APPENDIX M
BN01 – Person Trip Attraction

Transport Planning Associates

ASHFIELD LAND LTD

Rail Central

Briefing Note 01: Person Trip Attraction

Transport Model Stage 1: Trip Attraction

January 2018

DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central		
Project No.:	1211-80	**Report No.:**	1211-80/BN/01
Client:	Ashfield Land Ltd		

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Date	January 2018	January 2018	January 2018

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1 INTRODUCTION

1.1 Transport Planning Associates (TPA) is working on behalf of Ashfield Land Ltd in order to address the transportation aspects of a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the south of Milton Malsor, to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.2 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.3 This briefing note forms part of a four stage transport model which can be summarised as follows:

(i) Stage 1: Trip Attraction;

(ii) Stage 2: Trip Distribution;

(iii) Stage 3: Mode Choice; and

(iv) Stage 4: Route Assignment.

1.4 This briefing note forecasts person trip attraction (excluding HGVs). It forms part of a stepped approach to confirming Stage 1 of the four stage transport model, along with information provided by MDS Transmodal relating to HGV trip attraction. Stages 2, 3 and 4 will be considered as part of subsequent briefing notes.

1.5 The briefing notes will inform scoping work required in advance of a full Transportation Assessment. They adhere to the principles of the 'Rochdale Envelope', which is used when the final details of the project are not fixed at the time of assessment work; and where there is a need for flexibility within clearly defined parameters that consider a range of likely possibilities. The assessment will be precautionary and will therefore consider the worst case. However, regard will be given to the worst case which *is likely to* occur to avoid the potential for the assessment to become over precautionary. The assessment work considers the measures that would be necessary to mitigate likely significant effects. Essentially, this means that the work is predicated on a range of scenarios which are presented in a way that aids decision making.

1.6 These briefing notes will be agreed with the highway authority at Northamptonshire County Council (NCC) and with Highways England (HE) as appropriate and through collaborative working.

1.7 In forecasting person trip attraction, this briefing note sets out a reference case methodology with reference to person trip rates at similar SRFI facilities, for each of the peak and daily periods. It also refers to a first principles based assessment, as a means of confirming that the anticipated level of trip attraction is reasonable for the purpose of the forthcoming assessment work.

1.8 This report concludes by presenting what is considered to be a likely worst case for the number of people travelling at the times when it is agreed with NCC and HE that the highway network will be operating at its busiest. It is these time periods that are agreed to be used to assess the trip impact of the scheme.

2 PROPOSAL FOR RAIL CENTRAL

Accommodation Schedule

2.1 The development masterplan is not fixed at this stage. Therefore, it is considered reasonable for a total of 687,4833sq.m (7.4M sq.ft) Gross Internal Area (GIA) of high bay warehousing with ancillary offices to be applied as a robust assessment. This is the largest quantum of development that is anticipated at the site.

2.2 The Architect has advised that the GIA of the proposed scheme equates to 98% of Gross External Area (GEA). The proposals therefore equate to up to 701,513sq.m GEA of high bay warehousing.

2.3 It is anticipated that the site would operate three eight-hour shifts each day, in addition to a traditional working day shift (0800 to 1600 or similar).

2.4 As set out later in this note, the number of employees likely to be associated with the scheme may vary according to its level of rail linkages. For the purpose of this Briefing Note and for ongoing work in relation to the Rail Central development, the following definitions will be used:

(i) **Rail-Served** – warehouses within the SRFI which are indirectly served by the rail freight interchange facilities, with goods moved by road between the interchange facilities and the warehouses using the internal estate roads; and

(ii) **Rail-Connected** – warehouses within the SRFI which can be directly connected to the rail network through provision of rail sidings into or alongside the warehouse.

3 DAILY AND PEAK HOUR TRIP ATTRACTION

3.1 In order to determine the level of (non-HGV) trip attraction to the proposed development, it is considered reasonable for the trip attraction methodologies adopted for similar SRFI facilities elsewhere (DIRFT, EMGSRFI and Radlett) to be used for the purpose of this assessment. It is an industry standard approach for trip attraction to be determined based on trip rates of similar facilities (for example using the TRICS database). Trip rates were agreed with Highways England and the local highway authority for Radlett, DIRFT and EMGSRFI, which were recently approved in 2014, 2014 and 2016 respectively.

3.2 Each of the similar facilities set out below calculated total person movements based on surveyed vehicular trip rates. These therefore inherently include trips by visitors and delivery vehicles, in addition to employees.

'DIRFT' Strategic Rail Freight Interchange

3.3 The Daventry International Rail Freight Terminal (DIRFT) is a rail-road intermodal freight terminal with an associated warehousing estate. The facility is located in Northamptonshire at the junctions between the M1 motorway, the A5 and the A428. It is located approximately six kilometres to the east of Rugby and 10 kilometres to the north of Daventry. Parts of the site are also connected by rail via the line known as the 'Northampton Loop' which is provided off the West Coast Main Line.

3.4 The original DIRFT estate includes 354,351sq.m of distribution warehousing and a rail port (the 'intermodal area') with associated rail sidings. A second phase known as DIRFT II consists of 180,741sq.m of directly rail-connected buildings, accommodating three occupiers; Tesco, Sainsbury's and Eddie Stobart. The Tesco building was completed in 2011 and the remaining two buildings were completed in 2015. A third phase known as DIRFT III is approved for construction and includes a rail freight interchange with 730,665sq.m of warehouse floorspace. This forms an expansion to the established rail freight facility and involves the development of a number of rail-served large warehouse units. The site currently employs some 4,000 people, and it is anticipated that this would increase to around 12,500 employees with 1,265,757sq.m of warehousing once DIRFT II and DIRFT III are fully completed and occupied. The DIRFT III proposals suggested a ratio of 70:30 rail-served to rail-connected warehousing. The relevant extracts are contained at **Appendix A**.

3.5 The TA submitted to support the DIRFT III proposals included trip rates for Cars/LGVs throughout the day, which were used to determine the total person trips associated with the site based on a modal share of 83% car drivers. The trip rates were based on surveys carried out at the existing DIRFT I site with mode share determined from 2001 Census travel to work data. HGV trip rates were provided separately.

3.6 The total person trips as set out within the DIRFT TA are contained at **Appendix B** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.1**.

