

Doncaster Hill Parking Study

Prepared for:

MANNINGHAM CITY COUNCIL

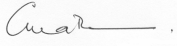
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1 INTRODUCTION

1.1 BACKGROUND

The City of Manningham (Council) is preparing a strategy to allow for the intensive development of the Doncaster Hill Area. High-density residential living alongside commercial and retail facilities is being planned to achieve a 'sustainable and smart' urban village.

As part of a previous study undertaken on behalf of Council and Westfield Pty Ltd, GTA Consultants undertook a traffic modelling and analysis of the Doncaster Hill area for the years 2001, 2011 and 2021. The results of this study (as documented in GTA Consultants report '*Doncaster Hill Strategy Traffic Modelling and Analysis*', dated 20 September 2002) indicate that Doncaster Hill can technically accommodate the travel demands of future residents, workers and visitors if an integrated approach to transport and traffic planning is adopted based on altered travel patterns. This approach includes the integration of transport and land use, the provision of genuine travel choices and a package of infrastructure items all supported by an appropriate regulatory and policy framework.

As part of the recommendations to achieve the above, the report commented on the need for the provision of car parking in satellite car parking stations that can be converted to alternative uses in the future in line with the anticipated reduced car use and ownership levels. The recommendation was made that the continued use of planning scheme rates for car parking assumes more of the same in relation to car use and ownership, and as such, these planning scheme rates should be re-considered if behavioural change is to occur.

As a consequence, the following report documents the parking study, strategy formulation which will form the basis of the Doncaster Hill Parking Precinct Plan (PPP) based on car parking rates for 2002 car parking data. It is expected that such a PPP will be updated and reviewed on a regular basis to promote and reflect changes in private car usage within the Doncaster Hill Precinct.

1.2 STUDY APPROACH

Figure 1.1 is reproduced from the Department of Infrastructure VPP Practices Notes on 'Parking Precinct Plans'.

