome, as shown on the Proposals Map, which is likely to result in the intensification of its use for flying and related activities. Other proposals will be assessed against the Green Belt and appropriate design and layout policies of this Local Plan. LDF – Green Belt	LPA – St Albans Local Plan – Green Belt LDF – n/a
Closest Settlement	Villages of Ridge Green and Whitebushes are adjacent to site	Frogmore is adjacent to the site
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land between two river valleys	No gradient issues – Flat land around old quarry site
Watercourse Issues	Watercourses exist on both sites	No watercourses
Comments	Rail spur would have to come off line at TQ292493. Very difficult to rail connect – M23 to cross, cutting and embankments, 1in 20 gradient. 2.0km of rail track required to access the site	Site contained in old quarry but land is available around it
Active promoter?	Helioslough	Helioslough

Site Ref No	JBH 85	JBH 82
OS Landranger Sheet No	176	177
Grid Ref	TQ090858	TQ533765
Site Location	**Ruislip Gardens, Northolt Aerodrome**	**Howbury Grange, Slade Green**
Rail line	Chiltern Line (High Wycombe to Northolt)	North Kent Line (Dartford to Erith)
Railway Connectivity	Existing rail junction	No existing junction
Loading Gauge	W8	W8
Road Connectivity	A 4180 adjacent to site the grade separated A40 is 2.0km distant, the M40/M25 junction is 9.0km further	1.0km of B road leads to the A206 some of which is grade separated. M25 junction is 3.5km distant
Land Available	70 hectares available	50 hectares available
Planning Status	LPA – London Borough of Hillingdon Local Plan – OL9 In areas of environmental opportunity including the Colne Valley park the local planning authority will keep the condition and use of areas of open land under review and, where appropriate, make or consider with other land owners positive improvements or rehabilitation proposals in accordance with this plan. A3 At Northolt Aerodrome, within the area of open character identified on the proposals map, planning permission will not be granted except for development essential for aircraft operational purposed or for safety or the purposes of national defence. Subject to the other policies of the plan, outside the defined area of open character, planning permission will normally be granted for development at RAF Northolt only if it is directly associated with military or civilian aviation for the purposes of national defence. LDF – Revised Core Strategy Preferred Options- n/a	LPA – Dartford Local Plan – Green Belt; Policy ENV24In the Sites of Borough Importance for Nature Conservation, defined on the Proposals Map and listed at Appendix C, the Council will have particular regard to the effects of development on wildlife habitats, or the need to protect rare species. Planning permission may be refused if development is likely to cause the loss of a valuable habitat or conditions will be used, where appropriate, to protect, enhance, create or restore habitats. LDF – n/a
Closest Settlement	Ruislip Gardens borders the site	Slade Green is adjacent to site
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land	No gradient issues – Flat land
Watercourse Issues	Contains a watercourse but this can be avoided	Alongside the River Cray and Crayford Marshes, possible drainage problems
Comments	Rail spur could be led off existing works sidings	Site is alongside existing Slade Green Depot (see also site JBH 102)
Active promoter?		Prologis

Site Ref No	JBH 78A	JBH 73
OS Landranger Sheet No	178	165
Grid Ref	TQ740815	SP892344
Site Location	**Shellhaven Oil Refinery Site**	**Crossroads Farm, Bow Brickhill**
Rail line	Thames Haven Branch Line – connects with London-Tilbury-Southend line (LTS) at Thameshaven Jct	Bedford to Bletchley line
Railway Connectivity	Existing rail junction and sidings	No existing junction
Loading Gauge	W6 (will be enhanced to W10 as part of Shellhaven port development). LTS line is already W10	W8
Road Connectivity	A1014 is 700 metres from site and leads to the A13, both roads are grade separated in parts	The grade separated A5/A4146 juction is adjacent to the site
Land Available	50 hectares available	45 hectares
Planning Status	LPA – Thurrock UDP – TRA 24 Railways – Freight Facilities. Within primary and secondary industrial and commercial areas, oil industry and port and river related areas, defined on the Proposals Map: The Council will promote the use or re-use of existing railway freight facilities and will not permit the redevelopment of rail-served sites or sites adjacent to railway lines in a manner that would involve the loss of existing or potential rail access where the site is still suitable for rail freight and where there is a realistic likelihood of its use for future rail traffic.The development of new rail freight facilities, including those in connection with existing, or proposed, industrial and commercial undertakings will be permitted, provided the development meets other policies protecting the environment.The following sites are identified and safeguarded for new rail freight facilities and are shown on the Proposals Map:a) Shell Haven.b) Existing Rail Sidings and adjacent land at Hedley Avenue,West Thurrock. LDF – n/a Site recently received planning consent for or an integrated container and RoRo port and B8 development.	LPA – Milton Keynes Local Plan – HE1 Planning permission will be refused for development proposals that would have an adverse impact upon a Scheduled Ancient Monument or its setting, or unscheduled site of local, regional or national importance or their settings. Where development is proposed affecting an unscheduled site of known archaeological interest then archaeological investigations will need to be carried out to establish a mitigation and/or excavation strategy prior to development being permitted. Where development is permitted, consent will be subject to a legal agreement and/or conditions, to ensure that: archaeological remains are preserved in situ or in appropriate circumstances, provision is made for the evaluation, excavation and recording of below and above ground archaeological remains Policy S10 Open Countryside. The open countryside is defined as all land outside the development boundaries defined on the Proposals Map. In the open countryside, planning permission will only be given for development that is essential for agriculture, forestry, countryside recreation or other development which is wholly appropriate to a rural area and cannot be located within a settlement. LDF – n/a
Closest Settlement	Corringham is 2.5km distant	
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land	No gradient issues – Flat land
Watercourse Issues	Watercourses should not present a problem on this previously developed land	
Comments		The 45 hectares could be expanded to around 100 hectares
Active promoter?	Shell and DP World	

Site Ref No	JBH 72	JBH 71
OS Landranger Sheet No	164	164
Grid Ref	SP585195	SP535162 to SP555185
Site Location	**Home Farm, Ambrosden**	**Chipping Farm, Brookfurlong Farm, Barndon Farm, Oddington Grange, Holts Farm**
Rail line	Bicester MoD line (connects with Bicester Town-Oxford line)	Bicester Town-Oxford line
Railway Connectivity	No existing rail junction	No existing rail junction
Loading Gauge	W7, close to a W8 route for which upgrade to W 10 is planned	W7, close to a W8 route for which upgrade to W 10 is planned
Road Connectivity	7km of B roads leads to M40 Jct4	The site is a 9km long rectangle lying between the grade separated A34, the M40 forms northern edge of the site.
Land Available	50 hectares available	300+ hectares could be available
Planning Status	LPA – Cherwell District Council Local Plan (1996) - Pollution ControlENV1 Development which is likely to cause materially detrimental levels of noise, vibration, smell, smoke, fumes or other type of environmental pollution will not normally be permitted. LDF n/a	LPA – Cherwell District Council Local Plan (1996) – Green Belt LDF – n/a
Closest Settlement	Ambrosden is 1.2km distant	Weston-on-the-Green is 1.0km distant
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land	No gradient issues – Flat land
Watercourse Issues	Watercourses exist in the area but 50 hectares could be available without encroaching on them	A number of watercourses flow through the area but could be avoided and still allow plots of 50+ hectares
Comments		The A34 is 500 metres from all site locations, but access roads will need to be built
Active promoter?		