Table 3.1 Summary of Rail Central Person Movements – DIRFT Methodology

701,513sq.m GEA B8 Warehousing – DIRFT Trip Rates	Car / LGV Trip Rates (per 100sq.m GFA)			Total Car / LGV Trips			Rail Central Total Person Trips (assuming 83% car drivers)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)	0.081	0.014	0.095	568	98	666	685	118	803
PM Peak (1700 – 1800)	0.054	0.086	0.140	379	603	982	456	727	1,183
Daily (24 hours)	1.048	1.036	2.084	7,352	7,268	14,620	8,858	8,756	17,614

East Midlands Gateway Strategic Rail Freight Interchange

3.7 The East Midlands Gateway Strategic Rail Freight Interchange (EMGSRFI) is a DCO application approved in 2016 for an intermodal freight terminal with up to 557,414sq.m of warehousing and ancillary B1 Office use. It is considered to be situated in a broadly similar location to Rail Central, being served by the Strategic Road Network at the M1 Junction 24 and the Rail Network in the form of the Castle Donington Branch freight-only railway line.

3.8 Technical Note Four – Trip Rates and Traffic Generation, submitted as part of the EMGSRFI application, set out trip rates for motorised persons (Car Driver, Car Passenger and Public Transport) throughout the day. These were calculated based on surveys carried out at the Pineham Park Industrial Area, immediately to the north of M1 Junction 15A near to Rail Central. The TA submitted to support the EMGSRFI proposals subsequently confirmed that an additional 3% would be added to the motorised person trips, to determine the overall person trips (including pedestrians and cyclists).HGV trip rates were provided separately.

3.9 The TA also confirmed that the busiest PM peak hour of the development was surveyed to be 1600-1700, and this was therefore applied to the typical network PM peak hour of 1700-1800 in order to provide a robust assessment.

3.10 The relevant extracts of the EMGSRFI submission are contained at **Appendix C** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.2**.

Table 3.2 Summary of Rail Central Person Movements – EMGSRFI Methodology

701,513sq.m GEA B8 Warehousing – EMGSRFI Trip Rates		Motorised Person Trip Rate (per 100sq.m GFA)			Motorised Person Trips (Car Driver, Car Passenger & Public Transport)			Pedestrian and Cycle Trips (3%)			Total Person Trips		
		Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)		0.128	0.014	0.142	898	98	996	27	3	30	925	101	1,026
PM Peak	1600-1700	0.042	0.147	0.189	295	1,031	1,326	9	31	40	303	1,062	1,366
	1700-1800	0.031	0.114	0.145	217	800	1,017	7	24	31	224	824	1,048
Daily (24 hours)		1.126	1.108	2.234	7,899	7,773	15,672	237	233	470	8,136	8,006	16,142

**Note EMGSRFI PM trips are based on 1600-1700 as a worst case assessment*

Radlett Strategic Rail Freight Interchange

3.11 The Radlett SRFI is a planning consent approved in 2014 for a Strategic Rail Freight Interchange including approximately 331,665sq.m of warehousing.

3.12 The Radlett SRFI is considered to be situated in a broadly similar location to the proposed development, being served by the Strategic Road Network including the M25 and M10, and close to the Rail Network in the form of the Midland Main Line.

3.13 The TA submitted to support the Radlett proposals set out separate trip rates for both light vehicles and HGVs. Separate trip rate scenarios were provided depending on the type of warehousing and distribution centre provided. These included rail related uses, with trip rates based on surveys carried out at DIRFT in 2005, and road based distribution, based on data from the Magna Park distribution site in Lutterworth.

3.14 As the Rail Central proposals are for a Strategic Rail Freight Interchange, with rail-served and rail-connected warehouses, it is considered appropriate for the rail related trip rate scenario to be used for the purpose of this assessment.

3.15 In order to determine the total person trips, the baseline mode share of car drivers set out within the Radlett TA (65.4%) has been used.

3.16 The trip rates as set out within the Radlett submission are contained at **Appendix D** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.3**.

Table 3.3 Summary of Rail Central Person Movements – Radlett Methodology

701,513sq.m GEA B8 Warehousing – Radlett Trip Rates	Light Vehicle Trip Rates (per 100sq.m)			Rail Central Light Vehicle Trips			Rail Central Total Person Trips (assuming 65.4% car drivers)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)	0.074	0.013	0.087	519	91	610	794	139	933
PM Peak (1700 – 1800)	0.027	0.073	0.100	189	512	702	290	783	1,073
Daily (24 hours)	0.831	0.770	1.601	5,830	5,402	11,231	8,914	8,259	17,173

Summary of Similar Facilities Trip Attraction

3.17 A summary of the total trips at Rail Central, based on each of the similar facilities trip rates, is set out in **Table 3.4** below.

Table 3.4 Summary of Rail Central Person Movements – Similar Facilities

Total Person Trips	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
DIRFT (Ref. Table 3.1)	685	118	803	456	727	1,183	8,858	8,756	17,614
EMGSRFI (Ref. Table 3.2)	925	101	1,026	303*	1,062*	1,366*	8,136	8,006	16,142
Radlett (Ref. Table 3.3)	794	139	933	290	783	1,073	8,914	8,259	17,173
Average	**801**	**119**	**921**	**350**	**857**	**1,207**	**8,636**	**8,340**	**16,976**

**Note EMGSRFI PM trips are based on 1600-1700 as a worst case assessment*

3.18 It is considered reasonable for the EMGSRFI trip attraction shown in **Table 3.4** to be taken forward for further assessment work, as these are based on an industry standard approach using trip rates that have previously been agreed as appropriate by Highways England and the relevant local highway authorities. They would also provide a worst case assessment in comparison to the other trip attraction forecasts derived.

Alternate First Principles Assessment

3.19 An assessment of trip attraction has been undertaken for comparison purposes, based on first principles. This considered employee trip attraction based on anticipated employment densities, attendance patterns and working patterns. Realistic and robust assessments have been carried out to account for different forecast employment densities. The full details of the first principles assessment are set out in 1211-80/TN/05, included at **Appendix E**.

3.20 A summary of the total trips at Rail Central, based on the first principles assessment, is set out in **Table 3.5** below.

Table 3.5 First Principles Trip Attraction

Total Person Trips		AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
		Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
First Principles (Ref. Appendix E)	**Scenario 1 (Realistic)**	548	217	765	377	582	959	6,510	6,510	13,020
	Scenario 2 (Robust)	658	261	919	453	699	1,152	7,819	7,819	15,638

3.21 The first principles based assessment results in a broadly similar level of peak hour trip attraction to both the DIRFT and Radlett methodologies, although is less than the EMGSRFI methodology.

