PARSONS BRINCKERHOFF

Prepared by Lisa Goddard
Approved by Jason Collins

PB Cardiff

AXA REAL ESTATE INVESTMENT MANAGERS UK LTD

WESTWOOD

TRIP GENERATION TECHNICAL NOTE

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1 INTRODUCTION

1.1 CBRE provided data for both the estimated number of jobs generated (document ref Calculation of Employment Densities) for the whole of the proposed development and for visitor numbers (document ref Forecasting Likely Scheme Footfall, February 2014) for the proposed retail and leisure aspects of the development.

1.2 The purpose of this Technical Note is to document the processes undertaken to generate arrival and departure trips for a typical weekday and typical Saturday/Sunday to and from the Westwood site using this original source data.

2 DATA PROVIDED

2.1 A calculation of the employment densities at Westwood was provided by CBRE as reproduced in Table 1 below.

Use	Area (ha)	Floorspace (sqft)	Use	Calculation	Estimated Jobs
Intermodal Rail / Road	1.9	21,000	Mixed - presume mainly A1 / A3	18 psqm	108
Regional Showcase / Tourism	1.9	21,000	Tourism / B1	Estimated	50
Taste of Devon	4.5	125,000	A1 food	19	611
Devon outdoor leisure destination	13	To be defined	Surf Park Cycle trail Outdoor gym Other outdoor activities	Estimated 150	150
Hotel / conference / concert	1.8	NA	100-150 room hotel 500 seat venue Concert Hall / conference (est 60,000sqft/5,574 sqm)	1 per 2 beds 90 psqm, based on 5,574 sqm	75 62
Outdoor Activity Sports / Retail Experience	3.3	90,000	A1 Retail	Estimated 100	100
Cinema / IMAX	2.4	50,000	D2	90	52
Plant / Horticulture	3	50,000	Suri Generis	Estimated 70	70
Outlet Centre	8	200,000	A1	19	978
Commercial Zone	25	600,000 - 900,000	B8	70	796-1,194

Table 1: Calculation of Employment Densities

2.2 An estimate of the scheme footfall at Westwood was provided by CBRE in the document, Forecasting Likely Scheme Footfall, February 2014. The footfall provided was an annual figure subdivided by the different elements of the scheme as reproduced in Table 2 below.

Footfall by Element		
	Absolute	**Relative**
Designer Outlet Centre	2,902,920	50%
Food & Beverage	641,519	11%
Devon Food Centre	644,941	11%
Garden Centre	343,155	6%
Visitor Attraction	386,786	7%
Outdoor Activity Retail	943,781	16%
TOTAL	**5,683,102**	**100%**

Table 2: Footfall by Element

2.3 Visitor numbers will fluctuate throughout the year with seasonal peaks anticipated in the summer season and in the run up to Christmas. With the assumption that the Easter weekend falls in the month of April, CBRE also provided a breakdown of the visitor numbers for the first three years with a seasonality index applied, as reproduced below in Table 3.

Month	Year One	Year Two	Year Three
January	293,000	336,752	362,099
February	337,527	387,531	416,700
March	370,421	425,298	457,310
April	396,058	454,733	488,960
May	392,286	450,402	484,304
June	401,301	460,753	495,434
July	433,089	497,250	534,678
August	441,263	506,635	544,769
September	395,759	454,390	488,592
October	371,935	427,036	459,179
November	416,899	478,662	514,691
December	499,272	573,239	616,386

Table 3: Footfall Seasonality Index

3 METHODOLOGY

3.1 In order to calculate a total number of trips for the whole site, for a typical weekday and Saturday/Sunday, it was necessary to manipulate the data for annual visitor figures and estimated jobs numbers separately.

3.2 A set of factors and assumptions were applied for the leisure and retail elements of the visitor footfall figures and a further set were applied for the employment data. Further information was obtained from the TRICS database as appropriate. Our rationale for the assumptions is discussed in detail in the following sections.

4 LEISURE ADJUSTMENT FACTORS

4.1 The monthly footfall figures for the Outdoor Activity Retail element of the scheme were factored using data provided from The Wave: Bristol, Transport Assessment, December 2013. The Wave was deemed to be a comparable site to one proposed at Westwood therefore the trip generation calculations and assumptions could also be utilised for this scheme.

4.2 The Wave TA looked at the likely visitor numbers to the Bristol site by season, with low, mid and high variations in opening hours, as reproduced in Table 4.