Site Ref No	JBH 70	JBH 69
OS Landranger Sheet No	164	164
Grid Ref	SU535995	SP575043
Site Location	**Lower Radley, Abingdon**	**Cowley Motor Works**
Rail line	GWML – Oxford Branch	Spur off GWML – Oxford Branch
Railway Connectivity	No existing rail junction	Junction possible see below
Loading Gauge	W8, though upgrade to W10 is planned	W8, though upgrade to W10 is planned
Road Connectivity	The grade separated A34 is accessed via 4.0km on 'B' roads and 2.0km on the A415	The grade separated A4142 (oxford ring road) is 2.0km from site via 'B' roads
Land Available	50 hectares available	50-70 hectares available dependent on watercourses through site
Planning Status	LPA – Vale of White Horse District Council Local Plan (2006) – Not available LDF – n/a	LPA – South Oxfordshire District Council Local Plan – Green Belt LDF – n/a
Closest Settlement	Radley is adjacent to site	Village of Horspath is 300 metres from site
Suitable for further consideration	Yes	Yes
Gradient Issues	Flat land adjacent to the River Thames (or Isis)	No gradient issues – Flat land
Watercourse Issues	Watercourse forms boundary to the site, possible drainage problems	Northfield Brook, Hollow Brook and tributaries run through site
Comments		Dismantled railway could be re-instated to serve site
Active promoter?		

Site Ref No	JBH 65	JBH 63
OS Landranger Sheet No	185	175
Grid Ref	SU316436	SU618691 and SU629700
Site Location	**Manor Farm, Abbots Ann**	**Tyle Mill, Sulhampstead**
Rail line	Basingstoke-Salisbury line	GW Berks & Hants Line (Theale to Newbury)
Railway Connectivity	No existing rail junction	No existing rail junction, but see note
Loading Gauge	W8	W8
Road Connectivity	The grade separated A303 (Andover bypass) is 3.0km distant via Monxton on B roads	The A4 skirts boundary of site and leads to M4 Jct 12 is 3.0km from site
Land Available	60 hectares available	35 hectares available on SU618691 between A4 and rail line, could be more if A4 could be diverted.
Planning Status	LPA – Test Valley BC Local Plan (2006) - Countryside LDF – n/a	LPA – West Berkshire District Council Local Plan (2002) - POLICY RL.7 The Council will permit proposals for the recreational use of land and water areas within the Lower Kennet Water Park (inset map 3) subject to provision of satisfactory access and parking facilities and where such development would not be materially detrimental to the rural character and landscape quality of the area, nature conservation interests, highway safety, or the amenities of nearby residents or other users of the area. LDF - West Berkshire Planning Strategy Submission (2006) (withdrawn pending further study) - Spatial Policy 6 Conserving and Enhancing Environmental Assets -Development within the key environmental assets will be restrained where it is inconsistent with the aims of designation or harmful to their function
Closest Settlement	Village of Abbots Ann is 500 metres distant	Village of Sulhampstead is 1.0km and Theale is 1.5km
Suitable for further consideration	Yes	Yes
Gradient Issues	Relatively flat land	No gradient issues – Flat land
Watercourse Issues	No watercourses	No watercourses on site
Comments	Area of woodland 'Great Wood' limits land availability to 40-50 hectares if it is protected	35 hectares also available at SU 629700. The two sites are separated by a small B road, which could be closed, as alternative routes are available. Existing sidings at the Theale depot could be extended into SU629700 south of 'Gravel Pit Cottages'
Active promoter?		

Site Ref No	JBH 58	JBH 57
OS Landranger Sheet No	174	174
Grid Ref	SU365915	SU455912
Site Location	**Church Farm, Goosey**	**Hill Farm, Steventon**
Rail line	Great Western Mainline (GWML - Didcot to Swindon)	GWML (Didcot to Swindon)
Railway Connectivity	No existing rail junction	No existing rail junction
Loading Gauge	W8	W8
Road Connectivity	A34 (grade separated) is 13.0km distant via 'B' roads. The A 338 Oxford-Wantage road is 6.0km distant	A34 (grade separated)/A4130 junction is 5.0km distant and is reached by B roads then the A 417 and the A 4130
Land Available	100 hectares could be available	400+ hectares could be available
Planning Status	LPA – Vale of White Horse District Council Local Plan – Not available LDF – n/a	LPA – Vale of the White Horse District Council Local Plan (2006) – Not available LDF – n/a
Closest Settlement	Village of Denchworth is 500 metres from site	Village of Steventon is 500 metres from site
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land	No gradient issues – Flat land
Watercourse Issues	Watercourses on site edges	Small watercourses run through site
Comments	Rail access may have to cross a watercourse to access site	Site lies 1.0km south of existing depot but is separated from it by the rail line
Active promoter?		Thames Water

Site Ref No	JBH 56	JBH 52
OS Landranger Sheet No	174	175
Grid Ref	SU455921	SU691685
Site Location	**Goose Willow, Steventon**	**Burnthouse Bridge, Burgfield**
Rail line	GWML (Didcot to Swindon)	Reading to Basingstoke Line
Railway Connectivity	No existing rail junction	No existing rail junction
Loading Gauge	W8	W8, though upgrade to W10 planned
Road Connectivity	A34 (grade separated)/A4130 junction is 3.0km distant and is reached by 'B' roads	M4 Jct 11 is 4.3km distant
Land Available	108 hectares available	84 hectares available
Planning Status	LPA – Vale of the White Horse District Council Local Plan (2006) – Not available LDF – n/a	LPA – West Berkshire District Council Local Plan (2002) – No allocation LDF - Core Strategy Submission (2006) – No allocation
Closest Settlement	Village of Steventon is 500 metres from site	Village of Burghfield is 2.0km distant
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land	No gradient issues – Flat land
Watercourse Issues	No watercourses	2 watercourses run through site
Comments	Site lies 0.5-1.0km west of Steventon alongside existing depot	Site lies between Amner's Farm and Burnhouse Bridge on a B road which is 4.0km from the A33 a further 300 metres accesses the M4 Jct 11
Active promoter?	Thames Water	

Site Ref No	JBH 45	JBH 43
OS Landranger Sheet No	165	165
Grid Ref	SP915195	SP 958119
Site Location	**Mentmore, Leighton Buzzard**	**Aldbury, Tring**
Rail line	West Coast Main Line (WCML - Leighton Buzzard to Tring)	WCML (Berkhampstead to Tring)
Railway Connectivity	No existing rail junction	No existing rail junction
Loading Gauge	W10	W10
Road Connectivity	11.0km to access the A505, some is grade separated (via B roads and the A 418)	The grade separated A41 is 2.5km distant
Land Available	100 hectares	50 hectares
Planning Status	LPA – Aylesbury Vale District Council (2004) Local Plan (2004) – Park and Garden of Special Interest	LPA – Chelmsford Local Plan (1997) – Countryside LDF – Core Strategy and Development Control Policies DPD (2006) – New Railway Station proposed and to be addressed within a future AAP
Closest Settlement	Adjacent to Mentmore	Adjacent to Aldbury village
Suitable for further consideration	Yes	Yes
Gradient Issues	No gradient issues – Flat land	No gradient issues – Flat land
Watercourse Issues	No watercourses	No watercourses
Comments	Rail line adjacent to site is approaching capacity and site is poorly served with road links	The site is located alongside the rail line south of Tring (which is potentially approaching capacity)
Active promoter?		

Site Ref No	JBH 27	JBH 25
OS Landranger Sheet No	168	177
Grid Ref	TL895225	TQ478827
Site Location	**Godbolt's Farm, Marks Tey**	**Dagenham Dock and Container Terminal**
Rail line	GEML (Colchester to Marks Tey)	London-Tilbury-Southend line (LTS - Barking to Dagenham)
Railway Connectivity	No existing rail junction	No existing rail junction, but site lies to south of existing Barking Container terminal
Loading Gauge	W10	W10
Road Connectivity	The site is adjacent to the A120, 2.2km from the grade separated A12	1.0km of 'B' road leads to the grade separated A13 (10.0km to M25 Jct 3)
Land Available	80 hectares	70 hectares
Planning Status	LPA – Colchester Borough Council Local Plan (2004) - Countryside LDF – Core Strategy Preferred Options (2006) - n/a	LPA – London Borough of Barking and Dagenham UDP (1996) – Employment Area LDF – Borough Wide Preferred Options (2007) – n/a
Closest Settlement	Site is adjacent to Marks Tey	Dagenham is 500 metres distant
Suitable for further consideration	Yes	Yes
Gradient Issues	Relatively flat land	No gradient issues – Flat land
Watercourse Issues	Small watercourse	Small watercourse
Comments	A 900 metre stretch of rail line forms the site boundary	Rail access would have to be from a spur off the existing container terminal passing under overhead power lines, this site could act as an expansion of the existing terminal
Active promoter?		