Conclusion on Peak Hour and Daily Trip Attraction

3.22 It is concluded that the EMGSRFI based trip attraction provides a robust assessment of trip attraction as it uses PM peak trip rates for the 1600-1700 period (when the site's trip attraction is highest) applied to the typical network peak period of 1700-1800, and is also shown to result in a higher trip attraction than each of the Radlett, DIRFT and First Principles methodologies. It is therefore appropriate for use to ensure that the assessment can be considered to be a realistic worst case.

3.23 HGV trip attraction will be considered separately by MDS Transmodal, in order to finalise the first stage (Trip Attraction) of the four stage Transport Model.

APPENDIX A

DIRFT III

Environmental Statement

Chapter L

Socio-Economics

February 2013

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proportion of construction workers drawn locally, it is difficult to identify the likely source of workers to fill these construction jobs before contracts have been let. However, based on experience elsewhere it would be reasonable to expect a proportion of the construction jobs created by the proposed development could be taken up by the local workforce, particularly if measures are in place to encourage local recruitment and to raise local skills levels.

L5.6 In addition, it is also likely that some businesses in the local area, as well as the Midlands economy, would benefit from the trade linkages that would be established to construct the development. This means that further indirect jobs would be supported locally in suppliers of construction materials and equipment. Local businesses would generally also benefit to some extent from temporary increases in expenditure as a result of the direct and indirect employment effects of the construction phase, for example, as construction workers spend wages in local shops and other facilities.

L5.7 Applying an employment multiplier of 1.2 to the FTE construction employment[4] indicates that up to a further 89 FTE indirect/induced jobs could be supported in the local area as a result of such construction-related expenditure.

L5.8 Drawing together these various effects of the construction phase, the construction of the new development could generate up to 4,433 person-years of temporary construction work (equivalent to 443 FTE jobs). 89 additional FTE jobs would be created from indirect impacts in the main impact area, many of which would be based in the local area.

After Completion

Economic Impacts

Direct Employment Impacts

L5.9 The level of direct employment associated with the likely form of B8 development has been estimated from consideration of the ratio between jobs and distribution floorspace of similar existing facilities, as well as from published studies of employment density of such schemes. Based on information provided by occupying companies at a range of RFI developments, including DIRFT, in 2008, the average employment density of those firms occupying rail-connected floorspace was approximately 1 job per 130 m^2 of floorspace (Appendix L1, Table 12). By comparison, HCA/OffPat's Employment Densities Second Edition

[4] Broadly derived from English Partnerships Additionality Guide Third Edition (Oct 2008) and NLP's experience of construction schemes and their economic impacts.

(2010) suggests employment densities of 1 FTE job per 50 m^2 GEA for general B8 uses and 1 FTE job per 80 m^2 GEA for large scale or high bay B8 warehousing. Survey work by Prologis in 2010 estimated that overall employment density across their portfolio of warehouses totalled 1 job (full time and part time) per 77 m^2.

L5.10 Assuming a density range of 1 job per 130 m^2 for rail-linked warehousing and 1 job per 80 m^2 for general strategic and rail-served warehousing at DIRFT III, the number of jobs can be estimated based upon the potential split of rail-linked and other rail-served warehousing. The scheme includes the ability for up to circa 30% to be rail-linked and with the remaining circa 70% being rail-served, with the ability to use the rail freight terminal without being directly linked. These additional jobs would be expected to have a broadly similar profile of employment in terms of full-time (91%) and part-time (9%) jobs and occupation types to those seen at DIRFT currently, as identified by information provided by occupying companies in 2001 and 2008.

Table L5.1 Direct Job Generation

Type	Floorspace (m^2)	Job Density	Jobs	PT:FT Split	PT Jobs	FT Jobs	FTE Jobs
Rail-linked B8 Warehouse	219,200	1 job per 130m^2	1,686	9:91	151	1,534	1,610
Rail-served B8 Warehouse	511,465	1 job per 80m^2	6,393	9:91	575	5,818	6,103
Total	730,665		8,079		686	6,936	7,713

Note: Floorspace split between 'rail-linked' and 'rail-served' floorspace is estimated based on current proposals.

L5.11 The table above demonstrates that applying these ratios to the proposed floorspace for the scheme will support circa 8,080 jobs or 7,710 FTE jobs.

L5.12 This represents a worst case scenario of job creation. If all of the floorspace were to come forward as rail-served warehousing, rather than directly linked, this level of direct job creation could increase to 9,133 jobs or 8,722 FTE jobs.

