

Cotswold District Council Parking Standards Review

Evidence Base/Background Information
Cotswold District Council

18 April 2016



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1. Introduction

1.1. Background

Atkins has been commissioned by Cotswold District Council (CDC) to undertake a review of the existing parking standards, included at **Appendix A**.

As part of the commission, Atkins has prepared a guidance note to advise developers and consultants how to determine an appropriate level of parking for new and extended developments. A guidance note has been prepared to inform residential and non-residential development.

This document sets out relevant background information and evidence to supplement the Guidance Note.

1.2. Policy Background

CDC's current vehicle parking standards are based on the most restrictive of previous (and now outdated) national, regional or county guidance (PPG13, RPG10 and Gloucestershire LTP, respectively) for "*strategically significant land uses*". Current standards for "*non-strategically significant land uses*" are primarily based on county guidance with some standards retained from the previous district standards where these were more restrictive.

At a County level, Section 9 of the Manual for Gloucestershire Streets at paragraph 9.9 specifies, "*There are currently no local car parking standards for Gloucestershire. However, developers are encouraged to calculate the parking demand that would be generated by the proposed development using the methodology set out in the NPPF and submit this evidence with the planning application.*"

The National Planning Policy Framework (NPPF) (March 2012) states at paragraph 39:

"If setting local parking standards for residential and non-residential development, local planning authorities should take into account:

- *The accessibility of the development;*
- *The type, mix and use of development;*
- *The availability of and opportunities for public transport;*
- *Local car ownership levels; and*
- *An overall need to reduce the use of high emission vehicles."*

A written ministerial statement was issued in March 2015 to be read alongside NPPF. In order to support the provision of car parking in residential developments and around town centres and high streets, the statement sets out that "*Local planning authorities should only impose local parking standards for residential and non-residential development where there is clear and compelling justification that it is necessary to manage their local road network*".

Due to the updated national policy, the rural nature of much of the district and the need to maintain economic vitality and viability of the area, the previous parking standards have been reviewed and new guidance prepared. The guidance does not impose rigid or onerous standards and instead provides guidance on an appropriate level of parking in new and extended developments to reflect the unique characteristics of Cotswold District.

In particular, the guidance is to be applied where it is agreed with the local highway (Gloucestershire County Council (GCC)) and planning (Cotswold District Council (CDC)) authorities that a development is forecast to have a significant impact on the local network, which would be at the discretion of GCC and CDC.

The guidance can also be used as a best practice document and can assist developers in considering an appropriate level of parking even if the proposed development is not forecast to have a significant impact on the network.

1.3. Document Contents

Following this introduction, this document will comprise the following:

- **Chapter 2** sets out the background information and evidence for the residential parking guidance note; and
- **Chapter 3** sets out the background information and evidence for the non-residential parking guidance note.

2. Residential Guidance Note

2.1. Car Availability Data

Data from the 2011 census has been obtained from the Office for National Statistics. This data cross-tabulates the number of habitable rooms against the level of car availability. Data was provided for all lower super outputs areas within the Cotswold District and was presented by type of dwelling (house or flat) and tenure (owner occupied or shared ownership/rented).

The average car availability across the Cotswold District across all types, tenures and sizes of dwelling is 1.5 cars per household, based on the 2011 census. The breakdown of the proportion of households in the District having access to different numbers of cars is set out in **Table 2-1**. Further car availability statistics are provided below **Table 2-1**.

Table 2-1 Car Availability Statistics - Cotswold District

	No Cars or Vans in Household	1 Car or Van in Household	2 Cars or Vans in Household	3 Cars or Vans in Household	4 or More Cars or Vans in Household
%age of Households	13%	40%	34%	9%	4%

Source: Car or Van Availability - 2011 Census

- Car availability varies significantly between flats and houses with average levels of 0.77 and 1.61 cars per dwelling, respectively.
- There are also differences between average car availability levels by tenure with an average of 1.71 cars per owner occupied dwelling and 1.24 cars per shared ownership/rented dwelling in the District.
- Across the District, there is a proportional relationship between the size of the dwelling and the average car availability levels. Dwellings with three habitable rooms or less have on average 0.71 cars per households with dwellings comprising eight or more habitable rooms having an average of 2.12 cars per household.
- In terms of the specified area definitions:
 - Car availability is lowest in the 'Town and Fringe' area (i.e. Cirencester and the surrounding area) at 1.22 cars per household averaged across all dwelling types, tenures and sizes.
 - Car availability in the 'Smaller Settlements (for example Tetbury, Moreton-in-Marsh and Lechlade) is higher at an average of 1.41 cars per dwelling.
 - With the highest car availability identified in the 'Rural' area (for example Andoversford and Kemble) with an average level of 1.71 cars per dwelling.

It is therefore important that the level of parking is considered in relation to the area in which the development is proposed to be located and the size, type and mix of dwellings proposed on each site.

Whilst there are differences in car availability levels in properties of different tenures, the tenure of a property could change. There is therefore the possibility that the level of parking may prove insufficient. As such, parking provision should be based on local car availability levels of owner occupied properties.