Site Ref No	JBH 4A	JBH 4
OS Landranger Sheet No	189	189
Grid Ref	TR025395	TR033400
Site Location	**Bilham Farm,**	**Sevington**
Rail line	Ashford-Folkstone line (Continental Junction to Ashford)	Ashford-Folkstone line (Continental Junction to Ashford)
Railway Connectivity	Poss link to existing freight depot	Existing rail freight siding for aggregates
Loading Gauge	W9	W9
Road Connectivity	The grade separated A2070 forms the W and N edge of site. M20 Jct 10 is 1.5km distant	The grade separated A2070 forms the north boundary of the site. M20 Jct 10 is 1.0km distant
Land Available	100 hectares	50 hectares
Planning Status	LPA – Ashford BC Local Plan (2000) – Employment Area LDF – Core Strategy Submission (2006) – not available	LPA – Ashford BC Local Plan (2000) – Southern Orbital Road: a new junction or junction improvements to serve development within Orbital Park / Waterbrook / Cheeseman's Green areas at Sevington; LDF – Core Strategy Submission (2006) – not available. CANWESAU land zoned for residential use.
Closest Settlement	Village of Kingsnorth is 500 metres from site	Village of Sevington is 500 metres from site
Suitable for further consideration	Yes	Yes
Gradient Issues	Relatively flat land	Relatively flat land
Watercourse Issues	East Stour River flows through site	No watercourses on freight depot site
Comments	Site could be used to increase area of Sevington Freight depot (see JBH 4). by diverting East Stour river. Needs 1.2km of track to access Sevington sidings	Good road access and existing rail access
Active promoter?		

Site Ref No	JBH 13	JBH 13A
OS Landranger Sheet No	177	177
Grid Ref	TQ525663	TQ532670
Site Location	**Hulberry Nr Farningham**	**Farningham**
Rail line	London-Ashford via Maidstone line (Otford Junction to Swanley)	London-Ashford via Maidstone line (Otford Junction to Swanley)
Railway Connectivity	No existing junction	No existing junction
Loading Gauge	W9	W9
Road Connectivity	1.7km on 'B' roads to M25/M20 Junction	1.9 Km on 'B' roads to M25/M 20 Junction
Land Available	70 hectares	80 hectares
Planning Status	LPA – Sevenoaks District Council Local Plan (2000) – Green Belt; AONB LDF – Core Strategy Preferred Options (2006) - Green Belt; AONB	LPA – Sevenoaks District Council Local Plan (2000) – Green Belt; AONB LDF – Core Strategy Preferred Options (2006) - Green Belt; AONB
Closest Settlement	Hulberry hamlet adjacent to site	Farningham 1.0km from site,
Suitable for further consideration	Possible	Possible
Gradient Issues	30m height difference on site	Relatively flat land
Watercourse Issues	No watercourses	No watercourses
Comments	Adjacent rail line goes from cutting to embankment, to another cutting then into a tunnel, awkward to construct a spur off	Rail access would have to overcome 10-15m height difference to access site, an existing B road would have to bridge any new rail access, farm buildings on site
Active promoter?		

Site Ref No	JBH 25a	JBH 25b
OS Landranger Sheet No	177	177
Grid Ref	TQ476832	TQ493829
Site Location	**Freightliner Terminal**	**Ford Dagenham**
Rail line	LTS line (Barking to Dagenham)	LTS line (Barking to Dagenham)
Railway Connectivity	Existing terminal	Existing terminal
Loading Gauge	W10	W10
Road Connectivity	1.0km of 'B' road leads to the grade separated A13 (10.0km to M25 Jct 3)	1.0km of 'B' road leads to the grade separated A13 (10.0km to M25 Jct 3)
Land Available	20 hectares, possible other land in surrounding area	70 hectares
Planning Status	LPA – London Borough of Dagenham UDP (1996) – Employment Area LDF – Borough Wide Preferred Options (2007) – n/a	LPA – London Borough of Dagenham UDP (1996) – Employment Area LDF – Borough Wide Preferred Options (2007) – n/a
Closest Settlement	Dagenham is 500 metres distant	Dagenham is 500 metres distant
Suitable for further consideration	Yes	Yes
Gradient Issues	Level site	Level site
Watercourse Issues	Small watercourse	Small watercourse
Comments	Rail access would have to be from a spur off the existing container terminal passing under overhead power lines, this site could act as an expansion of the existing terminal	Rail access would have to be from a spur off the existing container terminal passing under overhead power lines, this site could act as an expansion of the existing terminal
Active promoter?	TfL	TfL

Site Ref No	JBH 14	JBH 8
OS Landranger Sheet No	177	188
Grid Ref	TQ495677	TQ835556
Site Location	**Crouch Farm**	**Allington Farm, Hollingbourne**
Rail line	London-Chatham line (Swanley to Beckenham)	London-Ashford via Maidstone line (Maidstone East to Ashford)
Railway Connectivity	No existing junction	No existing connection
Loading Gauge	W9	W9
Road Connectivity	4.0km on 'B' roads (through Crockenhill) to M25/M20 Junction	3.5km of 'B road' leads to M 20 Jct 8
Land Available	100 hectares	50 hectares
Planning Status	LPA – London Borough of Bromley Local Plan (2006) – Green Belt ? (proposals map not available) LDF – n/a	LPA – Maidstone District Council Local Plan (2001) – Special Landscape Area LDF – n/a
Closest Settlement	Crockenhill 500 metres from site	300 metres from Hollingbourne
Suitable for further consideration	Possible	No
Gradient Issues	20-30m height difference on site	20-30m height differential on site
Watercourse Issues	No watercourses	No watercourses
Comments	Adjacent rail line on embankment, rail access would have to cross Bourne Wood, poss environmental issues	Adjacent rail line on embankment
Active promoter?		

Site Ref No	71a
OS Landranger Sheet No	164
Grid Ref	SP477174
Site Location	Shipton-on-Cherwell Nr Woodstock, Oxon
Rail line	Oxford to Leamington Spa
Railway Connectivity	No existing junction
Loading Gauge	W8
Road Connectivity	3.5km to grade separated A44
Land Available	40 hectares
Planning Status	LPA –West Oxfordshire District Council Local Plan (1996) – Green Belt LDF – n/a
Closest Settlement	100 metres from Shipton
Suitable for further consideration	Possible
Gradient Issues	On site of old cement works
Watercourse Issues	Lake on site
Comments	On site of old limestone quarry and cement works, published plans refer to residential development
Active promoter?	Kilbride Properties

APPENDIX 4

Alternative Site Search and Assessment: Long List

Alternative Site Search and Assessment: Long List

Site ref no:	JBH 1	JBH 2	JBH 3	JBH 5
OS Landranger sheet no	189	189	189	189
Grid ref:	TR 165366	TR 163375	TR 100375	TQ 975425
Site location	Saltwood	Summerhouse Hill	Harringe Court	Ninn lodge farm
Rail line	Ashford-Folkstone line (Continental Junction to Ashford)	Ashford-Folkstone line (Continental Junction to Ashford)	Ashford-Folkstone line (Continental Junction to Ashford)	Tonbridge-Ashford line
Railway connectivity	No existing junction	No existing junction	No existing junction	No existing junction
Rail gauge	W9	W9	W9	W9
Road connectivity	B road adjacent to site. 1.0km to junction 11a of M20	A20 forms site boundary 500 metres to junction 11a of M20	M20 junction 11 4.0km distant via A20	M20 junction 9 5.0km distant via A28 + 13 roads
Land available	50ha	40ha	60ha	60ha
Planning status				
Closest settlement	Saltwood 300 metres from site	Newington 1km from site	Barrowhill 500 metres	Great chart
Suitability for further consideration	No	No	No	No
Gradient issues	60 metre height differential on site	60 metre height differential on site	20 metre height differential on site	20 metre height differential on site
Watercourse issues	Watercourse through site	Watercourse through site	2 watercourses through site	No watercourse
Comments	Rail line enters tunnel at edge of site	Rail line wouldhave to cross M20 and A20 to access site		Rail access wouldhave to cross B road but alternative road route would still be available
Active promoter?				