Net Additional Employment

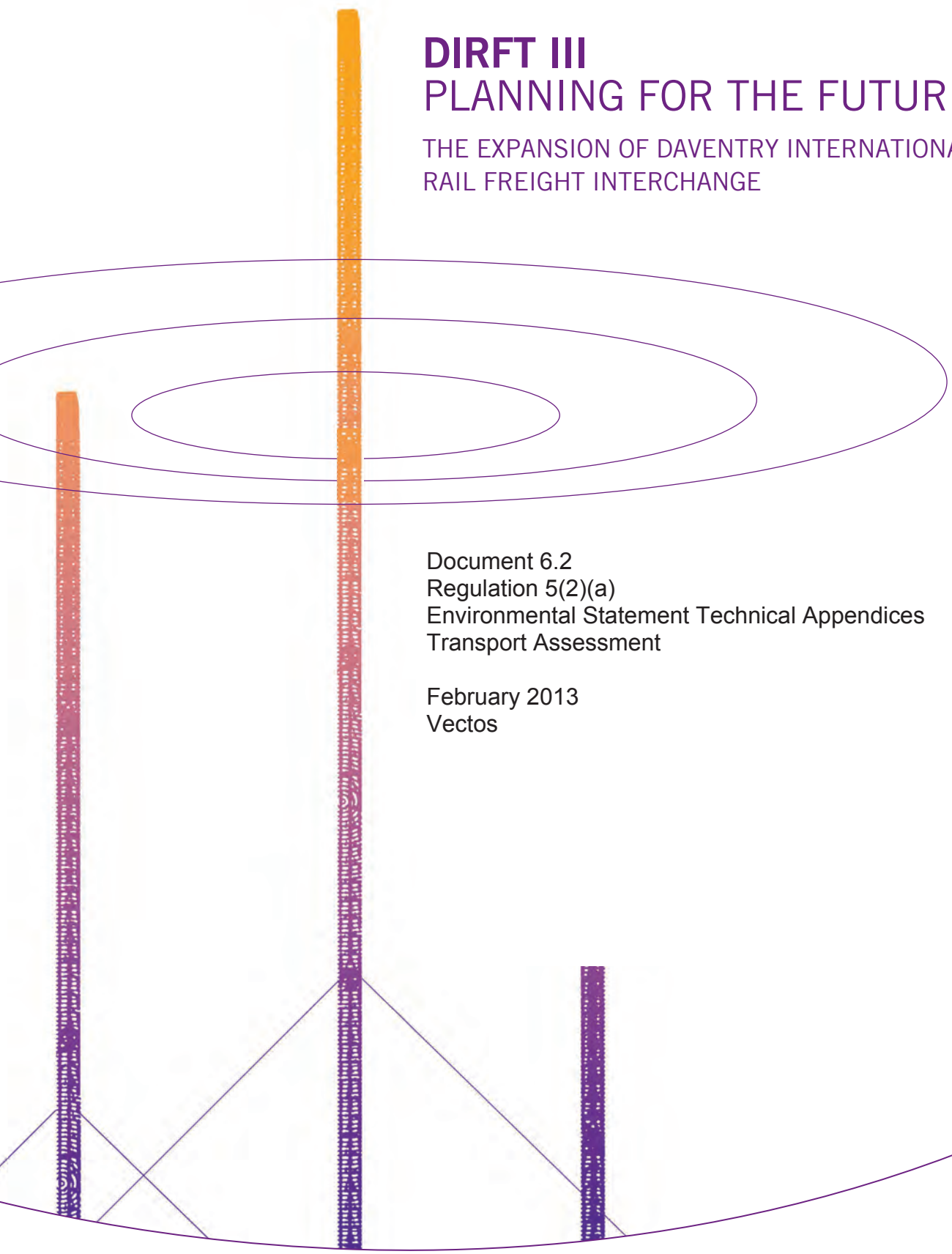
L5.13 As the application site is currently largely undeveloped, very few existing jobs, if any, will be lost, meaning all these job opportunities would be additional to current employment levels on the site.

L5.14 Net employment impacts in the main impact area have also been estimated by considering the extent to which the proposed development would displace some jobs from existing local businesses, or prevent other employment development proceeding. Consideration also needs

APPENDIX B

DIRFT III
PLANNING FOR THE FUTURE

THE EXPANSION OF DAVENTRY INTERNATIONAL RAIL FREIGHT INTERCHANGE



Document 6.2
Regulation 5(2)(a)
Environmental Statement Technical Appendices
Transport Assessment

February 2013
Vectos

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BT

AVIVA INVESTORS

PROLOGIS

6 TRIP GENERATION

Introduction

6.1 During 2011 detailed discussions took place between Vectos and the relevant highway authorities in order to seek agreement on the baseline level of vehicular trips anticipated to be generated by the development proposals (i.e. before the effects of any subsequent modal shift resulting from transport improvements and incentives to travel by non-car modes).

6.2 These discussions culminated in the preparation of a Technical Note to provide details of the proposed methodology, which was based on surveys undertaken at the existing DIRFT I facilities, including the existing Intermodal Terminal. The Technical Note was submitted to the highway authorities for review in November 2011 and the derived baseline trip rates were subsequently agreed by NCC, WCC, and the HA, with LCC deferring to the other authorities. The agreed traffic methodology and associated calculations are provided below.

Trip Rate Methodology

6.3 In March 2011 a comprehensive set of surveys was undertaken at all parts of DIRFT I (East, Central and South) and included the existing Intermodal Terminal. Furthermore, all roads leading to and from the DIRFT I area were surveyed, including:

- M1 northbound and southbound off-slip roads at Junction 18;
- A5 north of DIRFT I;
- Lilbourne Road (west of A5);
- A428 east of M1 Junction 18 and also east of the main route into Crick (i.e. on the A428 Crick bypass);
- A428 west of DIRFT I and DIRFT II;
- A5 east of junction with A361 (i.e. to the east of Kilsby);
- A361 south of Kilsby (to the south of junction with The Ridgeway); and

- The Ridgway (immediately west of the A361).

6.4 The surveys combined volumetric counts at all locations as well as ANPR data. The former was used in deriving appropriate trip rates for DIRFT I to be applied to the DIRFT III proposals. The ANPR results provided information on internal trips, i.e. DIRFT I to/from the Intermodal Terminal and internal DIRFT I trips (excluding those made within the same area, such as DIRFT (East)) and the distribution of trips on the wider road network.

6.5 Trips to and from the existing Eddie Stobart facility that forms part of the DIRFT II site on the west side of the A5 were assessed separately from the rest of DIRFT I.

Warehouse Trips

6.6 The baseline trip rates derived from the whole of DIRFT I are summarised in **Table 6.1** below. **Table 6.2** then provides the resultant DIRFT III trips for each peak period, based on an assessment total floor area of 730,665sqm. The time periods included in the tables below include the traditional morning and evening peak hours (08:00 – 09:00 and 17:00 – 18:00) as well as the longer three hour morning and evening peak periods. The latter three hour peak periods were used in the derivation of the Paramics model matrices. The Paramics model also includes information for each three hour peak to provide suitable profiles for the release of vehicles onto the network that represent changes in flow throughout the modelled period.

Table 6.1: DIRFT I Warehouse Baseline Trip Rates (March 2011 Surveys)

Trips per 100 sqm	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	0.088	0.017	0.227	0.075	0.056	0.091	0.132	0.254
HGV	0.020	0.022	0.063	0.065	0.025	0.030	0.077	0.071
Totals	0.108	0.039	0.290	0.140	0.081	0.121	0.209	0.325
	0.147		0.430		0.202		0.534	

Table 6.2: DIRFT III Warehouse Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	643	124	1,659	548	410	665	964	1,856
HGV	146	161	460	475	183	219	563	519
Totals	796	285	2,119	1,030	592	884	1,527	2,382
	1,081		3,149		1,476		3,909	

Based on assessment of 730,665 sqm of DIRFT III warehousing

6.7 It is noteworthy that over the whole of the DIRFT I estate, rail-linked warehouses account for up to 19% of the total warehouse floorspace. As a general principle, it is anticipated that rail-linked warehouses generate fewer external road-based trips, particularly by HGVs, than a traditional stand-alone warehouse, since a number of inbound movements (with goods) and outbound movements (empty containers) are undertaken using trains rather than conventional HGVs.