2.2. Department for Communities and Local Government (DCLG) Calculations

Research set out in the DCLG 'Residential Car Parking Research' document demonstrates that allocating too much parking can lead to inefficient use of parking spaces and the likely over provision of parking spaces. Unallocated parking is more flexible and efficient and will result in the provision of less parking overall. To demonstrate this point, a worked example of the calculations has been undertaken for a typical 100 dwelling development in Cotswold. This is based on the 2011 census car availability statistics set out in **Table 2-1**, above and summarised in **Table 2-2**, below.

Table 2-2 Cotswold District Car Availability Statistics and Typical 100 Dwelling Development

	No Cars or Vans in Household	1 Car or Van in Household	2 Cars or Vans in Household	3 Cars or Vans in Household	4 or More Cars or Vans in Household
%age of Households	13%	40%	34%	9%	4%
100 dwellings	13	40	34	9	4

The figures provided in **Table 2-2** have been applied in the worked example illustrated in **Tables 2-3 to 2-5**, below.

This example is to demonstrate the application of the method contained in the DCLG document. Each development should be considered on a case by case basis. Further details of the methodology can be found in the DCLG document¹.

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http://webarchive.nationalarchives.gov.uk/20120919132719/http://communities.gov.uk/pub/295/ResidentialCarParkingResearch_id1510295.pdf

Table 2-3 Resultant Car Parking Provision - Typical 100 Dwelling Development (0 Allocated Spaces)

Car Availability	No. of Dwellings	Utilised/Unutilised Spaces				Unutilised Allocated Spaces		Utilised Allocated Spaces		Spaces to Meet Unallocated Demand	
		1	2	3	4	Per dwelling	All Dwellings	Per dwelling	All Dwellings	Per dwelling	All Dwellings
0 Cars	13					0	0	0	0	0	0
1 Car	40					0	0	0	0	1	40
2 Car	34					0	0	0	0	2	68
3 Car	9					0	0	0	0	3	27
4 Cars	4					0	0	0	0	4	16
Total						0	0	0	0	151	Total: 151 Spaces

Table 2-4 Resultant Car Parking Provision - Typical 100 Dwelling Development (1 Allocated Space)

Car Availability	No. of Dwellings	Utilised/Unutilised Spaces				Unutilised Allocated Spaces		Utilised Allocated Spaces		Spaces to Meet Unallocated Demand	
		1	2	3	4	Per dwelling	All Dwellings	Per dwelling	All Dwellings	Per dwelling	All Dwellings
0 Cars	13					1	13	0	0	0	0
1 Car	40					0	0	1	40	0	0
2 Car	34					0	0	1	34	1	34
3 Car	9					0	0	1	9	2	18
4 Cars	4					0	0	1	4	3	12
Total						13	13	87	87	64	Total: 164 Spaces

Table 2-5 Resultant Car Parking Provision - Typical 100 Dwelling Development (2 Allocated Spaces)

Car Availability	No. of Dwellings	Utilised/Unutilised Spaces				Unutilised Allocated Spaces		Utilised Allocated Spaces		Spaces to Meet Unallocated Demand	
		1	2	3	4	Per dwelling	All Dwellings	Per dwelling	All Dwellings	Per dwelling	All Dwellings
0 Cars	13					2	26	0	0	0	0
1 Car	40					1	40	1	40	0	0
2 Car	34					0	0	2	68	0	0
3 Car	9					0	0	2	18	1	9
4 Cars	4					0	0	2	8	2	4
Total						66	66	134	134	17	Total: 217 Spaces

The above tables demonstrate that:

- The provision of unallocated parking is flexible and efficient in that fewer parking spaces are required overall. If all spaces were unallocated, a total of 151 spaces would be required across the typical 100 dwelling development. Since all spaces would be unallocated, there would not be a requirement for additional parking for visitors (see below).
- The provision of one allocated space per dwelling results in a requirement to provide additional spaces for those properties with access to more than one vehicle yet there are properties which do not have access to a vehicle with an allocated space which would not be used. This leads to an efficient provision. Across the typical 100 dwelling development, a total of 164 spaces would be required when allocating one space per dwelling. In addition, there would be a requirement for visitor parking (see below).
- The provision of two allocated parking spaces per dwelling is more inefficient. A total of 217 spaces would be required for a typical 100 dwelling development when allocating two spaces per dwelling. In addition, there would be a requirement for visitor parking (see below).

It has been demonstrated that ensuring a more suitable balance of allocated and unallocated parking will result in a greater efficiency in the use of parking and an overall reduction in the level of parking that would be required. As such, it is important to consider a suitable balance of allocated and unallocated parking to meet the needs of each development.

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2.3. Growth in Car Availability

The projected growth in car availability across the District during the Local Plan period (up to 2031) has been extracted from the TEMPro² database.

Since the car availability data relates to 2011, growth factors have been obtained for the period 2011 to 2031. The guidance on residential car parking is based on 2011 census data uplifted to 2031, this ensures that the provision of car parking in residential developments will meet the projected future demand in the Local Plan period.

Table 2-6 Projected Growth in Car Availability (2011-2031)

Area Description	Area Name	No Car	1 Car	2 Cars	3+ Cars	Total Cars
Authority	Cotswold	0.895	1.0647	1.071	1.1293	1.0826

TEMPro V6.2

The above factors have been applied to the 2011 car availability statistics in order to forecast 2031 car availability levels. The uplifted car availability levels have been used for the basis of the calculations set out in the DCLG 'Residential Car Parking Research' document. The factors project a reduction in the number of households without access to a car and an increase in the number of households having access to 1, 2 and 3+ cars.