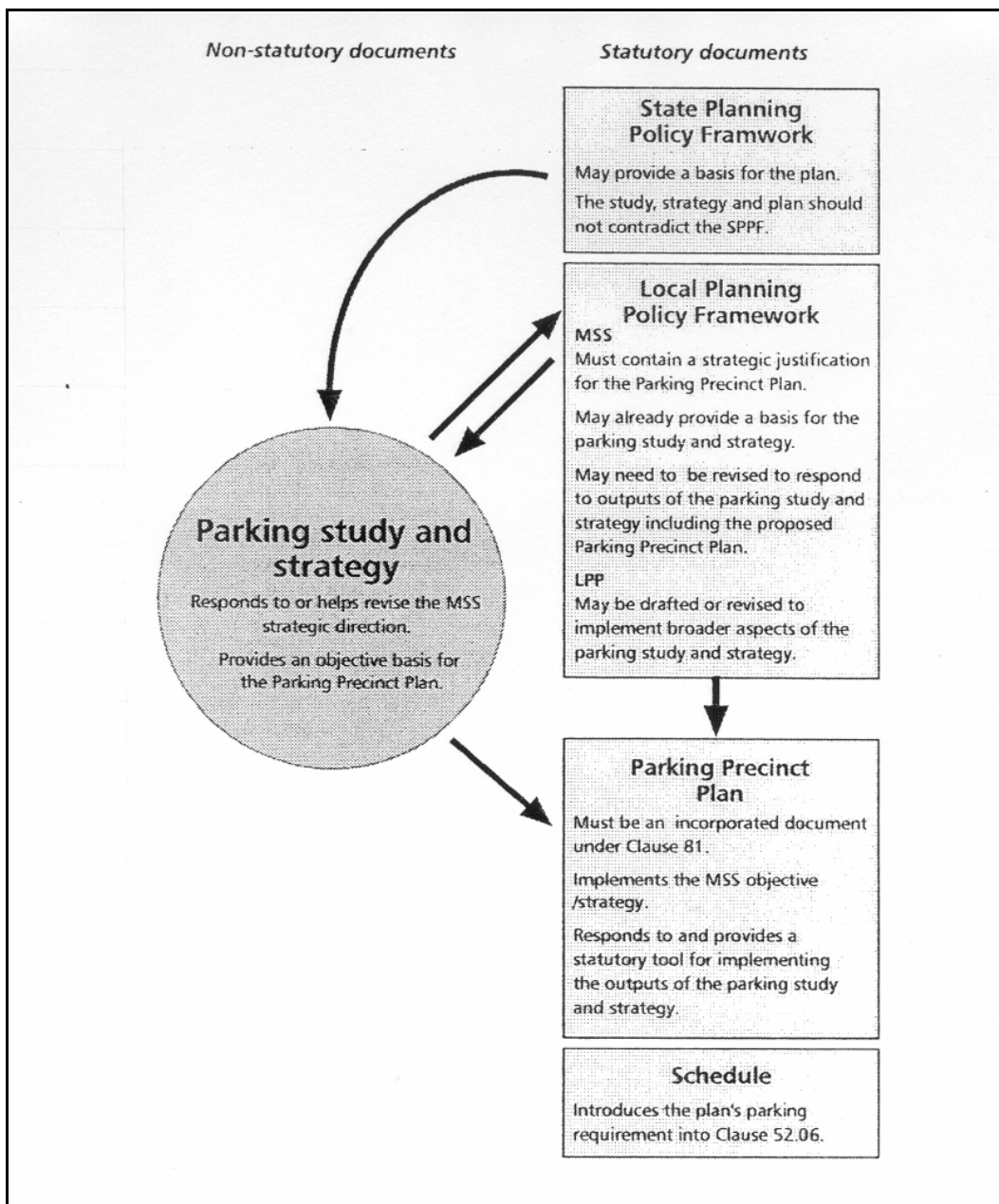


FIGURE 1.1: PARKING PRECINCT PLANS AND PARKING STUDIES AND STRATEGIES

The figure specifies the context of a Parking Study and how this relates to the elements of the Statutory Planning Process.

The Planning Practice Note includes further activities for the construction of each of the elements of the statutory process and the extent that they are relevant to the parking study. These are outlined within the relevant sections of this report.

1.3 POLICY FRAMEWORK

Figure 1.1 identifies the Policy Framework as an important reference for the initial considerations of Parking Studies and Parking Precinct Plans. In essence Parking Precinct Plans must be consistent with the policy framework as set down in the Manningham Planning

Scheme, and the parking study can provide important input to the development of the policy framework.

An examination of the Manningham Planning Scheme reveals few direct policy statements which provide clear guidance on the suitability of Parking Precinct Plans in general or specifically in Doncaster Hill.

The State Planning Policy Statement (SPPF) does note under the 'Principles of Land Use and Development Planning (Clause (3)) that,

"Planning is to recognise the need for, and as far as practical contribute towards... land use and transport integration."

This principle is embodied in the approach taken for the development of Doncaster Hill and the preparation of a PPP are elements supporting that approach.

The Local Planning Policy Framework (LPPF) comprises two elements where items are the Municipal Strategic Statement (MSS) (Clause 21) and the Local Planning Policies (Clause 22).

The Municipal Strategic Statement (MSS) discusses Traffic and Transport issues at Clause 21.18 by, among other things, outlining, key issues. Those key issues which are relevant to this study are reproduced below:

- (i) The need to reduce reliance on private cars and enhance community mobility;
- (ii) The reduction of traffic volumes along Doncaster Road that provides the opportunity to improve the streetscape and amenity along the roadway;
- (iii) Integration of new development with existing and proposed bicycle and pedestrian networks.

Finally the Local Planning Policy makes reference to the need for developments to enhance car parking in Activity Centres.

1.4 OBJECTIVES

The primary objective is to provide a parking study for the Doncaster Hill Precinct that assesses the parking demands, supply, and provides recommendations on the management and provision of car parking in the centre. This is proposed to incorporate the following:

- The definition of applicable car parking rates and temporal distributions for car parking for key land uses within the Doncaster Hill Precinct;
- The projection of future car parking demands given the proposed changes within the Doncaster Hill Precinct, including anticipated increases in floor area and targeted changes in mode split and non motorised travel;
- The estimation of car parking numbers expected to be accommodated by satellite car parking stations and to determine appropriate locations for satellite parking stations to service the precinct, as well as management proposals including the consideration of car parking charges; and

- The generation of a strategy to manage on-street car parking in and surrounding the Doncaster Hill Precinct.

The ultimate objective of the study is to make recommendations on the supply and management of car parking, and the tools and mechanisms to achieve this including the preparation of a draft Parking Precinct Plan and Planning Scheme amendment for the Doncaster Hill Precinct.