6.8 The proposals for DIRFT III allow for the provision of approximately 40% direct rail-linked warehouses. However, for the purposes of the assessment, no additional allowance has been made for the significant increase in rail-linked warehouses. The trip rates and resultant trips as set out in **Tables 6.1** and **6.2** above, based on the whole of the existing DIRFT I estate, have been used in future assessments.

Intermodal Terminal Trips

6.9 The March 2011 surveys separately considered trips to and from the existing Intermodal Terminal. The resultant baseline trip rates, based on the existing number of container lifts (71,531 per year), are summarised in **Table 6.3** below. **Table 6.4** then provides the projections for the replacement facility, based on an assumption of up to 510,000 future lifts per year (as set out in Section 5.3 of the 'Rail Operations Report' (Document No. 7.8)).

Table 6.3: Intermodal Terminal Baseline Trip Rates (March 2011 Surveys)

Trips per 1,000 lifts	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	0.169	0.042	0.352	0.197	0.084	0.084	0.112	0.225
HGV	0.085	0.099	0.366	0.338	0.155	0.169	0.366	0.549
Totals	0.254	0.141	0.718	0.535	0.239	0.254	0.479	0.775
	0.395		1.253		0.493		1.254	

Table 6.4: New Intermodal Terminal Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	86	21	178	100	43	43	57	114
HGV	43	50	185	171	79	86	185	278
Totals	129	71	364	271	121	129	242	392
	200		635		250		634	

Based on projection of 510,000 lifts per year at new Intermodal Terminal

DIRFT III Combined Trips

6.10 In summary, **Table 6.5** below provides the total baseline trips associated with the overall development of DIRFT III, including warehousing and replacement Intermodal Terminal, before the effects of any modal shift assumptions or internal trips are applied.

Table 6.5: DIRFT III Total Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	729	145	1,837	648	453	708	1,021	1,970
HGV	189	211	645	646	262	305	748	797
Totals	925	356	2,483	1,301	713	1,013	1,769	2,774
	1,281		3,784		1,726		4,543	

6.11 The highway authorities have agreed the use of the total baseline trips derived from the surveys at DIRFT I and the existing Intermodal Terminal as set out above.

6.12 The assessment of total trips associated with the DIRFT III proposals is based on an assumption of 730,665 sqm of warehouse floorspace across the whole of the Site. However, not all of this floorspace would be located on the

main area of the Site to the east of the A5. The indicative Masterplan and associated Parameters assumes that up to 17,187 sqm of warehouse accommodation would be provided on the Site of the existing Intermodal Terminal within DIRFT South.

6.13 It has been established that the levels of trips during both peak periods within the zone that represents the existing Intermodal Terminal (Paramics zone 136) are broadly similar to the levels that would be expected should that area of the Site be developed for up to 17,187 sqm of warehousing.

6.14 Therefore, in order to simplify the Paramics matrix derivation process, the traffic flows that would be associated with the small element of DIRFT III on the site of the existing Intermodal Terminal have been excluded from the assessment, but the trips associated with the existing Intermodal Terminal have not been removed from the Paramics matrices. This approach has been agreed with the highway authorities. The resultant DIRFT III traffic flows (before modal shift or internalisation) are shown in **Table 6.6** below:

Table 6.6: DIRFT III Warehouse Baseline Trips – Main Site

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	628	121	1,619	535	399	650	941	1,812
HGV	143	157	449	464	178	214	549	507

Based on assessment of 713,478 sqm of DIRFT III warehousing on main site

Modal Shift

6.15 DIRFT I was built in the 1990's and does not benefit from a significant level of public transport services. Only bus route 96, which operates between Rugby and Northampton via Crick, passes close to the Site and is only hourly during the working day. As such, there are few opportunities to travel to DIRFT I by bus. Furthermore, it is understood that there is no Travel Plan in effect at DIRFT I and there are very few, if any, incentives to travel to the site by means other than the car.

6.16 In addition, NCC has determined a target of a 20% reduction in single occupancy car journeys based on "*challenging but realistic targets following a review of best practice".* This is based on research undertaken by the Council as part of their 'Transport Strategy for Growth' of 2007. To achieve this target the Council suggest that *"higher quality alternatives to the private car need to be introduced"* and provide examples of 'Smarter Choice' techniques that could be implemented to achieve the targets.

6.17 It has therefore been assumed in the assessment of DIRFT III that there will be a 20% reduction in single occupancy car journeys when compared with the baseline levels established from the surveys of DIRFT I and that this would be achieved as a result of the sustainable transport initiatives being proposed as part of the development, including the introduction of a Travel Plan and improved public transport provision.

6.18 In order to establish the mode shift, journey to work data of people working in the Crick Ward has been extracted from 2001 Census Data. The Crick Ward has been selected as the majority of DIRFT I is located in the ward, therefore providing the most representative basis for the analysis. The analysis of the census data is included as **Appendix 6.1**, along with the derivation of the modal split percentages of people travelling to work in the Crick Ward. It should be noted that the 'Work from Home' respondents have been excluded from the analysis as they are not representative of the likely employees at the Site.

6.19 The existing modal split of journeys to work in the Crick Ward is presented in **Table 6.7**. The results of the census data analysis revealed that 83% of people who work in the Crick Ward travel to work as a car driver. The analysis also reveals only 3% of people who work in the ward travel to work by bus.

Table 6.7: Existing Modal Split of Journeys to Work in the Crick Ward

Mode	Existing Split (%)
Car Driver	83%
Car Passenger	9%
Bus	3%
Train	0%
Walk	1%
Cycle	1%
Other	3%
Total	100%

6.20 To ensure a robust assessment it has been assumed that, of the target of 20% reduction in single occupancy car journeys, 67% of people would choose to travel to the Site by bus and the remaining 33% of people would shift to car share. These are only working assumptions and it may be that the split between the sustainable modes is different in reality. Furthermore when baseline travel surveys are undertaken during the early occupation stages of DIRFT III, it may be that the modal split has already moved some way towards the achievement of the proposed modal share targets.

6.21 The potential modal split of journeys to work at DIRFT III is presented in **Table 6.8**.

Table 6.8: Proposed Modal Split of Journeys to Work at DIRFT III

Mode	Proposed Split (%)
Car Driver	66%
Car Passenger	14%
Bus	15%
Train	0%
Walk	1%
Cycle	1%
Other	3%
Total	100%

8.6 The total person trips to and from the Site for each hour can be calculated by dividing the car driver trips presented in **Table 6.6** by the car driver modal split percentage presented in **Table 6.7** (i.e. prior to the 20% reduction in single occupancy car trips). A summary of the total person trips for each hour of the day is provided in **Table 8.1** below.