Site ref no:	JBH 6	JBH 7	JBH 9	JBH 10
OS Landranger sheet no	189	189	188	188
Grid ref:	TQ 981450	TQ 913515	TQ 717570	TQ 665580
Site location	House Farm	East Lenham	Ditton Industrial Estate	Badgers Mount, West Malling
Rail line	Ashford to Maidstone East	Ashford to Maidstone East	Maidstone East to Sevenoaks	Maidstone East to Sevenoaks
Railway connectivity	No existing junction	No existing junction	No existing junction	No existing junction
Rail gauge	W9	W9	W9	W9
Road connectivity	M20 junction 9 3.2km distant via A20	M20 junction 8 10.0km distant via A20	M20 junction 5 1.0km via B2246 or A20	M20 junction 4 3.0km via A20, A228 v B roads
Land available	60ha	50ha	50ha	70ha
Planning status				
Closest settlement	Hothfield adjacent to site	East Lenham adjacent to site	Ditton adjacent to site	West Malling
Suitability for further consideration	No	Possible	Possible	No
Gradient issues	30 metre height differential on site	10-20 metre height differential on site	Relatively flatland	20 metre height differential on site
Watercourse issues	Lake adjacent to site, watercourse through site	No watercourse	No watercourse	No watercourse
Comments		Rail wouldhave to access site as it goes from a cutting to an embankment	Rail access wouldhave to transit on orchard area	Adjacent rail line in cutting and on embankment awkward rail access
Active promoter?				

Site ref no:	JBH 11 (see also 92)	JBH 12	JBH 15	JBH 16
OS Landranger sheet no	188	188	188	188
Grid ref:	TQ 590578	TQ 552602	TQ 765439	TQ 447711
Site location	Lightham Court, Borough Green	Filstonhall, Otford	Lindridge Staplehurst	Paddock Wood
Rail line	Maidstone East to Sevenoaks	Otford junction to Swanley	Paddock Wood to Tonbridge	Paddock Wood to Tonbridge
Railway connectivity	No existing junction	No existing junction	No existing rail junction	No existing rail junction
Rail gauge	W9	W9	W9	W9
Road connectivity	M26 junction 22 3.0km via A25	M26/M25 junction 5.0km via A225 + A25	17.0km to M20 via B roads to Staplehurst then A229	20.0km to M20 via B 2029 then A229
Land available	50ha	50ha	80ha	50ha
Planning status				
Closest settlement	Borough Green 1.5km distant	Otford 500 metres distant	Lindridge adjacent to site, Staplehurst 1.0km from site	Great Oldhay adjacent to site
Suitability for further consideration	No	No	Possible	Possible
Gradient issues	10-20 metre height differential on site	30 metre height differential on site	Relatively flat land	Relatively flat land
Watercourse issues	2 watercourses run through site	Watercourses on edge of site	No watercourses	River Teise and tributary form site boundary
Comments		National trail runs through site. Site located on a valley side	Rail access wouldhave to cross a B road but alternative road routes are available	Site is an awkward shape if watercourse cannot be covered over
Active promoter?				

Site ref no:	JBH 17	JBH 18	JBH 19	JBH 20
OS Landranger sheet no	188	188	188	187
Grid ref:	TQ 664456	TQ 637457	TQ 473535	TQ 395486
Site location	Whetsted, Paddock Wood	Five Oak Green	Prices Farm	Fowle Farm, Oxted
Rail line	Paddock Wood to Tonbridge	Paddock Wood to Tonbridge	Tonbridge to Hurst Green	Hurst Green to Redhill
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W9	W9	W9	W9
Road connectivity	M20 junction 4 17.0km via A228	M20 junction 4 19.0km via B roads and A228	M26 junction 5 12.0km via B roads and A21	M25 junction 6 8.0km va B roads then A22
Land available	40ha	50ha	50ha	50ha
Planning status				
Closest settlement	Whetsted and Paddock Wood adjacent to site	Five Oak Green adjacent to site	Wickhurst 1.0km from site	Crowhurst, land end 1.0km from site
Suitability for further consideration	Possible	No	No	No
Gradient issues	Relatively flat land	Relatively flat land	Relatively flat land	10-20 metre height differential on site
Watercourse issues	River forms site boundary	Watercourse through middle of site	Watercourse through middle of site	Watercourse through middle of site
Comments	Area could increase subject to diversion of river		Adjacent rail line lies in a cutting. Rail acess wouldhave to cross a B road and a wood to reach site	
Active promoter?				

Site ref no:	JBH 21	JBH 22	JBH 23	JBH 24
OS Landranger sheet no	187	177	177	177
Grid ref:	TQ 323493	TQ 686792	TQ 646776	TQ 595785
Site location	Sandhills Farm, South Nutfield	East Tilbury	Tilbury North	South Shifford, Grays
Rail line	Hurst Green to Redhill	Thameshaven to Tilbury Marshes	Tilbury to Purfleet	Grays to Ockenden
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W9	W8	W9/W10	W8/W9/W10
Road connectivity	M25 junction 6 5.0km via B roads then A25	A1089 (grade separated) 6.0km via B roads	A1089 (grade separated) 2.0km via B roads	A126 (grade separated) 300 ms from site leading to M25 1.5km distant
Land available	50ha	100+ha	40ha	50ha
Planning status				
Closest settlement	Bletchingley 1.0km from site	East Tilbury adjacent to site	Tilbury and Chadwell St Mary are adjacent to site	South Slifford adjacent to site
Suitability for further consideration	No	No	No	Possible
Gradient issues	40 metre height differential on site	Flat land	Flat land	10 metre height differential on site
Watercourse issues	Number of watercourses through site	Site adjacent to Mucking Marshes, watercourse through area	Site is crisscrossed by watercourses	No watercourses
Comments			Rail link of over 1.0km would be needed to access site and wouldhave to cross a B road	Rail line adjacent to site lies mostly in a cutting but access may be feasible
Active promoter?				

Site ref no:	JBH 25	JBH 26	JBH 28	JBH 29
OS Landranger sheet no	177	168	168	168
Grid ref:	TQ 476825	TM 090325	TL 881225	TL 870215
Site location	Dagenham Dock, Barking	Manningtree station	Elm Farm, Little Tey	Skye Green, Coffeshall
Rail line	Grays to Barking	Manningtree to Colchester	Marks Tey to Witham	Marks Tey to Witham
Railway connectivity	Existing freightline. Terminal to North of site	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W10	W10	W10	W10
Road connectivity	A13 (grade separated) 700 ms from site	A137 o.5km A12 (grade separated) 10.0km via A137 and B roads	A12 (grade separated) 3km via B roads and A120	A12 (grade separated) 6km via B roads + A120
Land available	50ha	50ha	70ha	70ha
Planning status				
Closest settlement	Dagenham within 700 ms of site	Manningtree 1.0km	Broad Green 300 metres	Skye Green adjacent to site
Suitability for further consideration	No	No	Possible	Possible
Gradient issues	Flat land	Flat land	Relatively flat land	Relatively flat land
Watercourse issues	Watercourses present	Watercourses through site	No watercourses	No watercourses
Comments	Site identified lies outside flood protection barrier	Possible flood risk on banks of River Stour. Adjacent rail line is on an embankment	A 1.o0km spur would be needed to reach site and wouldhave to cross a B road alternative road access is however available	A 1.0km spur would be needed to reach site and wouldhave to cross a B road alternative road access is however available
Active promoter?				