1.5 REPORT STRUCTURE

This report documents the investigations, analysis and rationale leading to the formulation of the car parking strategies which are documented within this study. In the course of this analysis many detailed surveys were undertaken together with a number of intermediate analytical steps.

In the interest of brevity and in an attempt to make this study more accessible to a wider audience most of the detail has been incorporated into a supplementary report entitled, *"Doncaster Hill Parking Study - Technical Report"*.

The Doncaster Hill Parking Study and Technical Report forms the basis of separate documents entitled *"Doncaster Hill Parking Precinct Plan"* and *"Schedule to Clause 52.06-2"* which have also been prepared as a result of this study.

2 EXISTING CONDITIONS

2.1 STUDY AREA

The definition of the area known as the Doncaster Hill Precinct was determined as part of the 'Doncaster Hill Strategy Traffic Modelling and Analysis Paramics Simulation' prepared by GTA Consultants in March 2002. The area defined as the Doncaster Hill Precinct is indicated in Figure 2.1.

Figure 2.1 also indicates a wider area defined as the Total Survey Area for the Parking Study which was intended to define an interface which may have required specific car parking arrangements to manage the transition between the high density activity centre and the traditional low density residential development.

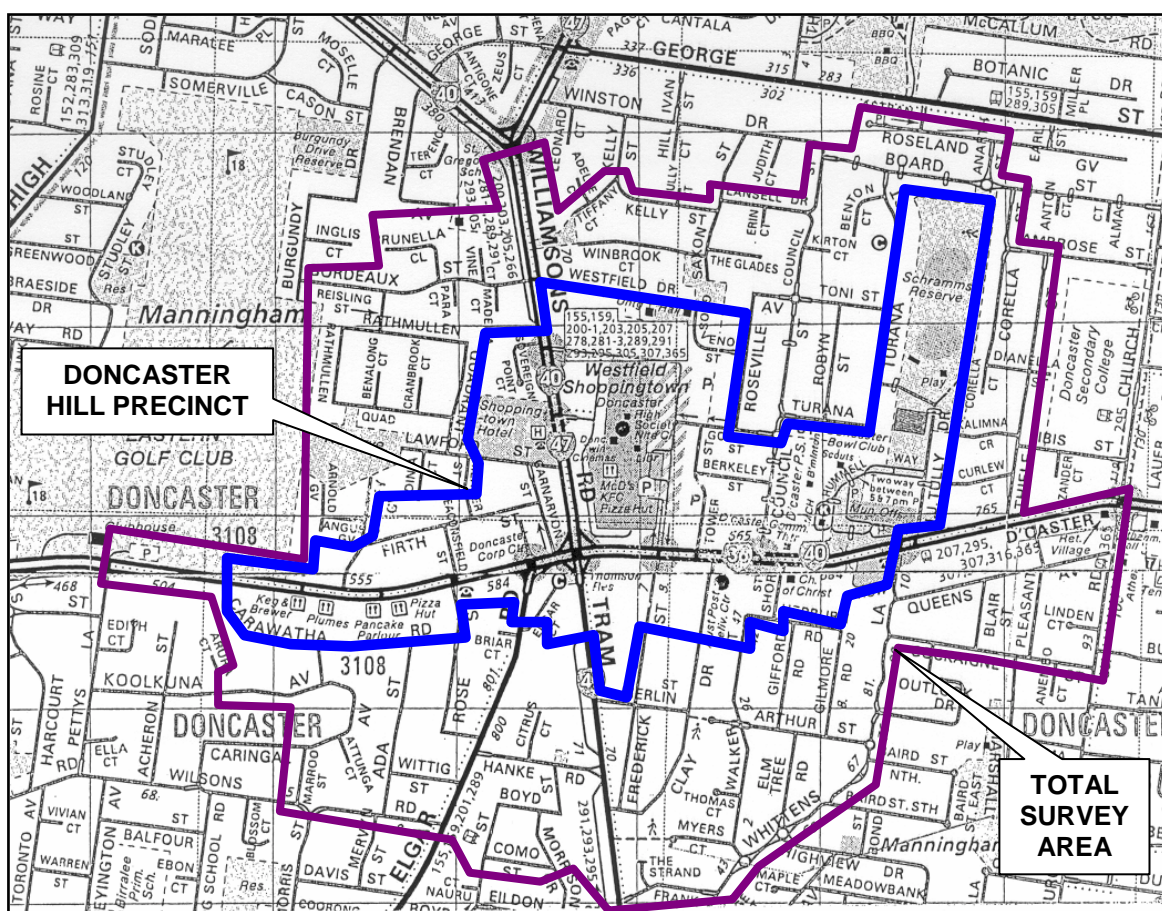


FIGURE 2.1: LOCATION OF DONCASTER HILL PRECINCT AND STUDY AREA
(REPRINTED WITH PERMISSION FROM MELWAY PUBLISHING PTY LTD)

2.2 DONCASTER HILL PRECINCTS

The area known as the Doncaster Hill Precinct has been further sub-divided into seven (7) precincts as shown in Figure 2.2. Each of the precincts is described below together with a name which characterises the precinct.

Precinct 1 – Municipal Precinct

The Municipal Precinct encompasses the municipal offices and major recreational area and primary school in the northeast corner of the Hill.

Precinct 2 – Doncaster Hill South Precinct

This precinct lies on the south side of Doncaster Road to the east of Tram Road. Permits have already been issued for the construction of high-density residential developments in this precinct.

Precinct 3 – Doncaster Hill North Precinct

Precinct 3 lies between Westfield Shoppingtown and the Community Precinct.