Table 8.1: DIRFT III Total Person Trips

Time	IN			OUT		
	DIRFT I Trip Rate per 100sqm of GFA	DIRFT III Cars (730,665sqm GFA)	DIRFT III Total Person Trips	DIRFT I Trip Rate per 100sqm of GFA	DIRFT III Cars (730,665sqm GFA)	DIRFT III Total Person Trips
00:00-01:00	0.015	110	132	0.031	227	273
01:00-02:00	0.012	88	106	0.041	300	361
02:00-03:00	0.009	66	79	0.018	132	159
03:00-04:00	0.022	161	194	0.019	139	167
04:00-05:00	0.021	153	184	0.016	117	141
05:00-06:00	0.183	1337	1609	0.054	395	475
06:00-07:00	0.068	497	598	0.079	577	694
07:00-08:00	0.066	482	580	0.033	241	290
08:00-09:00	0.081	592	712	0.014	102	123
09:00-10:00	0.055	402	484	0.016	117	141
10:00-11:00	0.023	168	202	0.018	132	159
11:00-12:00	0.030	219	264	0.023	168	202
12:00-13:00	0.035	256	308	0.031	227	273
13:00-14:00	0.098	716	862	0.044	321	386
14:00-15:00	0.036	263	316	0.129	943	1135
15:00-16:00	0.029	212	255	0.048	351	422
16:00-17:00	0.023	168	202	0.074	541	651
17:00-18:00	0.054	395	475	0.086	628	756
18:00-19:00	0.045	329	396	0.076	555	668
19:00-20:00	0.028	205	247	0.037	270	325
20:00-21:00	0.021	153	184	0.026	190	229
21:00-22:00	0.068	497	598	0.029	212	255
22:00-23:00	0.015	110	132	0.073	533	641
23:00-24:00	0.011	80	96	0.019	139	167
Total	**1.048**	**7657**	**9214**	**1.036**	**7570**	**9110**

8.7 It has been assumed that a 20% reduction in single occupancy car journeys would be achieved as a result of the sustainable transport initiatives being proposed as part of the development, including the introduction of a Site Wide Travel Plan and improved public transport provision. This is

APPENDIX C

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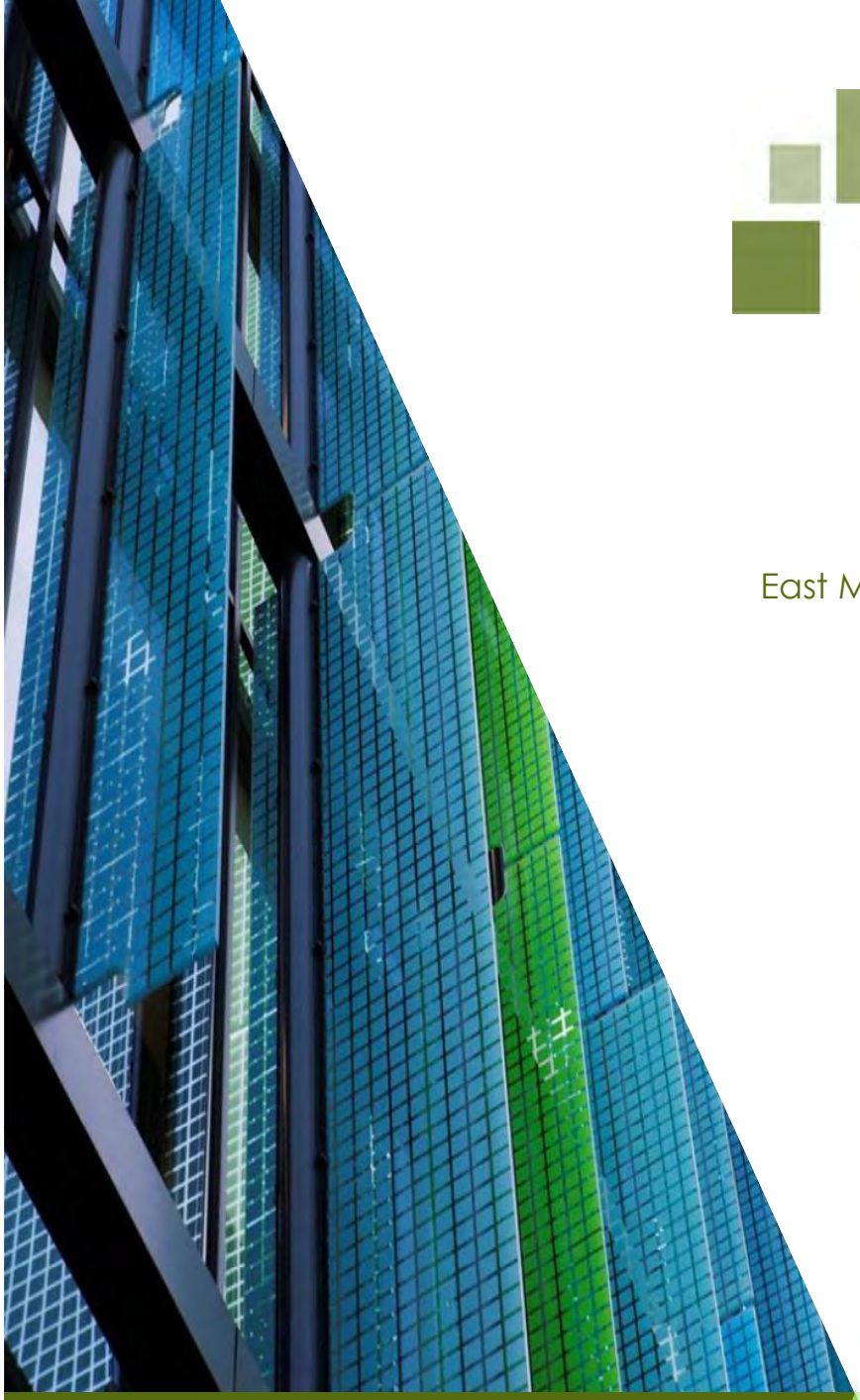
Technical Note 4