Site ref no:	JBH 30	JBH 31	JBH 33	JBH 34
OS Landranger sheet no	167	167	167	167
Grid ref:	TL 765103	TL 105755	TL 696037	TL 070003
Site location	Hogwells, Boreham	Boreham	Elm Farm	Margaretting Tye
Rail line	Witham to Chelmsford	Witham to Chelmsford	Chelmsford to Brentwood	Chelmsford to Brentwood
Railway connectivity	No existing	No existing rail junction	No existing rail junction	No existing
Rail gauge	W10	W10	W10	W10
Road connectivity	3km via B roads to (grade separated) A12	2.5km via B roads to A12 (grade separated)	3.0km via B roads to A414 (grade separated)	4.0km via B roads to A414 (grade separated)
Land available	60ha	50ha	50ha	50ha
Planning status				
Closest settlement	Boreham adjacent to site	Broad Green 300 metres	Skye Green adjacent to site	Boreham adjacent to site
Suitability for further consideration	No	Possible	Possible	No
Gradient issues	20 metre height differential	Relatively flat land	Relatively flat land	20 metre height differential
Watercourse issues	No watercourses	No watercourses	No watercourses	No watercourses
Comments	Rail access wouldhave to cross A12 and B1137 therefore unacceptable	A 1.0km spur would be needed to reach site and wouldhave to cross a B road alternative road access is however available	A 1.0km spur would be needed to reach site and wouldhave to cross a B road alternative road access is however available	Rail access wouldhave to cross A12 and B1137 therefore unacceptable
Active promoter?				

Site ref no:	JBH 35	JBH 36	JBH 37	JBH 38
OS Landranger sheet no	167	166	166	166
Grid ref:	TQ 647987	TL 203315	TL 196317	TL 204282
Site location	Heybridge, Ingatestone	Highover Farm, Hitchin	Hitchin Industrial Estate	Ashbrook St Ippollitts
Rail line	Chelmsford to Brentwood	Letchworth to Hitchin	Letchworth to Hitchin	Hitchin to Stevenage
Railway connectivity		No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W10	W8	W8	W9
Road connectivity	2.0km via B roads to (grade separated) A12	5.0km to A1 (m)	5.5km to A1 (m) via B roads	A1 (m) 3.0km via A602
Land available	40ha	50ha	50ha	50ha
Planning status				
Closest settlement	Heybridge adjacent to site	Hitchin adjacent to site	Hitchin Industrial Estate adjacent to site	Little Wymondley 500 m's
Suitability for further consideration	No	No	No	No
Gradient issues	20 metre height differential	20-30 metre height differential on site	10-20 metre height differential on site	20-30 metre height differential on site
Watercourse issues	Watercourses on site	No watercourses	No watercourses	Watercourses through site
Comments	Rail access wouldhave to cross watercourse to reach site. Very poor road access – no direct route to A12	Adjacent rail line oin cutting and on embankment awkward rail access, site would require diversion of a B road	Adjacent rail line on embankment and in a cutting, awkward rail access	Adjacent rail line on embankment and in cutting
Active promoter?				

Site ref no:	JBH 39	JBH 40	JBH 41	JBH 42
OS Landranger sheet no	166	166	166	166
Grid ref:	TL 243215	TL 254208	TL 305165	TL 315025
Site location	Old Knebworth	Knebworth	Stapleford	Cuffley
Rail line	Stevenage to Knebworth	Stevenage to Watton-at-Stone	Watton-at-Stone to Hertford	Hertford to Enfield
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W8	W9	W9	W9
Road connectivity	A1 (m) junction 7 1.0km via B roads	A1 (m) junction 7 3.5km via B197	A10 (grade separated) 8.5km via A602 + A119: A1 (m)	M25 junction 25, 6.5km via Broads
Land available	50ha	50ha	50ha	50ha
Planning status	Golf course			
Closest settlement	Knebworth adjacent to site	Knebworth adjacent to site	Stapleford adjacent to site	Goff's Oak adjacent to site
Suitability for further consideration	No	No	No	No
Gradient issues	30 metre height differential on site	10-20 metre height differential on site	20-30 metre height differential on site	30 metre height differential on site
Watercourse issues	No watercourses	No watercourses	No watercourses	Cuffley Brook separates site from rail line
Comments	In use as a Golf Course	Adjacent rail line in cutting and on embankment	Adjacent rail line on embankment and in cutting	Adjacent rail line on embankment and in cutting
Active promoter?				

Site ref no:	JBH 44	JBH 46	JBH 47	JBH 48
OS Landranger sheet no	165	165	185	185
Grid ref:	SP 942128	SP 875290	SU 495383	SU 566480
Site location	Bulbourne, Tring	Stokehammond	East Stoke farm, Sutton Scotney	Village farm, North Waltham
Rail line	Tring to Leighton Buzzard	Tring to Leighton Buzzard	Eastleigh to Basingstoke	Eastleigh to Basingstoke
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W10	W10	W8	W8
Road connectivity	A41 (grade separated) 4.0km via B roads	A5 (grade separated) 5.5km via A4146 and B roads	A33 (grade separated) 3.5km via B roads	M3 junction 7 3.0km via B roads
Land available	50ha	100ha	130ha	70ha
Planning status				
Closest settlement	Bulbourne 300 metres from site	Stokehammond 300 metres from site	Micheldever, 1.5km	North Waltham 1.0km
Suitability for further consideration	No	No	No	No
Gradient issues	Uo to 10 metre height differential on site	20-30 metre height differential on site	20 metre height differential on site	20-30 metre height differential on site
Watercourse issues	Grand Union Canal forms site boundary	Watercourse forms site boundary	No watercourses	No watercourses
Comments	Adjacent rail line in cutting	Adjacent rail line on embankment	Adjacent rail line in cutting and on embankment	Adjacent rail line in cutting and on embankment and is 1.5km distant, rail route wouldhave to cross a B road
Active promoter?				Thames Water

Site ref no:	JBH 49	JBH 50	JBH 51	JBH 53
OS Landranger sheet no	185	175	175	174
Grid ref:	SU 599511	SU 660610	SU 682643	SU 577874
Site location	Batledown farm, Basingstoke	Lavell's farm, West End Green	Great Park farm, Stratefiedl Mortimer	Manor farm, Cholsey Nr Didcot
Rail line	Eastleigh to Basingstoke	Basingstoke to Reading	Basingstoke to Reading	Reading to Didcot
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W8	W8	W8	W8
Road connectivity	M3 junction 6 4.0km via B roads	M4 junction 11 13.0km via A33 + B roads	M4 Junction 11 7.0km via A33 + B Roads	A417 2.0km via B roads
Land available	30ha	100ha	70ha	60ha
Planning status				
Closest settlement	Basingstoke adjacent to site	West End Green adjacent to site	Beech Hill, 1.0km from site	Cholsey, 1.0km from site
Suitability for further consideration	No	No	No	No
Gradient issues	10 metre height differential on site	10-20 metre height differential on site	10-20 metre height differential on site	10-20 metre height differential on site
Watercourse issues	No watercourses	No watercourses	Watercourses form sit eboundaries	No watercourses
Comments	50ha available subject to diversion of B road	Adjacent rail line on embankment + in cutting	Adjacent rail line on embankment + in cutting, rail access wouldhave to cros sa B road, alternative access is however possible	Adjacent rail line on embankments + in cuttings
Active promoter?				