2.4. Jenks and Noble Research

Jenks and Noble undertook a study in 1996 of Lower Earley in Reading. In this study, they monitored the accumulation of car parking associated with visitors to residential developments. It was found that the peak periods for visitors were concentrated during the evening and at weekends. During these periods it was found that some residents were using their vehicles elsewhere and were not parked within the development.

Thereby, if these spaces were not allocated to the specific dwelling they would be available for use by visitors. As such, if greater than 50% of parking is unallocated to specific dwellings, it is not necessary to allocate specific provision for visitors.

Should more of the parking be allocated than unallocated then the research suggests the provision of separate visitor parking at a ratio of 1 visitor space for every five dwellings or 0.2 visitor spaces per dwelling.

² TEMPro (Trip End Model Presentation Program) – A program which includes forecasts of population, employment, household car ownership, trip ends and traffic growth factors. The forecasts are based on data from the National Transport Model.

3. Non-Residential Guidance Note

3.1. Cirencester On and Off-Street Parking Study

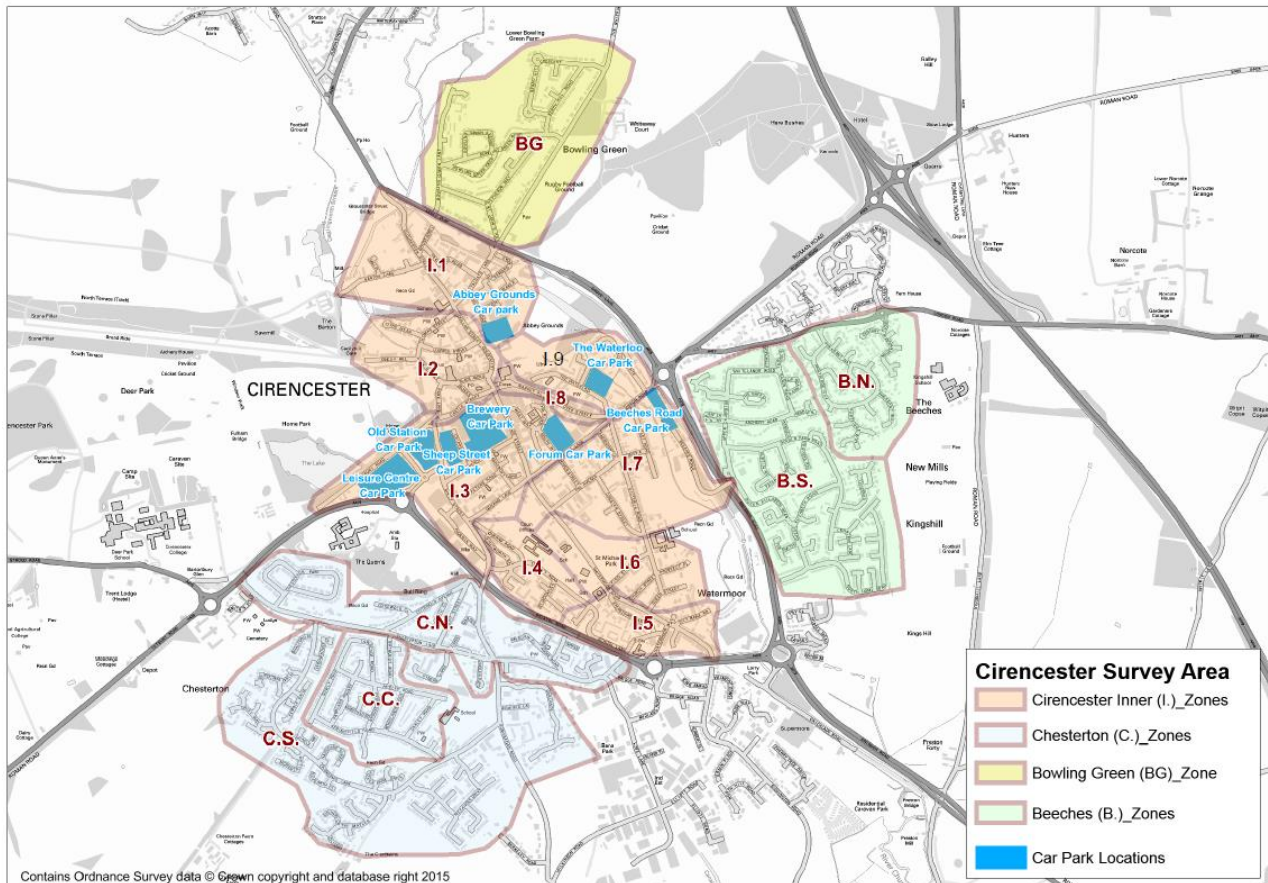
Gloucestershire County Council (GCC) undertook a parking study in Cirencester in May 2015, this included on-street parking within the ring road and also in peripheral residential areas (Chesterton, Bowling Green and Beeches). The surveys also included off-street car parks in Cirencester, as follows:

- Leisure Centre;
- Old Station Car Park;
- Sheep Street Car Park;
- Brewery Car Park;
- Forum Car Park;
- Abbey Grounds Car Park;
- The Waterloo Car Park; and
- Beeches Road Car Park.