Trip Rates and Traffic Generation

Time Window	Motorised Person Trip Rates* (excluding heavy vehicles) per 100 sqm GFA			Motorised Person Trips* (excluding heavy vehicles)			Total external HGVs SRFI			Motorised Person Trips including HGV drivers		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way
00.00-01.00	0.011	0.008	0.018	60	43	103	54	85	139	114	128	242
01.00-02.00	0.007	0.002	0.009	39	13	52	81	81	162	119	94	214
02.00-03.00	0.005	0.018	0.022	26	99	125	86	87	173	112	185	297
03.00-04.00	0.008	0.010	0.018	43	56	99	60	91	150	103	146	249
04.00-05.00	0.025	0.012	0.036	137	64	202	83	57	140	220	121	342
05.00-06.00	0.175	0.083	0.257	978	464	1441	135	88	223	1113	552	1665
06.00-07.00	0.082	0.063	0.145	459	355	815	154	86	240	613	441	1054
07.00-08.00	0.094	0.030	0.124	528	167	696	154	191	345	682	358	1040
08.00-09.00	0.128	0.014	0.142	717	77	794	118	138	256	835	216	1051
09.00-10.00	0.061	0.019	0.081	344	107	451	143	133	277	487	241	728
10.00-11.00	0.048	0.029	0.077	266	163	429	170	180	351	437	344	780
11.00-12.00	0.036	0.027	0.063	202	150	352	152	147	299	354	298	651
12.00-13.00	0.052	0.058	0.110	292	326	618	138	127	266	430	453	884
13.00-14.00	0.088	0.061	0.149	492	344	836	113	160	273	605	504	1109
14.00-15.00	0.041	0.096	0.138	232	540	772	118	169	287	350	709	1059
15.00-16.00	0.024	0.118	0.142	133	661	794	97	149	246	230	810	1040
16.00-17.00	0.042	0.147	0.189	236	824	1061	164	118	282	400	942	1342
17.00-18.00	0.031	0.114	0.145	172	640	812	135	155	290	307	795	1102
18.00-19.00	0.094	0.094	0.188	528	524	1052	152	132	284	680	656	1336
19.00-20.00	0.014	0.035	0.049	77	198	275	122	90	213	200	288	488
20.00-21.00	0.016	0.018	0.035	90	103	193	119	98	217	209	201	410
21.00-22.00	0.040	0.014	0.053	222	77	299	72	104	176	294	181	475
22.00-23.00	0.003	0.029	0.032	17	162	179	65	80	146	82	242	325
23.00-00.00	0.002	0.008	0.011	13	47	60	74	85	160	87	132	220
Totals	**1.126**	**1.108**	**2.234**	**6304**	**6205**	**12509**	**2759**	**2834**	**5593**	**9063**	**9039**	**18102**

*Motorised person trips include: vehicle drivers, vehicle passengers, and public transport users

Table 14: Motorised Person Trips



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Employee numbers

6.10 Based on published data from the Home and Communities Agency, and empirical data collected by ProLogis, the proposed 560,000sqm of B8 use at East Midlands Gateway SRFI could create around 7,270 full time equivalent jobs.

6.11 All the B8 units are likely to operate on a 24-hour basis, seven days a week. The main shifts are therefore likely to be 0600-1400 hours, 1400-2200 hours and 2200-0600 hours, although there will be some variation depending on the individual occupier requirements. Some occupiers may operate a 12 hour shift, from 0700-1900 hours and 1900-0700 hours.

6.12 The rail terminal would also employ a small number of staff, typically between 10 to 20 employees per shift. Therefore an average of 15 staff per shift (0600 – 1400 hours, 1400 - 2200 hours, and 2200 - 0600 hours) has been assumed.

Person trip generation

6.13 The TCM used in the assessment of the scheme (see Section 4.0) is a multi-modal model capable of allocating person trips to either highway or public transport modes. Car occupancy factors are also applied within the model to the highway person trips to obtain trips in vehicles. The model does not include for pedestrian and cyclist trips and therefore these modes were accounted for separately, with a worst case (for the purposes of traffic generation calculations) of a 3% mode share defined in TN4.

6.14 Based on the calculations in TN4 the total person trip generation the East Midlands Gateway SRFI development is given at **Table 6.1**.

Table 6.1: Total person trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	858	217	1,075
1700-1800	408	967	1,375
Daily	9,258	9,231	18,489

6.15 The person trips, broken down into car occupants and public transport trips (non HGV motorised person trips), HGV trips, and pedestrian and cyclists trips are shown at **Table 6.2**, **Table 6.3** and **Table 6.4** respectively.

Table 6.2: Car driver, car passenger and public transport person trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	717	77	794
1700-1800	236	824	1,060
Daily	6,304	6,205	12,509

Table 6.3: HGV trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	118	138	256
1700-1800	164	118	282
Daily	2,759	2,834	5,593

Table 6.4: Pedestrian and cyclist person trips

Time period	Arrivals	Departures	Two-way
0800-0900	23	1	24
1700-1800	8	25	33
Daily	195	192	387

6.16 HGV trips are modelled separately within the strategic transport model as it is assumed that the purpose of a HGV movement is the transportation of its cargo. Therefore HGV driver trips are assumed not to undergo modal shift.

6.17 It should be noted that for the motorised trips, the shoulder peak period 1600 to 1700 hours was found to have a higher departure rate than the traditional 1700 to 1800 hours highway network peak hour. Therefore, to ensure a robust assessment, the higher shoulder peak hour trip generations have been used in the assessment of the development as a proxy for the 1700 to 1800 hour period.

6.18 Based on the output from the TCM, **Table 6.5**, **Table 6.6** and **Table 6.7** summarise the peak hour highway trip generations examined in this TA.

Table 6.5: Non HGV highway trips (car and public transport)

Time period	Arrivals	Departures	Two-way
0800-0900	628	62	690
1700-1800	201	724	925

Table 6.6: HGV highway trips

Time period	Arrivals	Departures	Two-way
0800-0900	118	138	256
1700-1800	164	118	282

Table 6.7: Total highway trips

Time period	Arrivals	Departures	Two-way
0800-0900	864	200	946
1700-1800	365	842	1207

6.19 Overall, it can be seen that the East Midlands Gateway SRFI is forecast to generation approximately 950 and 1210 two-way trips during the morning and evening peak hour periods, respectively. Of which, approximately 260 and 280 two-way trips will be HGVs.