Site ref no:	JBH 54	JBH 55	JBH 59	JBH 60
OS Landranger sheet no	174	174	174	186
Grid ref:	SU 565870	SU 553895	SU 255885	SU 832560
Site location	The Lees. Cholsey	North Moreton, Didcot	Home farm, Shrivenham	Great Bramshot farm, Farnborough
Rail line	Reading to Didcot	Reading to Didcot	Didcot to Swindon	Reading to Maidenhead
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W8	W8	W8	W8
Road connectivity	2.0km to A417 via B roads	9.0km to (grade separated) A34, via Didcot	5.0km to A420 via B roads through Shrivenham	4.0km to A404 (m) via A4
Land available	100ha	50ha	50ha	50ha
Planning status				
Closest settlement	Aston Tirrold 700m from site	North Moreton adjacent to site	Shrivenham 700m from site	Harehatch, 300 metres from site
Suitability for further consideration	No	No	No	No
Gradient issues	10 metre height differential on site	10-20 metre height differential on site	Relatively flat land	10 metre height differential on site
Watercourse issues	Number of watercourses through site	No watercourses	Number of watercourses flow through site	No watercourses
Comments	Adjacent rail line is on an embankment	Adjacent rail line on embankment + in cutting		Adjacent rail line in cutting + on embankment
Active promoter?				

Site ref no:	JBH 61	JBH 64	JBH 66	JBH 67
OS Landranger sheet no	186	175	185	198
Grid ref:	SU 745547	SU 817777	SU 368203	TV 436082
Site location	Murrel Green, Hook	Scarlett's farm,harehatch	Whitenap, Romsey	Ranscombe farm, Lewes
Rail line	Woking to Basingstoke	Reading to Maidenhead		
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W8	W8	W8	W8
Road connectivity	3.5km to M3 junciton 5	4.0km to A404 (m) via A4	3.0km to M27 junction 3 via A3057	1.0km to A27
Land available	50ha	50ha	50ha	50ha
Planning status				
Closest settlement	Hook 1.0km distant	Harehatch, 300 metres from site	2.0km to Lewes	500 metre to Salfords
Suitability for further consideration	No	No	No	No
Gradient issues	10-20 metre height differential on site	10 metre height differential on site	Flat land	20-30 metre height differential on site
Watercourse issues	Watercourses forms site boundary	No watercourses	Number of watercourses through site	No watercourses
Comments	Adjacent rail line in cutting + on embankment	Adjacent rail line in cutting + on embankment		
Active promoter?				

Site ref no:	JBH 68	JBH 74	JBH 75	JBH 76
OS Landranger sheet no	187	167	178	178
Grid ref:	TQ 290455	TL 537273	TR 813854	TR 750870
Site location	Pickets, Salfords	Elsenham railway station	Hadleigh Marsh,hadleigh	Ptisea Marsh, Bowers March, Basildon
Rail line	Horley to Redhill	Cambridge to Bishops Stortford	Southend to Basildon	Southend to Basildon
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W8	W8	W8	W8
Road connectivity	3.0km to M23 junction via A23	6.0km to M11 junction 8 via B roads	6.0km to (grade separated) A13 via A roads	1.0km to (grade separated) A13
Land available	50ha	50ha	80ha	100ha
Planning status				
Closest settlement	500 metres to Salfords	Adjacent to Elsenham	1.0km fromhadleigh	1.5km from Basildon
Suitability for further consideration	No	No	No	No
Gradient issues	20-30 metre height differential on site	10-20 metre height differential on site	Flat land	Flat land
Watercourse issues	No watercourses	No watercourses	Marshland area, watercourses on site	Marshland area, watercourses on site
Comments	To achieve 50ha requires diversion of a B road	Rail access wouldhave to cross an important B road to reach site alternative road routes are however available	1.5km of road access would be needed to reach site which is 70 metres lower than nearest access road	1.0km of new road required to access A130 which is on an embankment
Active promoter?				

Site ref no:	JBH 77	JBH 78	JBH 79	JBH 81
OS Landranger sheet no	178	178	178	177
Grid ref:	TQ 655875	TQ 677815	TQ 866755	TQ 685 745 or TQ 685735
Site location	Lower Duntonhall	Bluehouse farm, Stanford-le-Hope	Isle of Grain	Shorne Marshes, Gravesend
Rail line	Basildon to London	Basildon to Tilbury	Isle of Grain to Gravesend	Rochester to Gravesend
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail junction	No existing rail junction
Rail gauge	W8	W8	W8	W8
Road connectivity	A127 (grade separated) is 3.0km distant	A13 adjacent to site	A228 adjacent to site	A2 (grade separated) 5.0km via B road
Land available	50ha	60ha	60ha	100ha
Planning status				
Closest settlement	Basildon 1.0km	Stanford-le0Hope is adjacent to site	3.5km to Grain village	Gravesend 1.0km from site
Suitability for further consideration	No	No	No	No
Gradient issues	Relatively flat land	20-30 metre height differential on site	Flat land	Flat land
Watercourse issues	2 watercoruses through site	No watercourses	Various prominent watecourses through site	Marshland area, watercourses criss cross site
Comments	Rail access wouldhave to cross a watercourse to reach site, and the adjacent rail line is on an embankment	Adjacent rail line in cutting, rail access wouldhave to cross a B road to reach site but alternative routes are available	Access to A228 wouldhave to cross adjacent rail line	
Active promoter?				

Site ref no:	JBH 83	JBH 84	85a	JBH 88 (sa ½)	JBH 89 (sa 1/3)
OS Landranger sheet no	177	177	176	187	187
Grid ref:	TQ 587842	TQ 603882	TQ236867	TQ 235362	TQ 075575
Site location	North Ockendon	Great Warleyhall, Upminster	Cricklewood Waste transfer station, London	Landfill site, Holmbush farm	Disused airfield, Ockham
Rail line	Ockendon to Upminster	Basildon to Upminster	Hampstead to Edgeware	Crawley to Horsham	Guildford to Oxshott
Railway connectivity	No existing rail junction	No existing rail junction	Existing rail terminal	No existing rail junction	No existing rail junction
Rail gauge	W8	W8	W7	W6 (check)	W6 9check)
Road connectivity	4.0km to M25 junction 29 via B186	2.0km to M25 junciton 29 via B186 + A127 (T)	1.0km to grade separated A 406	3.0km to M23 junction 11	5.0km to M25 junction 10 via B roads + A3
Land available	75ha	60ha	Minimal. Site in full existing use	50ha	80ha
Planning status					
Closest settlement	South Ockendon 500 metres from site	West Horndon 2.0km from site	Built up all around boundary	Bewbush, Crawley adjacent to site	Ockham 700 metres
Suitability for further consideration	Possible	No	No, loading gauge too low	No	No
Gradient issues	Flat land	20-30 metre height differential on site	Flat land	10 metres height differential on site	10 metre height differential on site
Watercourse issues	No watercourses	Watercourses through site	None	Watercourses on site boundaries	Watercourses on site boundary
Comments	N.B. W8 only	Adjacent rail line in cutting	Site is virtually fully utilised	W6 gauge only	W6 gauge only. Nearest rail live * is 4.0km distanct and wouldhave to cross at least 2 B roads to access site
Active promoter?			Hammerson		

Site ref no:	JBH 90 (sa ¼)	JBH 92 (sa 2/5) (see also 11)	JBH 93 (sa 2/6)	JBH 96 (sa 2/3)
OS Landranger sheet no	188	188	188	178
Grid ref:	SU 777556	TQ 605580	TQ 543575	TQ 810727
Site location	Taplin's farm,harley Wintney	Borough Green	Greatness, Sevenoaks	Kingsnorth power station
Rail line	Hook to Farnborough (Hants)	Maidstone to Otford	Maidstone to Otford	Isle of Grain to Rochester
Railway connectivity	No existing rail junction			
Rail gauge	W8	W9	W9	W9
Road connectivity	6.0km to M3 junciton 5 via A323 + A30	M20/M26 junction 4.0km	M20 junciton 5 8.0km via A25	M2 junction 1 15.0km via A289
Land available	60ha		50ha	50ha
Planning status				
Closest settlement	Hartley Wintney adjacent to site	Borough Green adjacent to site	Greatness adjacent to site	Kingsnorth adjacent to site
Suitability for further consideration	No	No	No	No
Gradient issues	20-30 metre height differential on site	10-20 metre height differential on site	20-30 metre height differential on site	Flat land
Watercourse issues	Watercourses on site boundary	Watercourse runs through site	Lakes on site edges	Watercourses in area, Damhead Creek forms site boundary
Comments	Nearest rail line is separated from site by M3 and is on an embankment. Rail connectivity therefore very difficult. Very poor road access.	Rail access wouldhave to pass through built up area	Very poor road access.	Very poor road access.
Active promoter?				