Surveys were undertaken during the AM period (09:00 to 12:00), the Inter-Peak period (13:30 to 16:30) and PM period (18:00 to 20:00). From these surveys, vehicles parked were classified as 'short stay' (parked within one period and duration of stay of <4hrs), 'long stay' or 'commuter' (parked in two consecutive periods with a duration of stay of 4-8 hrs) and 'all-day' (parked during all periods). The surveys were conducted over various weekdays and also on a Saturday.

An extract of the survey area is shown on **Figure 3-1**.

Figure 3-1 Cirencester Parking Survey Plan (Extracted from GCC – Cirencester Parking Study)



The parking survey also recorded the registration plates of parked vehicles and an origin analysis was undertaken using the registered address of each vehicle. A summary of the findings of the survey is set out below.

3.1.1. Weekday

3.1.1.1. On-Street

- Inner Zones – many of the inner zones were observed to be approaching capacity. Primarily occupied by short stay vehicles. A high proportion of commuter parking was recorded and at capacity in the eastern part of town.
- Beeches/Bowling Green/Chesterton - plenty of spare capacity was observed in all periods during the weekday. The majority of parking observed was short stay parking with smaller element of commuter or long stay parking.

3.1.1.2. Off-Street

The study assumes an occupancy level of 80% within car parks is acceptable. Above this level of occupancy, it may be difficult to locate a vacant parking space. During the weekday AM and inter-peak periods, the Abbey Grounds, Old Station, Sheep Street and Beeches Road car parks were observed to be at or approaching this level of occupancy. The Leisure Centre car park was also approaching this level of occupancy in the AM and PM periods but much of the car parking was short-stay and hence there was a higher turnover of parking in this car park.

Abbey Ground, Brewery, Forum and The Waterloo car parks all had higher proportions of short-stay parking with relatively low level of commuter parking. Beeches Road, Old Station and Sheep Street car parks had a mix of short stay and commuter parking.

3.1.2. Saturday

3.1.2.1. On-Street

- Inner Zones – most areas were observed approaching capacity. This was primarily short-stay parking but as with the weekday a higher proportion of long stay parking was observed in the eastern part of the town.
- Beeches/Bowling Green/Chesterton plenty of spare capacity during all Saturday periods observed. The majority of parking in these areas was short-stay with smaller element of commuter or long stay parking observed.

3.1.2.2. Off-Street

The study assumes an occupancy level of 80% within car parks is acceptable. Above this level of occupancy, it may be difficult to locate a vacant parking space. Abbey Ground, Leisure Centre, Brewery, Beeches Road were all observed to approach this level of occupancy during the AM and or inter peak periods. The majority of parking was observed to be short-stay with the exception of the Beeches Road car park where there was an even balance of short-stay/commuter parking.

3.1.3. Vehicle Origins

Around 25% of parked vehicles originated within 5 miles of the town centre. Those travelling greater distances were observed to be more likely to park off-street. As would be expected, a higher proportion of vehicles parked on-street were registered locally during the Saturday surveyed.

3.1.4. Updated study

The 2015 Parking Study will be updated shortly to take account of new survey information. Incorporation of this information into the study may result in revised estimates of public parking capacity in the town Employment

3.1.5. First Principles Assessment

In order to verify whether the previous CDC standards provide a reasonable starting point for the determination of appropriate parking levels in the revised guidance, an assessment has been undertaken of typical car parking accumulation for the various land uses. This has been undertaken utilising 2011 census journey to work data (for the workplace population of Cotswold District) and typical employment densities, as set out below.

3.1.5.1. Method of Travel to Work

The Method of Travel to Work for Middle Super Output Areas (MSOAs) in Cotswold District has been extracted from the 2011 census for journeys to work (for workplaces in Cotswold). The census data is presented in **Table 3-1**.

Table 3-1 2011 Census – Method of Travel to Work (Workplace Population)

2011 super output area - middle layer	Train, underground, metro, light rail, tram, bus, minibus or coach	Driving a car or van	Bicycle	On foot	All other methods of travel to work
Cotswold 001	1.7%	80.0%	2.0%	7.9%	8.4%
Cotswold 002	3.1%	72.2%	1.7%	14.9%	8.1%
Cotswold 003	2.6%	72.4%	2.7%	13.9%	8.4%
Cotswold 004	7.1%	77.0%	2.1%	6.3%	7.5%
Cotswold 005	2.1%	78.1%	1.5%	11.1%	7.3%
Cotswold 006	1.7%	77.1%	2.7%	10.5%	8.1%
Cotswold 007	2.6%	69.7%	2.8%	17.6%	7.4%
Cotswold 008	1.5%	72.0%	3.7%	15.9%	7.0%
Cotswold 009	1.1%	76.5%	3.4%	12.3%	6.7%
Cotswold 010	2.8%	78.5%	3.1%	6.1%	9.5%
Cotswold 011	1.2%	74.6%	1.7%	15.3%	7.1%
Total	2.5%	74.2%	2.5%	13.1%	7.7%

Approximately three in four journeys to workplaces in Cotswold were undertaken by car according to the 2011 census. Fewer journeys were undertaken by public transport or bicycle. One in eight journeys was undertaken on foot to workplaces in Cotswold. The car driver mode split has been utilised in the proceeding calculations of typical car park accumulation for employment sites in Cotswold District.