Precinct 4 – Doncaster Shoppingtown Precinct

The existing regional shopping centre, Westfield Shoppingtown, on the northeast corner of Williamsons Road and Doncaster Road makes up the majority of this precinct, which also contains a major bus interchange.

It should be noted that this Precinct represents something of an anomalous situation in the context of this study. Doncaster Shoppingtown has been the subject of many detailed traffic and parking studies and specific controls for development including traffic access and car parking requirements have already been incorporated with the Manningham Planning Scheme.

As such Doncaster Shoppingtown already has the level of information which is sought in this study to be captured for the other sub precincts of Doncaster Hill. Moreover any Parking Precinct Plan developed for Doncaster Hill would, in any event, treat Doncaster Shoppingtown as a separate self contained precinct.

As a consequence Doncaster Shoppingtown has been effectively deleted from Precinct 4 and subsequent analysis and discussion. Precinct 4 is reduced, for the purposes of this study, to the area bounded by Doncaster Road, Tower Street, Goodson Street and the eastern extent of Doncaster Shoppingtown.

Precinct 5 – Hotel Precinct

This precinct lies on the west side of Williamsons Road, across from Shoppingtown and includes the Crest apartments, the Hill's initial experience of high-density residential apartments.

Precinct 6 – Commercial / Office Precinct

Extending west along Doncaster Road, this precinct includes an existing established commercial area.

Precinct 7 – Commercial / Restaurant Precinct

Lying opposite Precinct 6 on the south side of Doncaster Road, this precinct is currently home to a number of family restaurants and other commercial developments.

The seven (7) precincts have been constructed for the purposes of breaking down the area into manageable units for the purposes of survey and analysis.

Moreover the sub precincts are capable of being subsequently treated separately or grouped together for the purposes of policy formulation and for the construction of Parking Precincts for this study.

2.3 LAND USE DATA

Information obtained from Council regarding the component uses and associated floor areas of retail/commercial properties within the Doncaster Hill Precincts is summarised in Table 2.1. This data excludes Westfield Shoppingtown.