Season	Months	Operational hrs per day	Opening/Closing Times
Low	Nov - Feb, *Mar	10 hrs	08:00-18:00
Mid	Apr, May, Oct	12 hrs	08:00-20:00
High	Jun - Sep	14 hrs	08:00-22:00

**Assumed March is also low season as this was not stated in the original TA*

Table 4: The Wave TA, Season Details

4.3 Table 5 shows the aspirational daily visitor numbers to The Wave, Bristol by season.

Season	Low Season		Mid Season		High Season	
Day	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Total no. of visitors	100	200	288	430	600	750

Table 5: The Wave TA, Daily Visitor Numbers

4.4 The Wave TA made the assumption that all trips were made by car which then necessitated the derivation of an estimated vehicle occupancy rate. Like the Westwood Outdoor Activity Retail land use, The Wave offers multiple social facilities for families, friends and other groups of visitors. With this in mind it was concluded that there will be a high frequency of multiple occupancy vehicle trips.

4.5 The assumption of three occupants per vehicle was used as a robust number that would take into account the likelihood of arrivals by larger groups of visitors by minibus or similar multi occupancy vehcile. Table 6 below shows the impact of varying vehicle occupancy rates on the daily vehicle trips, with the average occupancy of three visitors per vehicle highlighted.

	Low season		Mid season		High season	
No of vehicles	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
1 occupant	100	200	288	430	600	750
2 occupants	50	100	144	215	300	375
3 occupants	33	67	96	143	200	250
4 occupants	25	50	72	108	150	188

Table 6: The Wave TA, Daily Vehicle Trips

4.6 The percentage splits of the low, mid and high seasonal daily vehicle trips in Table 5 were applied to the yearly footfall figures for the Westwood Outdoor Activity Retail land use as shown for year one in Table 7. This provided a more realistic seasonality index based on the weather constraints for this type of land use.

	Monthly footfall												
Footfall by element	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**TOTAL**
Outdoor Activity Retail	19,370	19,370	19,370	77,264	77,264	108,955	108,955	108,955	108,955	77,264	19,370	19,370	**764,462**

Table 7: Outdoor Activity Retail Monthly Footfall in Year One

4.7 Tables of hourly trip generation calculations by arrivals and departures, for weekdays and weekends in the low, mid and high seasons included in The Wave TA were utilised to derive relevant factors that could be applied to the monthly footfall figures. This generated tables of hourly footfall by direction and days of the week.

4.8 Given the proximity of Tiverton Parkway railway station and the potential for frequent high quality bus routes to the site, an assumed Modal split of 70/20/10 (Car/ Rail/ Bus) was applied to the 'Outdoor Activity Retail' visitors.

4.9 As discussed in paragraphs 4.5 and 4.6 the car occupancy rate for The Wave was assumed to be three occupants per vehicle. The same rate was adopted for the Outdoor Activity Retail land use.

4.10 By applying these adjustment factors to the anticipated monthly footfall figures, typical weekday and weekend trip rates were established.

	Two Way (vehicles)			
	Mon-Thu	**Fri**	**Sat**	**Sun**
Total	**918**	**1,090**	**3,404**	**3,404**

Table 8: Total Leisure Trip Generation, Two Way (Aug Year 1)

4.11 Table 8 represents the total two way trip generation resulting from the leisure aspects on the site during the peak season of year one.

5 RETAIL ADJUSTMENT FACTORS

5.1 Seasonality factors were applied to the total annual footfall numbers provided by CBRE to determine the total monthly footfall for the retail aspect of the development and are shown in Table 9.

	Monthly footfall												
Footfall by element	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**TOTAL**
Designer Outlet Centre	145,218	167,115	183,402	196,095	194,227	198,691	214,430	218,477	195,947	184,151	206,414	247,198	2,351,364
Food & Beverage	32,092	36,931	40,530	43,335	42,922	43,909	47,387	48,281	43,302	40,696	45,616	54,629	519,630
Devon Food Centre	32,263	37,128	40,746	43,566	43,151	44,143	47,640	48,539	43,533	40,913	45,859	54,920	522,402
Garden Centre	17,166	19,755	21,680	23,180	22,960	23,487	25,348	25,826	23,163	21,769	24,400	29,221	277,955
Visitor Attraction	19,349	22,266	24,436	26,128	25,879	26,474	28,571	29,110	26,108	24,536	27,503	32,937	313,296

Table 9: Total Retail Monthly Footfall in Year One

5.2 Traffic data was obtained from the Highways Agency TRADS database to determine weekly and hourly traffic profiles on the slip roads at M5 Junction 17. Due to the proximity of Cribbs Causeways, the traffic data at this junction is likely to reflect the impact of significant retail development upon weekly traffic profiles. This data was used in preference to the existing data at M5 Junction 27 as the existing land use near the junction is likely to result in an underrepresentation of the weekend peaks.

5.3 After the flow profiles from M5 Junction 17 were applied to the monthly anticipated footfall figures, modal splits were applied as per the assumptions outlined in the Leisure section of this note (Car/Rail/Bus; 70/20/10).