Highway trip distribution

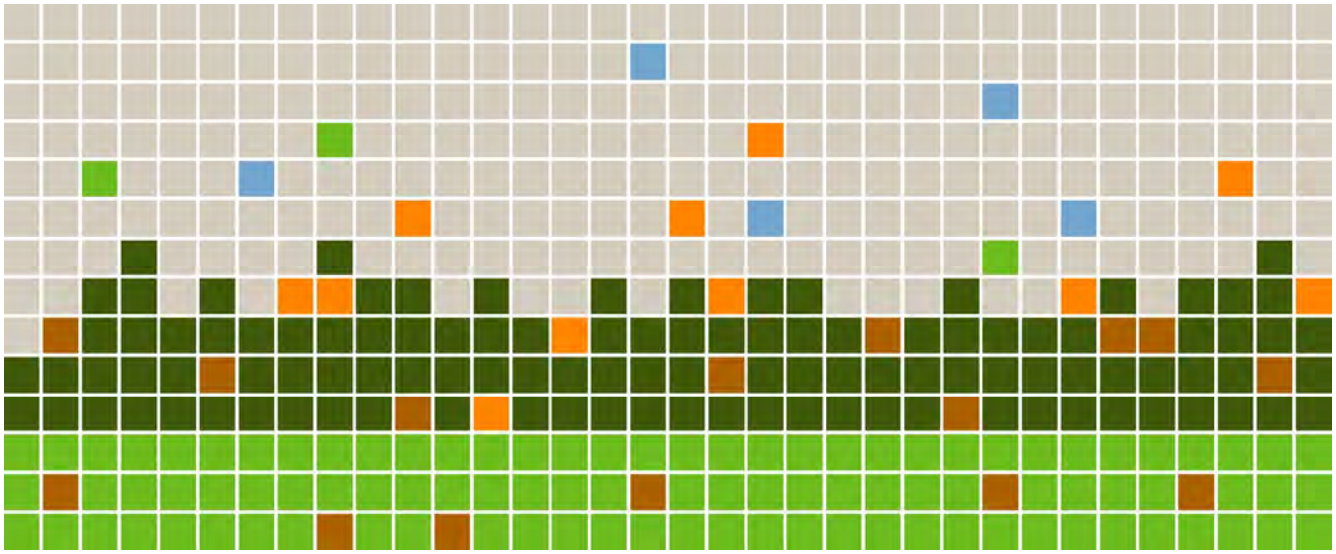
6.20 The distribution of non-HGV highway trips (effectively the employee trip distribution) was determined by the TCM based on the attractiveness of the proposed development. The resulting distribution shows that the SRFI is forecast to draw trips from a large number of districts across the East Midlands and beyond. A significant number of trips are associated with North West Leicestershire, Loughborough, Charnwood, as well as Derby City and Nottingham City. The attractiveness of the proposed SRFI diminishes as the distance from the site increase.

6.21 The distribution of HGV traffic was derived from the detailed assessment undertaken in TN7 (**Appendix J**).

6.22 The distribution of regional HGV trips was based on workplace population Census data and covers a 25 mile catchment area. The majority of regional trips to Derbyshire, Nottinghamshire and Leicestershire are therefore contained within the regional distribution. National HGV trips primarily use the SRN and travel further than the East Midlands. The proportion of trips associated with the national distribution was based on the top 10 busiest ports.

6.23 The resulting distribution plots are included in TMR2 and TMR3 (**Appendices N and O**). Overall the SRFI is forecast to have a wide distribution covering most parts of the AOI

APPENDIX D



Former Aerodrome, North Orbital Road, Hertfordshire

Transport Assessment

Helioslough

March 2009

WSP

Table 7.3: Traffic Generation – using rail based distribution trip rates (161,193 sqm)

	Rail Based Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	45	54	120	21	165	75
PM Peak (1700-1800)	57	33	44	117	101	150
24 Hour (0000-2400)	540	586	1340	1241	1880	1827

Table 7.4: Traffic Generation – using road based distribution trip rates (170,472 sqm)

	Road Based Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	51	52	268	85	319	138
PM Peak (1700-1800)	50	45	56	275	106	319
24 Hour (0000-2400)	1052	1019	2190	2286	3242	3305

7.2.10 The total traffic generation, as agreed with the Highways Agency, is summarised in **Table 7.5.**

Table 7.5: Total Traffic Generation (331,665 sqm)

	Total Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	96	106	388	106	484	213
PM Peak (1700-1800)	107	78	99	392	206	469
24 Hour (0000-2400)	1592	1605	3530	3527	5122	5132

7.2.11 It can be seen that, of the total daily traffic movements generated by the proposals, 36% arises from the rail based distribution, with 64% arising from the road based distribution. In the case of HGV's, the rail based distribution would generate 35% of the total HGV movements.

Land in and around the Former Aerodrome,
North Orbital Road, Upper Colne Valley,
Hertfordshire

Travel Plan and Freight Management Plan

January 2009

- To reduce negative environmental impact of fleet vehicles, business travel and deliveries.

6.5 Travel Plan Targets

6.5.1 Clearly, at present no specific information is available regarding the journey to work modal splits of employees to the site. The target for the modal share for car drivers has therefore been set using 2001 National Census Journey to Work data for Hertfordshire as a baseline and this will need to be reviewed following initial staff surveys.

6.5.2 To set the context of the target for car journeys to and from the site, **Table 5** shows the modal split for Hertfordshire from the 2001 Census data. It should be noted that the baseline data excludes people working from home.

Table 5: Baseline – Modal Split for Hertfordshire

Mode	Bus	Train	M/C	Cycle	Walk	Car Driver	Car Pass
Baseline Modal Share	3.5	9.8	1.2	2.0	9.7	65.4	5.7

6.5.3 The target figure for journeys to work by car drivers has therefore been set at 65%. Whilst the target may change following initial and ongoing survey work, the broad principle of the target is to achieve a 15% reduction in the number of sole occupancy commuter car journeys to the site over 10 years, with an ultimate target of 50%.

6.5.4 In addition to the above overall targets for single occupancy car use, it is anticipated that there may be a range of staged targets over the life of the plan across all modes. These will be developed by the Travel Plan Working Group as considered appropriate. Staged targets and those targets relating to specific modes may be determined by the Travel Plan Working Group following detailed consultation with the local authorities and the Highways Agency.

APPENDIX E

Technical Note 05:

First Principles Person Trip Attraction

Transport Model Stage 1: Trip Attraction

Bound separately