3.1.5.2. Employment Densities

The joint Homes and Communities Agency and Office of Project and Programme Advice and Training document 'Employment Densities Guide, 2nd Edition', 2010, provides guidance on typical employment densities. These have been extracted and are presented in **Table 3-2**, below.

Table 3-2 Indicative Employment Densities

Use Class	Use Type	Area per FTE (m ²)	Floor Area Basis	Comment on potential variation	
Industrial					
1	B2	General	36	GIA	Range of 18 - 60 m ²
2	B1(c)	Light Industry (Business Park)	47	NIA	
Warehouse & Distribution					
3	B8	General	70	GEA	Range of 25 - 115 m ² The higher the capital intensity of the business, the lower the employment density
4	B8	Large Scale and High Bay Warehousing	80	GEA	Wide variations exist arising from scale and storage duration
Office					
5	B1(a)	General Office	12	NIA	Includes HQ, Admin and 'Client Facing' office types
6	B1(a)	Call Centres	8	NIA	
7	B1(a)	IT/ Data Centres	47	NIA	A blended rate of the above B1(a) uses where they are found in out of town business park locations Densities within separately let units are c.7 m ² per workstation but 30% of a facility's total NIA for shared services reduces the overall density
8	B1(a)	Business Park	10	NIA	
9	B1(a)	Serviced Office	10	NIA	

Source: Homes and Communities Agency and Office of Project and Programme Advice and Training document 'Employment Densities Guide, 2nd Edition', 2010

In terms of B1, B2 and B8 land uses, the above densities have been extracted and utilised to determine the likely ratio of parking spaces to employees to verify the previous standards.

3.1.5.3. Calculated Car Parking Ratios

As advised in the Employment Densities guidance, it has been assumed that the net internal area represents approximately 80% to 85% of the gross internal area. Utilising the above densities and the mode split for journeys to workplaces in Cotswold, the ratio of spaces to gross floor space to meet the likely demand for workplace parking is set out in **Table 3-3**, below.

Table 3-3 Employment Parking Ratios calculated from First Principles

Land Use	Area per FTE	FTE per 100sqm	FTE per 100sqm – Gross Area	Car Driver FTE per 100sqm – Gross Area	1 space per xsqm Gross Area (Calculated/CDC Standards)
B1(a)	12sqm NIA	8	7	5	22/25
B1(c)	47sqm NIA	2	2	1	88/50
B2	36sqm GIA	3	3	2	49/50
B8	80sqm GEA	1	1	1	108/100

It can be seen that the calculated parking ratios align relatively well with those set out in the previous standards.

3.1.6. TRICS Assessment

To further assess the suitability of the current standards as a starting point for the determination of appropriate parking levels, the TRICS database has been interrogated to determine average trip rates. From this, a calculation of parking accumulation has been undertaken to determine whether the current standards are in line with typical car park accumulation for the various land uses.

Sites have been selected from the TRICS database from the 02 – Employment, A – Office category. No parameter selections have been made as the purpose of this exercise is to determine an average trip generation and parking accumulation regardless of the area in which the site is located or the size of the development. The TRICS assessment is summarised in **Table 3-4**.

Table 3-4 TRICS Parking Accumulation – 02/A (Offices)

	Trip Rates per 100sqm			
	Arrivals	Departures	Two-Way	Accumulation
Start Rate:	0.01			
05:00-05:30	0.00	0.01	0.01	0.00
05:30-06:00	0.02	0.01	0.03	0.02
06:00-06:30	0.07	0.01	0.08	0.08
06:30-07:00	0.68	0.19	0.86	0.57
07:00-07:30	0.20	0.03	0.23	0.73
07:30-08:00	0.38	0.07	0.45	1.05
08:00-08:30	0.55	0.09	0.64	1.51
08:30-09:00	0.61	0.09	0.70	2.04
09:00-09:30	0.46	0.10	0.56	2.40
09:30-10:00	0.28	0.10	0.38	2.58
10:00-10:30	0.17	0.09	0.27	2.66
10:30-11:00	0.15	0.09	0.24	2.72
11:00-11:30	0.13	0.10	0.23	2.75
11:30-12:00	0.12	0.10	0.22	2.76
12:00-12:30	0.12	0.14	0.26	2.75
12:30-13:00	0.13	0.16	0.29	2.71
13:00-13:30	0.14	0.14	0.29	2.71
13:30-14:00	0.15	0.12	0.26	2.73
14:00-14:30	0.14	0.12	0.26	2.75
14:30-15:00	0.12	0.16	0.27	2.71
15:00-15:30	0.10	0.18	0.28	2.63
15:30-16:00	0.10	0.24	0.34	2.50
16:00-16:30	0.09	0.40	0.49	2.19
16:30-17:00	0.09	0.44	0.53	1.84
17:00-17:30	0.08	0.62	0.70	1.29
17:30-18:00	0.06	0.38	0.43	0.97
18:00-18:30	0.04	0.24	0.29	0.77
18:30-19:00	0.03	0.13	0.15	0.67
19:00-19:30	0.10	0.13	0.22	0.63
19:30-20:00	0.08	0.09	0.17	0.62
20:00-20:30	0.09	0.12	0.20	0.60
20:30-21:00	0.10	0.08	0.18	0.61
21:00-21:30	0.09	0.18	0.27	0.51

1 space per 36sqm

Sites have been selected from the TRICS database from the 02 – Employment, C – Industrial category. No selections have been made as the purpose of this exercise is to determine an average trip generation and parking accumulation regardless of the area in which the site is located or the size of the development. The TRICS assessment is summarised in **Table 3-5**.