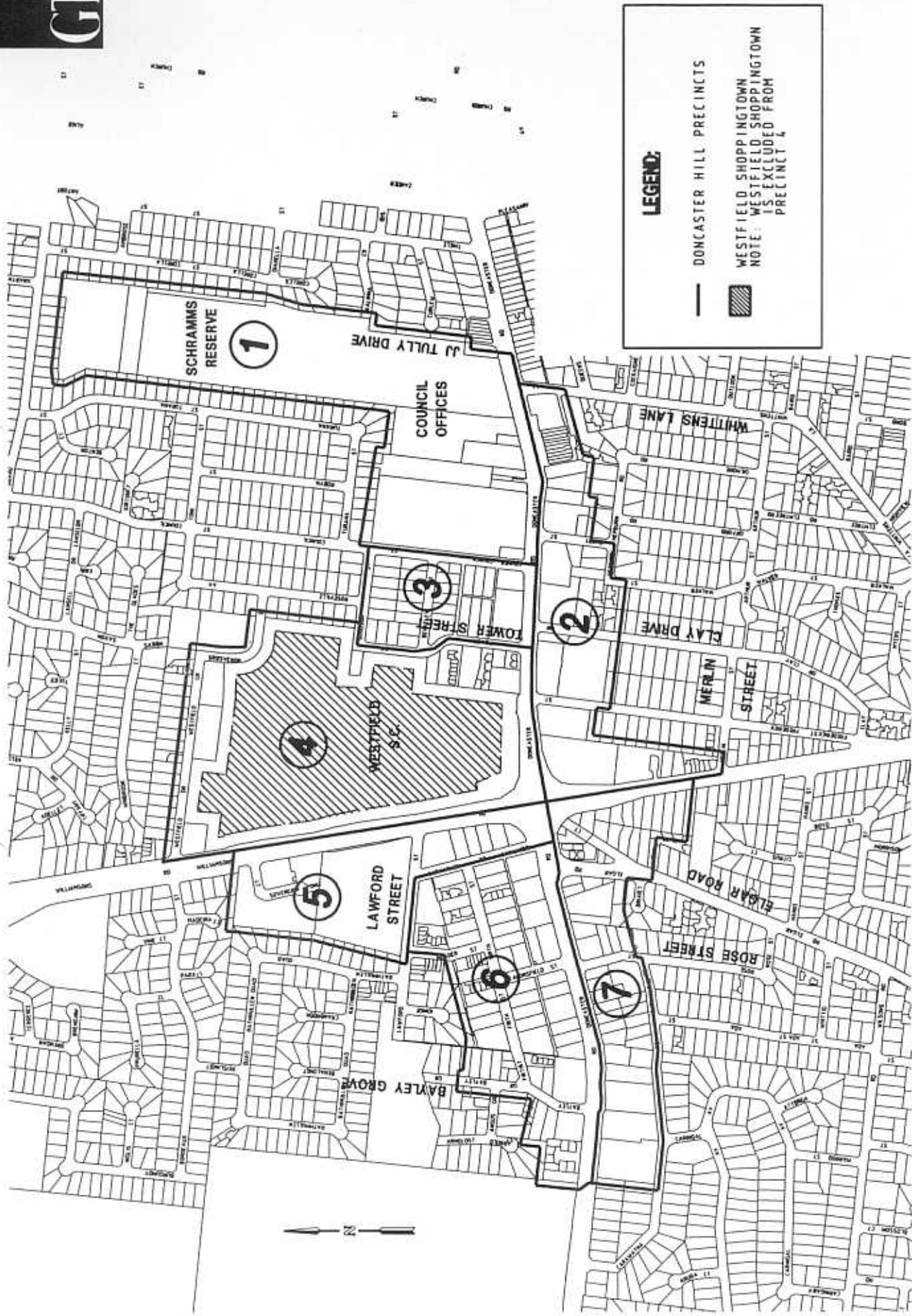


FIGURE 2.2 : DEFINITIONS OF DONCASTER HILL PRECINCTS

TABLE 2.1: SUMMARY OF EXISTING LAND USE DATA BY PRECINCT

LAND USE	TOTAL GROSS FLOOR AREA							
	PRECINCT 1	PRECINCT 2	PRECINCT 3	PRECINCT 4	PRECINCT 5	PRECINCT 6	PRECINCT 7	TOTAL
Recreational								
BOWLING CLUB	802	0	0	0	0	0	0	802
RECREATION RESERVE	0	0	0	0	0	0	0	0
Sub-Total	802	0	0	0	0	0	0	802
Service Industry								
CAR SALES YARD	0	0	0	0	0	1443	1407	2850
CAR WASH	0	0	0	0	0	0	268	268
SERVICE STATION	0	0	0	0	0	270	0	270
Sub-Total	0	0	0	0	0	1713	1675	3388
Place of Assembly								
CHURCH/PLACE OF WORSHIP	0	0	0	799.8	0	0	0	799.8
HALL/AUDITORIUM	0	0	0	0	0	0	0	0
FUNCTION CENTRE	400	0	0	0	0	0	0	400
Sub-Total [1]	0	0	0	799.8	0	0	0	799.8
Food and Drink Premises								
CONVENIENCE STORE/FAST FOOD	0	0	229	0	0	0	0	229
RESTAURANT	0	0	0	0	0	0	3013.8	3013.8
Sub-Total	0	0	229	0	0	0	3013.8	3242.8
Accommodation								
HOTEL	0	0	0	0	2607	0	0	2607
Sub-Total	0	0	0	0	2607	0	0	2607
Office								
OFFICE	0	10219.5	0	792.6	0	3377	612	15001.1
MUNICIPAL OFFICE	4762	0	0	0	0	0	0	4762
OFFICE/FACTORY	0	0	0	0	0	0	3503.8	3503.8
OFFICE/WAREHOUSE	0	0	0	0	0	0	1142	1142
MEDICAL CENTRE/SURGERY	0	0	0	0	0	158	0	158
BANK	0	289.5	0	0	0	0	0	289.5
Sub-Total	4762	10509	0	792.6	0	3535	5257.8	24856.4
Residential - Number of Dwellings								
OYO STRATA UNIT	0	0	0	13	0	116	0	129
OYO SUBDIVIDED DWELLING	0	2	0	0	0	0	0	2
OYO SUBDIVIDED UNIT	0	19	0	0	98	31	0	148
HOUSE	0	28	29	3	0	8	8	76
RENTAL FLAT - TENANTED	0	0	0	0	0	7	0	7
Sub-Total	0	49	29	16	98	162	8	362
Educational								
PRIMARY SCHOOL	1077	0	0	0	0	0	0	1077
Sub-Total	1077	0	0	0	0	0	0	1077
Retail								
SHOP	0	1487.5	0	46.2	0	0	0	1533.7
SHOP AND DWELLING	0	699.2	0	0	0	0	0	699.2
SHOWROOM	0	1349	0	0	0	3094	3991	8434
UNSPECIFIED - RETAIL TRADE	0	0	0	0	0	553	0	553