5.4 Due to the location of the development it was assumed that visitors would likely make a 'day out' of their trip and visit multiple aspects of the site. Additionally, due to the range of development on the site it has been assumed that families would likely visit the site on the same basis and subsequently a car occupancy rate of 2.4 has been assumed for the retail aspect of the site.

	Two Way (vehicles)			
	Mon-Thu	Fri	Sat	Sun
Total	7,252	8,694	7,966	6,516

Table 10: Total Retail Trip Generation, Two Way (Aug Year 1)

5.5 Table 10 represents the total two way trip generation resulting from the retail aspects on the site during the peak season of year one.

6 EMPLOYMENT ADJUSTMENT FACTORS

6.1 Employment numbers were provided by CBRE and have been adjusted to remove employees which are considered elsewhere in the assessment. The adjustment identified that the impact of 2,011 full time equivalent employees needs to be considered. This represents the total number of leisure and retail employees onsite, whilst employees from the Hotel, Conference Centre and Commercial Zone are considered separately.

Element	Full Time Equivalent Staff
Regional Showcase / Tourism	50
Taste of Devon	611
Devon outdoor leisure destination	150
Outdoor Activity Sports / Retail Experience Space	100
Cinema / IMAX	52
Plant / Horticulture	70
Outlet Centre	978
Total	**2,011**

Table 11: Total Employees (not including those accounted for elsewhere)

6.2 Trip rates were calculated based on the assumption that 5/7 of the full time equivalent employees are on site during any one day. This assumes all employees work the equivalent of a 5 day week with 2 days off and that employee levels are similar on site across all days of the week.

6.3 Modal splits were applied as per the assumptions outlined in the Leisure section of this note (Car/Rail/Bus; 70/20/10).

Two Way Employee Trips	
Weekday	Weekend
2,011	2,011

Table 12: Anticipated Daily Trip Generation, two way, of Retail and Leisure Employees

6.4 The result two way trip generation of the employees is presented in Table 12.

6.5 TRICS was used to establish typical daily trip rates for the Hotel, Conference Centre and Commercial Zone. The TRICS database contained insufficient data to differentiate between weekday and weekend traffic, therefore a flat profile across the week has been assumed but the rates include an allowance for employee journeys.

Weekday and Weekend	Daily trips		
Element	**Arrivals**	**Departures**	**Two Way**
Hotel	293	282	575
Concert Hall / Conference Centre	9	9	19
Commercial Zone	744	806	1,550
Total	***1,047***	***1,098***	***2,144***

Table 13: Total Trip Generation of TRICS Elements

6.6 Table 13 presents the total trip generation of the Hotel, Conference Centre and Commercial Zone upon M5 Junction 27.

7 SUMMARY

7.1 The trips displayed below are generated solely from the proposed Westwood development and do not take account of any trips that are already on the existing highway network. They are a worst case figure that will be subject to refinement during the assessment process, taking into account the factors outlined in Section 8.

Trips	Daily trips			
	Average Mon-Thurs	**Average Friday**	**Average Saturday**	**Average Sunday**
Year One				
January	8,954	9,908	9,720	8,757
August	12,325	13,939	15,525	14,075
Year Two				
January	9,664	10,760	10,545	9,438
August	13,535	15,388	17,209	15,545
Year Three				
January	10,079	11,257	11,026	9,836
August	14,241	16,234	18,192	16,402
Average Two Way Traffic Flow at M5 Junction 27 (2013-2014)				
	44,270	60,060	45,637	44,769

Table 14: Development Trips in Years One, Two and Three

8 ASSUMPTIONS/REFINEMENTS

8.1 The above figures have been generated assuming that Westwood would be a standalone development and that all trips generated would be new trips to the network. Given the tourist nature of the proposals and its location within the South West this would not be the case and therefore a discounting of trips would be required to take this into account.

8.2 The figures have also been generated based on each element of the scheme being a standalone attraction. With a development of this nature visitors will invariably make use of several facilities in one visit and therefore another discounting of trips would be required.

8.3 The spatial distribution of the trips will need to be assessed. This will be based on evidence provided in the Retail and Leisure Impact Assessments. The evidence will be used to develop a spatial distribution matrix which will assist in discounting the trips already on the highway network.

8.4 The temporal distribution of the trips will need to be assessed. The spatial distribution matrix will assist with this assessment together with evidence of peak times from similar developments. This would also have to be applied to employee trips as a flat rate across the week has currently been assumed.

8.5 No reductions have been made for sustainable travel initiatives, other than a ‘standard’ modal split. A development of this size would promote the use of sustainable travel for employees.

8.6 The quantum of discounts applied to the gross trip generation figures would be agreed with the Highways Agency and Devon County Council as part of the Transportation Assessment. If the above factors are taken into account there would be a significant reduction in the number of new trips generated by the development at Westwood.