Table 3-5 TRICS Parking Accumulation – 02/C (Industrial)

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.00				
06:00-06:30	0.05	0.00	0.05	0.05	
06:30-07:00	0.22	0.08	0.30	0.18	
07:00-07:30	0.11	0.05	0.16	0.24	
07:30-08:00	0.31	0.06	0.37	0.49	
08:00-08:30	0.27	0.06	0.34	0.70	
08:30-09:00	0.18	0.05	0.23	0.84	
09:00-09:30	0.10	0.06	0.16	0.89	
09:30-10:00	0.08	0.06	0.14	0.91	
10:00-10:30	0.06	0.06	0.12	0.91	
10:30-11:00	0.06	0.05	0.11	0.92	
11:00-11:30	0.06	0.05	0.11	0.92	
11:30-12:00	0.06	0.05	0.11	0.93	1 space per 108sqm
12:00-12:30	0.07	0.09	0.15	0.91	
12:30-13:00	0.07	0.08	0.16	0.89	
13:00-13:30	0.11	0.09	0.20	0.91	
13:30-14:00	0.14	0.08	0.22	0.97	
14:00-14:30	0.09	0.15	0.24	0.90	
14:30-15:00	0.09	0.09	0.17	0.91	
15:00-15:30	0.05	0.10	0.15	0.85	
15:30-16:00	0.08	0.07	0.15	0.86	
16:00-16:30	0.06	0.13	0.19	0.79	
16:30-17:00	0.05	0.24	0.29	0.60	
17:00-17:30	0.04	0.17	0.20	0.46	
17:30-18:00	0.02	0.23	0.25	0.26	
18:00-18:30	0.03	0.11	0.14	0.18	
18:30-19:00	0.03	0.06	0.09	0.14	
19:00-19:30	0.04	0.04	0.08	0.13	
19:30-20:00	0.01	0.09	0.10	0.05	

Sites have been selected from the TRICS database from the 02 – Employment, F – Commercial Warehousing category. No selections have been made as the purpose of this exercise is to determine an average trip generation and parking accumulation regardless of the area in which the site is located or the size of the development. The TRICS assessment is summarised in **Table 3-6**.

Table 3-6 TRICS Parking Accumulation – 02/F (Warehousing)

	Trip Rates per 100sqm			
	Arrivals	Departures	Two-Way	Accumulation
Start Rate:	0.06			
05:00-05:30	0.01	0.02	0.03	0.06
05:30-06:00	0.02	0.02	0.04	0.06
06:00-06:30	0.02	0.02	0.04	0.06
06:30-07:00	0.05	0.04	0.09	0.06
07:00-07:30	0.04	0.04	0.08	0.07
07:30-08:00	0.07	0.03	0.10	0.10
08:00-08:30	0.06	0.02	0.09	0.14
08:30-09:00	0.07	0.03	0.10	0.18
09:00-09:30	0.05	0.04	0.09	0.20
09:30-10:00	0.04	0.04	0.07	0.20
10:00-10:30	0.04	0.04	0.08	0.20
10:30-11:00	0.04	0.04	0.08	0.21
11:00-11:30	0.04	0.03	0.07	0.21
11:30-12:00	0.04	0.04	0.08	0.21
12:00-12:30	0.04	0.04	0.09	0.21
12:30-13:00	0.04	0.04	0.08	0.21
13:00-13:30	0.06	0.05	0.11	0.21
13:30-14:00	0.07	0.05	0.12	0.23
14:00-14:30	0.06	0.07	0.13	0.22
14:30-15:00	0.06	0.06	0.12	0.22
15:00-15:30	0.04	0.07	0.11	0.19
15:30-16:00	0.05	0.05	0.10	0.19
16:00-16:30	0.04	0.06	0.10	0.17
16:30-17:00	0.03	0.06	0.10	0.14
17:00-17:30	0.03	0.06	0.09	0.11
17:30-18:00	0.02	0.07	0.09	0.06
18:00-18:30	0.02	0.05	0.07	0.04
18:30-19:00	0.01	0.03	0.04	0.02
19:00-19:30	0.04	0.02	0.07	0.04
19:30-20:00	0.01	0.03	0.04	0.02
20:00-20:30	0.01	0.02	0.03	0.01
20:30-21:00	0.02	0.02	0.04	0.00
21:00-21:30	0.02	0.01	0.03	0.01
21:30-22:00	0.01	0.01	0.02	0.01

1 space per 435sqm

The parking ratios calculated from the first principles assessment of car parking accumulation (using local census data and typical employment densities) and from the TRICS based assessment are set out in **Table 3-7** below.