Sub-Total	0	3535.7	0	46.2	0	3647	3991	11219.9
Other								
FACTORY - Industrial & Manufacturing	0	0	0	0	0	3708	0	3708
GYMNASIUM/HEALTHCLUB	0	0	0	0	0	1289	0	1289
PUBLIC UTILITY - TELECOMMUNIC.	0	0	0	0	0	683	0	683
SUBDIVISIONAL LAND (EN-GLOBO)	0	0	0	0	0	0	0	0
UNSPECIFIED - COMMERCIAL	0	0	0	0	0	111.5	0	111.5
WAREHOUSE	0	0	0	0	0	0	0	0
Sub-Total	0	0	0	0	0	5791.5	0	5791.5
Vacant								
VACANT COMMERCIAL LAND	0	4677	0	0	0	0	0	4677
VACANT INDUSTRIAL	0	0	0	0	0	0	382	382
Sub-Total	0	4677	0	0	0	0	382	5059
TOTAL [1]	6641	18721.7	229	1638.6	2607	14686.5	14319.6	58843.4

[1] Excludes numbers of seats in restaurants and function centre and residential dwellings

3 CAR PARKING CONDITIONS

3.1 SUPPLY

GTA Consultants undertook an inventory of on-street and off-street car parking within the area defined as the 'Total Survey Area' in Figure 2.1¹. This area was selected based on consultation with Council and aimed at recording all on-street and off-street car parking that may be attributable to Doncaster Hill and is set out in detail in the Technical Report related to this study.

In addition, a breakdown of the inventory has been prepared for each precinct and these are also included in the Technical Report related to this study.

The inventory identified a total of some 4,714 on-street and 2,466 off-street car parking spaces in the area bounded by the 'Total Survey Area' as shown in Figure 2.1. The parking supply totals for each of the Doncaster Hill Precincts as defined in Figure 2.2 are set out in Table 3.1.

TABLE 3.1: SURVEY OF CAR PARKING SUPPLY BY PRECINCT

PRECINCT	ON-STREET SUPPLY	OFF-STREET SUPPLY	TOTAL
1	33	477	510
2	103	646	749
3	88	10	98
4 [1]	198	88	286
5	28	400	428
6	237	354	591
7	128	491	619
Totals	815	2466	3281

[1] Precinct 4 excludes any parking contained within Doncaster Shoppingtown as discussed in Section 2.2.