Site ref no:	JBH 97 (sa 2/4)	JBH 98 (sa 2/11)	98a	JBH 99 (sa 1/5)	JBH 100 (sa 2/9)
OS Landranger sheet no	178	178	178	198	177
Grid ref:	TQ 706645	TQ 738578	TQ 913656	TQ 115567	TQ 606760
Site location	Newtown,halling	Royal British Legion village	Gpark, Kemsley Fields Sittingbourne	Newmarsh farm, Effingham	Swanscombe Marshes
Rail line	Maidstone to Rochester	Maidstone to East Malling	Sittingbourne to Sheerness	Effingham to Oxshott, Effingham to Leatherhead	Gravesend to Dartford
Railway connectivity	No existing rail junction	No existing rail junction	No existing Junction	No existing rail junction	No existing rail junction
Rail gauge	W6	W6 + W9	W6	W6	W8
Road connectivity	4.0km to M2 junction 2	300km to 20/A20 junction	6.5km via A roads to M2 Jct 5	5.0km to M25 junction 10	A2 (grade separated) 3.0km from site *
Land available	40ha	40ha	50+ hectares	50ha	70ha
Planning status					
Closest settlement	Halling adjacent to site	Allington adjacent to site		Fetchham 2.0km	Swanscombe 300 metre from site
Suitability for further consideration	No	No	No, loading gauge too small	No	No
Gradient issues	Flat land	Relatively flat land	Flat land	Relatively flat land	Flat land
Watercourse issues	Watercourses through site	No watercourse	Watercourse through site	No watercourses	Marshland area various watercourses through site
Comments	Restricted land area, site bounded by River Medway. Road access wouldhave to cross existing rail line	Restricted land area, both adjacent rail lines are in cuttings or on embankments	Rail line wouldhave to cross B road to access site	Adjacent rail lines on embankment. Rail access wouldhave to transit Great Mornshill Wood. Very poor road access	Site is separated from adjacent rail line by a built up area
Active promoter?			Gazeley		

Site ref no:	JBH 101 (sa 2/10)	JBH 104 (sa 2/13)	JBH 106 (sa 3/3)	JBH 107 (sa 3/11)
OS Landranger sheet no	177	188	177	177
Grid ref:	TQ 627746	TQ 580462	TQ 570777	TQ 630760
Site location	Rusherville	Tonbridge west yard	Purfleet	Tilbury Port
Rail line	Gravesen to Dartford	Tonbridge to Penshurst + Redhill	Grays to Rainham	Tilbury to Grays
Railway connectivity	No existing rail junction	Existing rail yard	Existing rail spur	Existing rail sindings
Rail gauge	W8	W9	W10	W10
Road connectivity	A2 (grade separated) 3.0km from site *	1.5km to (grade separated) A2	1.0km to M25 junciton 30	Adjacent to (grade separated) A1089
Land available	30ha	10ha	50ha if wharf/port area is included	50ha If port area is included
Planning status				
Closest settlement	Rusherville adjacent to site	Tonbridge adjacent to site	Site adjacent to Purfleet	Site adjacent to Tilbury
Suitability for further consideration	No	No	No	No
Gradient issues	Flat land	Flat land	Flat land	Flat land
Watercourse issues	No watercourses	Adjacent to country park + lake	Watercourses through site	No watercourse
Comments	Nearest rail line is in cutting + is separated from site by approx. 700 metres of built up area. A number of roads wouldhave to crossed to access site	Site is around 10ha with little room for expansion	Only around 10ha is available if existing port area cannot be used.	Available land will be minimal. Tilbry is a major busy seaport. Any change of use will be unacceptable
Active promoter?				

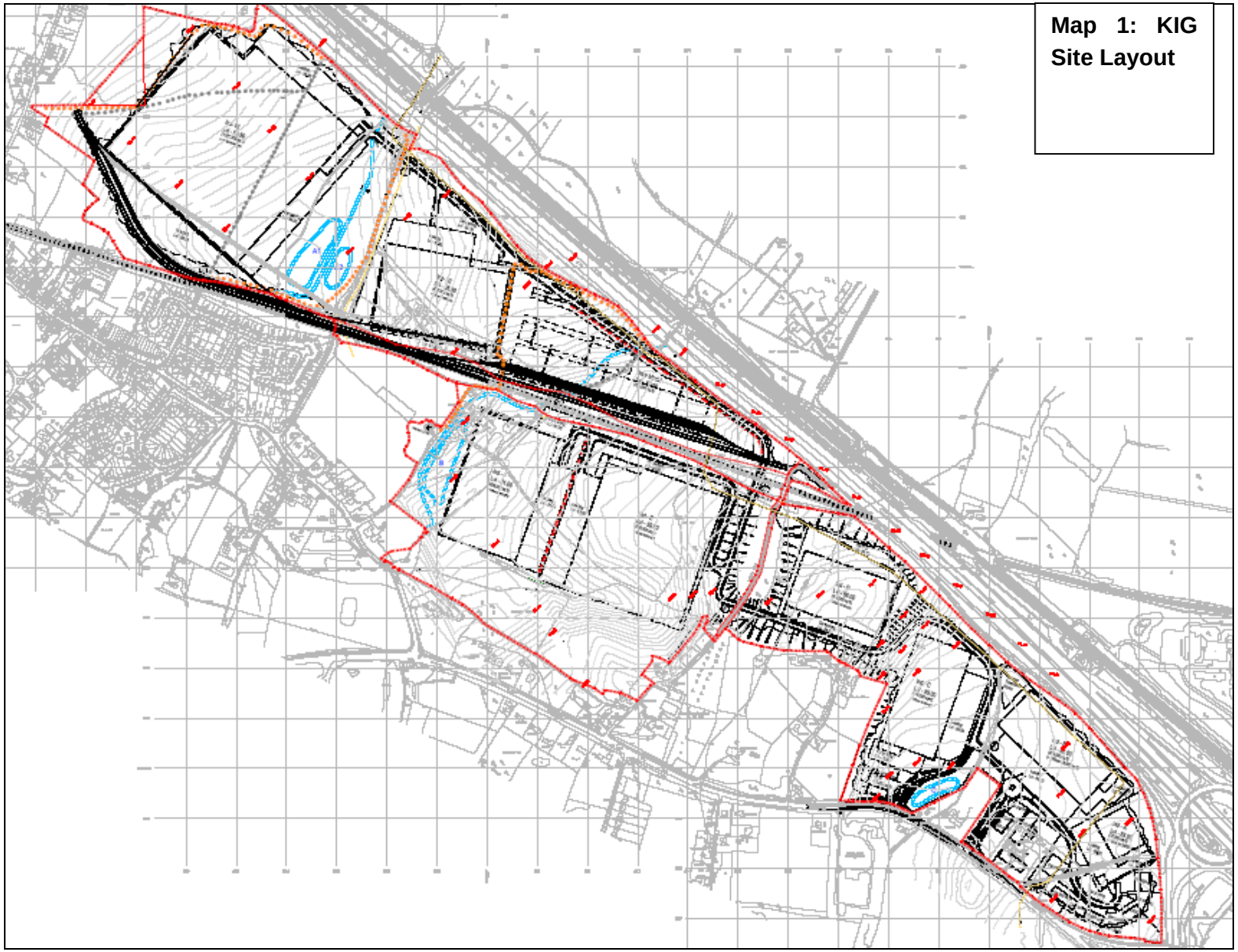
Site ref no:	JBH 108 (sa 3/5)	JBH 109 (sa 3/6)	JBH 110 (sa 3/7)	JBH 112 (sa 3/9)
OS Landranger sheet no	177	177	177	167
Grid ref:	TQ 530792	TQ 665755	TQ 633982	TQ 545252
Site location	Aveley Marshes	Tilbury power station	Heybridge	Gount's End, Elsenham
Rail line	Grays to Railham	Stanford-le-Jope to Tilbury	Chelmsford to Brentwood	Cambridge to Bishops Stortford
Railway connectivity	No existing rail junction	No existing rail connection	No existing rail connection	No existing rail connection
Rail gauge	W10	W8	W10	W8
Road connectivity	4.0km to M25 junction 30	4.0km via B roads to (grade separated) A1089	Adjacent to (grade separated) A12, M25 junction 28 11.0km distant	8.0km to M11 junction 8
Land available	100ha	50ha	50ha	50ha
Planning status				
Closest settlement	Site is 1.0km from Aveley	Tilbury 500 metres from site	Mountnessing adjacent to site	Elsenham 500 metres
Suitability for further consideration	No	Possible	No	No
Gradient issues	Flat land	Flat land	10-20 metre height differential on site	10-20 metre height differential on site
Watercourse issues	Marshland area criss crossed by watercourses	Marshland area watercourses throughout site	Watercourses on edge of site	Watercourse through centre of site
Comments	The council wish to protect Aveley Marshes	Remediation of land may be required because of possible contamination issues	Adjacent rail line is in cutting + on embankment + wouldhave to cross a B road and an A road to access site	Very difficult to rail connect - site is 1.0km from rail line which wouldhave to cross B road to across site. Poor road access Near village
Active promoter?				