Table 3-7 Summary of Calculated Parking Ratios

TRICS Category	Land Use Category	Calculated Parking Ratio (1 space per x sqm)		CDC Previous Standard (1 space per x sqm)
		First Principles	TRICS	
02/A (Offices)	B1(a) Offices	22	36	25
	B1(c)	88		40
02/C (Industrial)	B2 General Industry	49	107	50
02/F (Warehousing)	B8 Storage/Distribution	108	435	100

There are differences between the calculated parking ratio from the two methods (i.e. first principles assessment and TRICS assessment) and the previous standards which demonstrates the importance of considering parking provision on a site by site basis. The calculated ratios are however broadly in line with the previous standards. It is therefore not deemed appropriate to amend the previous standards. The previous standards have therefore been retained as the starting point for determining an appropriate level of car parking.

3.2. Retail

3.2.1. Food Retail

To assess the suitability of the current retail parking standards as a starting point in the determination of appropriate parking levels, the TRICS database has been interrogated to determine average trip rates. From this a calculation of parking accumulation has been undertaken to determine whether the current standards are in line with typical car park accumulation for retail developments.

Sites have been selected from the TRICS database from the 01 – Retail, A – Food Superstore category. No selections have been made as the purpose of this exercise is to determine an average trip generation and parking accumulation regardless of the area in which the site is located or the size of the development. The TRICS assessment is summarised in **Tables 3-8** and **3-9**.

Both weekday and weekend survey data has been extracted and presented separately.

Table 3-8 TRICS Parking Accumulation – 01/A (Food Retail) – Weekday

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.00				
06:00-07:00	0.28	0.06	0.34	0.22	
07:00-08:00	1.32	0.81	2.13	0.73	
08:00-09:00	2.49	1.86	4.35	1.36	
09:00-10:00	3.58	2.70	6.28	2.24	
10:00-11:00	4.01	3.54	7.54	2.70	
11:00-12:00	4.52	4.25	8.76	2.97	
12:00-13:00	4.78	4.75	9.53	3.01	1 space per 33sqm
13:00-14:00	4.69	4.70	9.39	2.99	
14:00-15:00	4.29	4.50	8.79	2.79	
15:00-16:00	4.48	4.67	9.15	2.60	
16:00-17:00	4.60	4.61	9.22	2.59	
17:00-18:00	4.68	4.94	9.62	2.33	
18:00-19:00	4.24	4.63	8.87	1.94	
19:00-20:00	3.09	3.63	6.72	1.39	
20:00-21:00	2.09	2.58	4.67	0.91	
21:00-22:00	1.20	1.66	2.86	0.44	
22:00-23:00	0.08	0.27	0.34	0.25	

Table 3-9 TRICS Parking Accumulation – 01/A (Food Retail) – Saturday

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.10				
06:00-07:00	0.27	0.03	0.29	0.34	
07:00-08:00	1.26	0.78	2.04	0.82	
08:00-09:00	2.89	1.99	4.88	1.72	
09:00-10:00	4.35	3.38	7.73	2.69	
10:00-11:00	5.50	4.66	10.17	3.53	
11:00-12:00	6.00	5.64	11.64	3.90	
12:00-13:00	5.81	5.74	11.55	3.96	
13:00-14:00	5.72	5.72	11.43	3.96	
14:00-15:00	5.63	5.60	11.23	3.99	1 space per 25sqm
15:00-16:00	5.64	5.73	11.36	3.90	
16:00-17:00	5.44	5.99	11.43	3.36	
17:00-18:00	4.72	5.59	10.31	2.49	
18:00-19:00	3.59	4.53	8.12	1.56	
19:00-20:00	2.23	2.99	5.22	0.80	
20:00-21:00	1.24	1.67	2.91	0.37	
21:00-22:00	0.67	0.92	1.59	0.12	
22:00-23:00	0.01	0.14	0.15	0.00	

3.2.2. Non-Food Retail

Sites have been selected from the TRICS database from the 01 – Retail, G – Non-Food Retail category. No selections have been made as the purpose of this exercise is to determine an average trip generation and parking accumulation regardless of the area in which the site is located or the size of the development. The TRICS assessment is summarised in **Tables 3-10** and **3-11**.

Both weekday and weekend survey data has been extracted and presented separately.

Table 3-10 TRICS Parking Accumulation – 01/G (Non-Food Retail) – Weekday

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.00				
07:00-08:00	0.09	0.00	0.09	0.09	
08:00-09:00	0.34	0.18	0.52	0.26	
09:00-10:00	1.71	1.11	2.82	0.85	
10:00-11:00	2.22	1.86	4.08	1.22	
11:00-12:00	2.49	2.24	4.73	1.47	
12:00-13:00	2.44	2.33	4.77	1.58	
13:00-14:00	2.65	2.49	5.13	1.74	1 space per 57sqm
14:00-15:00	2.38	2.40	4.78	1.71	
15:00-16:00	2.01	2.38	4.38	1.34	
16:00-17:00	1.54	1.79	3.33	1.09	
17:00-18:00	1.50	1.60	3.10	0.99	
18:00-19:00	0.72	0.98	1.70	0.74	
19:00-20:00	0.31	0.65	0.96	0.40	
20:00-21:00	0.00	0.14	0.14	0.26	