3.2 DEMAND

To quantify the existing car parking demand, GTA Consultants undertook hourly car parking surveys for all on-street car parking listed in the inventory and off-street car parks associated with the Shoppingtown Hotel and Municipal Offices at the following dates and times:

- Friday 19 July 2002: 7:00am – 7:00pm; and
- Saturday 20 July 2002: 9:00am – 9:00pm.

Subsequent surveys of all other off-street parking were undertaken later at the following dates and times:

- Friday 12 October 2002: 7:00am – 7:00pm; and

¹ As discussed in Section 2.2 Doncaster Shoppingtown has been excluded from our analysis.

- Saturday 13 October 2002: 9:00am – 9:00pm.

The following pages graphically present the results of the car parking data obtained from surveys conducted at the above times. Specific results can be summarised as:

- Results of these surveys indicate a relatively low utilisation of car parking within all precincts with car parking occupancy within each of the individual precincts not exceeding 57%, which was recorded in Precinct 6 on the Friday.
- Total parking within precincts 1-7 indicated a peak occupancy of 46% comprising 51% occupancy within off-street parking areas and 30% occupancy of on-street parking supplies.
- Across the total survey area a peak parking occupancy of 25% was recorded on Friday.

These surveys indicate an abundance of available car parking is currently available both within the seven (7) precincts and the total survey area.