Site ref no:	JBH 113 (sa 3/10)	JBH 114 (sa 3/11)	JBH 116	JBH117
OS Landranger sheet no	167	167	177	198
Grid ref:	TL 525287	TL 735116	TQ 640977	TQ234350
Site location	Ugley	Airfield site, Boreham	Begrums, Heybridge	Crawley
Rail line	Cambridge to Bishop's Stortford	Hatifeld Peverel to Chelmsford	Chelmsford to Brentwood	Crawley-Horsham line
Railway connectivity	No existing rail junction	No existing rail junction	No existing rail connection	No existing rail connection
Rail gauge	W8	W10	W10	W6 – 7km to a W8 cleared route
Road connectivity	8.0km to M11 junctin 8	5.0km to A12 (grade separated) via B roads + A130	300 metres on B roads to access (grade separated) A12	Adjacent to A264, 4km to M23 Jct 11
Land available	80ha	100ha	50ha	130ha
Planning status				
Closest settlement	Henham, 2.0km	Boreham 1.0km from site	Heybridge adjacent to site	Close to town of Crawley
Suitability for further consideration	No	No	No	No
Gradient issues	20-30 metre height differential on site	10-20 metre height differential onsite	20-30m height differential on site	10m height differential on site
Watercourse issues	No watercourses	Watercourses through site	No watercourses	1 watercourse througout site
Comments	Rail line wouldhave to cross M11 to access site	Site is 2.0km form adjacent rail line, rail route wouldhave to cross a watercourse and 2 B roads to access site	Adjacent rail line in cutting and on embankment. Site development would require diversion of a B road	
Active promoter?				

Site ref no:	JBH 118			
OS Landranger sheet no	177			
Grid ref:	TQ517673			
Site location	**Swanley**			
Rail line	London-Ashford via Maidstone line (Otford Junction to Swanley)			
Railway connectivity	No existing junction			
Rail gauge	W9			
Road connectivity	Adjacent to A20/M25 junction			
Land available	51ha			
Planning status				
Closest settlement	Village of Crockenhill adjacent to site			
Suitability for further consideration	No			
Gradient issues	30m height difference on site			
Watercourse issues	No watercourses			
Comments	Adjacent rail line goes from cutting to embankmen then into a tunnel, awkward to construct a spur off			
Active promoter?				

APPENDIX 5

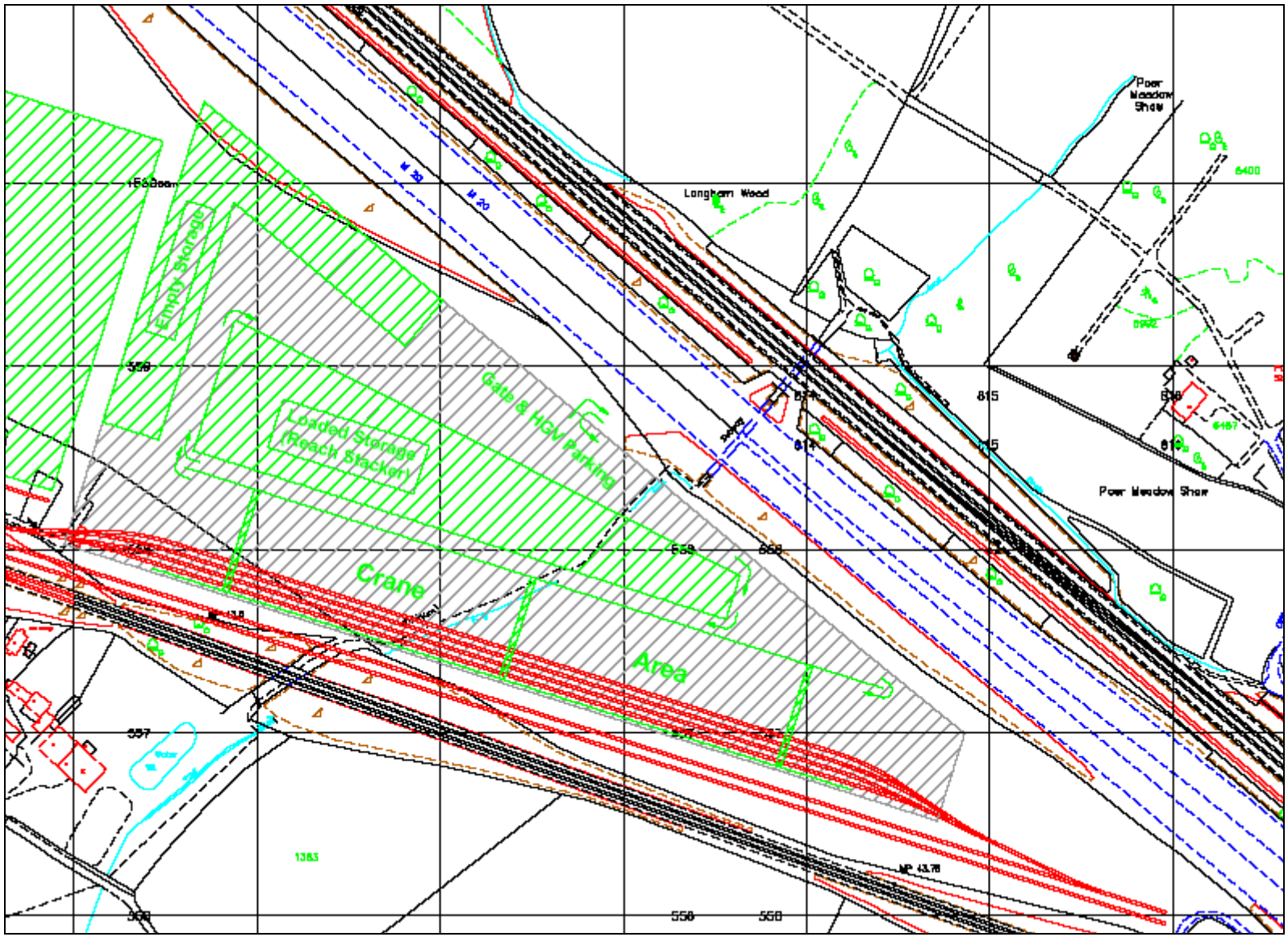
SITE LAYOUT MAPS



Map 1: KIG Site Layout

Map 2: KIG Railway Layout to North of Railway Line

Map 3: KIG Intermodal Terminal



Map 4: Internal KIG Track Layout