Table 3-11 TRICS Parking Accumulation – 01/G (Non-Food Retail) – Saturday

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.20				
07:00-08:00	0.00	0.00	0.00	0.20	
08:00-09:00	0.26	0.07	0.32	0.39	
09:00-10:00	0.65	0.31	0.96	0.74	
10:00-11:00	1.24	0.82	2.05	1.16	
11:00-12:00	1.74	1.25	2.98	1.64	
12:00-13:00	1.85	1.58	3.43	1.92	
13:00-14:00	1.69	1.55	3.24	2.05	
14:00-15:00	2.02	1.86	3.87	2.21	1 space per 45sqm
15:00-16:00	1.69	1.92	3.60	1.98	
16:00-17:00	1.42	1.70	3.12	1.71	
17:00-18:00	0.73	1.33	2.06	1.11	
18:00-19:00	0.26	0.60	0.86	0.77	
19:00-20:00	0.14	0.37	0.50	0.54	
20:00-21:00	0.11	0.43	0.54	0.22	
21:00-22:00	0.062	0.215	0.28	0.07	
22:00-23:00	0	0.068	0.07	0.00	

3.2.3. Pub/Restaurant

Sites have been selected from the TRICS database from the 06 – Food/Drink, C – Pub/Restaurant category. No selections have been made as the purpose of this exercise is to determine an average trip generation and parking accumulation regardless of the area in which the site is located or the size of the development. The TRICS assessment is summarised in **Tables 3-12** and **3-13**.

Both weekday and weekend survey data has been extracted and presented separately.

Table 3-12 TRICS Parking Accumulation – 06/C (Pub/Restaurant) – Weekday

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.18				
10:00-11:00	0.35	0.28	0.62	0.25	
11:00-12:00	0.89	0.41	1.29	0.73	
12:00-13:00	2.08	0.84	2.92	1.96	
13:00-14:00	1.58	1.42	3.00	2.12	
14:00-15:00	0.95	1.63	2.58	1.44	
15:00-16:00	0.86	0.89	1.75	1.41	
16:00-17:00	1.18	0.75	1.93	1.84	
17:00-18:00	1.85	1.24	3.09	2.45	
18:00-19:00	2.39	1.98	4.38	2.86	
19:00-20:00	2.32	2.27	4.59	2.90	1 space per 34sqm
20:00-21:00	1.54	2.00	3.54	2.44	
21:00-22:00	0.91	1.64	2.55	1.70	
22:00-23:00	0.53	1.39	1.92	0.84	
23:00-24:00	0.36	1.20	1.56	0.00	

Table 3-13 TRICS Parking Accumulation – 06/C (Pub/Restaurant) – Saturday

	Trip Rates per 100sqm				
	Arrivals	Departures	Two-Way	Accumulation	
Start Rate:	0.00				
08:00-09:00	0.88	0.00	0.88	0.88	
09:00-10:00	1.48	0.42	1.90	1.94	
10:00-11:00	0.69	0.51	1.21	1.66	
11:00-12:00	1.43	0.73	2.16	1.40	
12:00-13:00	1.88	1.22	3.10	2.09	
13:00-14:00	2.23	1.84	4.07	2.27	
14:00-15:00	1.95	2.37	4.32	1.81	
15:00-16:00	2.02	2.21	4.23	1.75	
16:00-17:00	2.37	1.81	4.18	2.59	
17:00-18:00	2.44	2.25	4.69	2.57	
18:00-19:00	2.89	2.60	5.49	2.73	
19:00-20:00	4.04	3.44	7.47	3.49	
20:00-21:00	2.98	3.40	6.38	3.61	1 space per 28sqm
21:00-22:00	2.16	3.29	5.45	1.84	
22:00-23:00	0.94	1.97	2.91	1.13	
23:00-24:00	0.51	1.21	1.72	0.23	

The maximum accumulation of car parking spaces per 100sqm for the above land uses has been calculated to determine a suitable ratio of parking spaces per 100sqm (based on the peak accumulation whether this

was on a weekday or a Saturday). The parking ratios calculated from the TRICS based assessment are set out in **Table 3-14** below.

Table 3-14 Summary of Calculated Parking Ratios

TRICS Category	Land Use Category	TRICS Calculated Parking Ratio (1 space per x sqm GFA)	CDC Previous Standard (1 space per x sqm)
01/A	A1 Food Retail	25	18/25-30*
01/G	A1 Non-Food Retail	45	22/25-30*
06/C	A3 Pub Restaurant	28	5 (public area)**
* Depending on scale of development/development location			
** The units of measurements used are not comparable			

The calculated ratio for the A1 Food Retail land use is in line with the previous CDC standards and therefore the CDC previous standards provide a suitable starting point for the determination of an appropriate level of parking.

The calculated ratio for the A1 Non-Food Retail land use does differ from the previous CDC standards. This is likely to be as a result of the rural nature of the District and the higher usage of the private car resulting in a higher level of car parking being required. As such it is proposed to retain the previous CDC standards as a starting for the determination of appropriate parking levels.

Appendices



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