Figure 3.1: Friday Parking Utilisation - Precincts Only

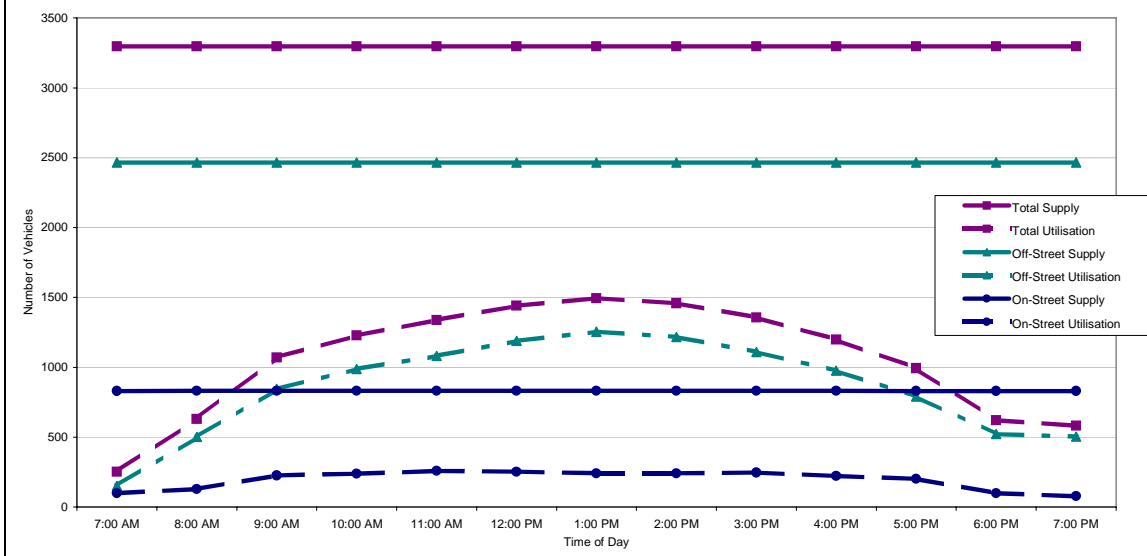
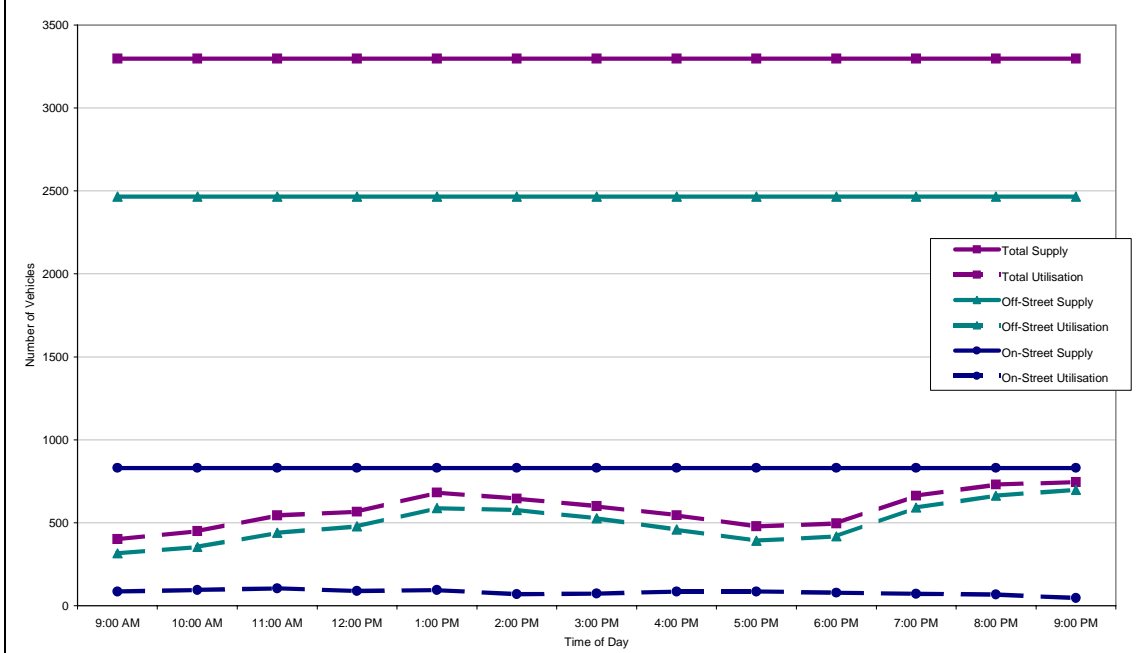
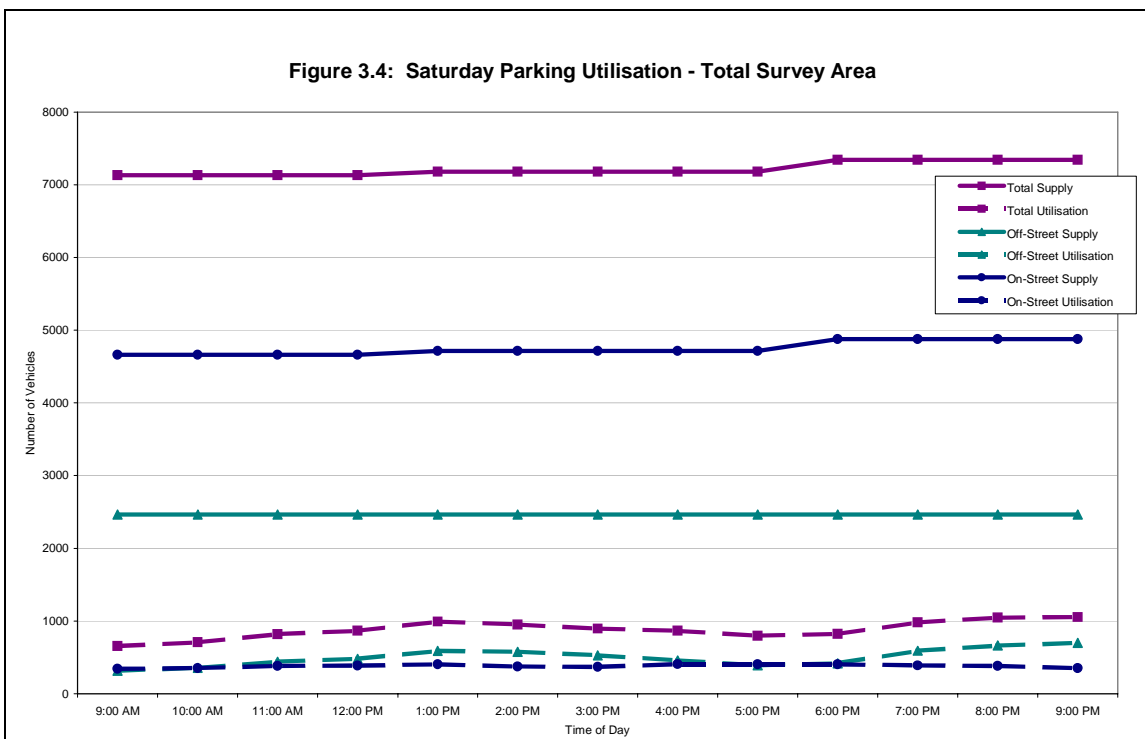
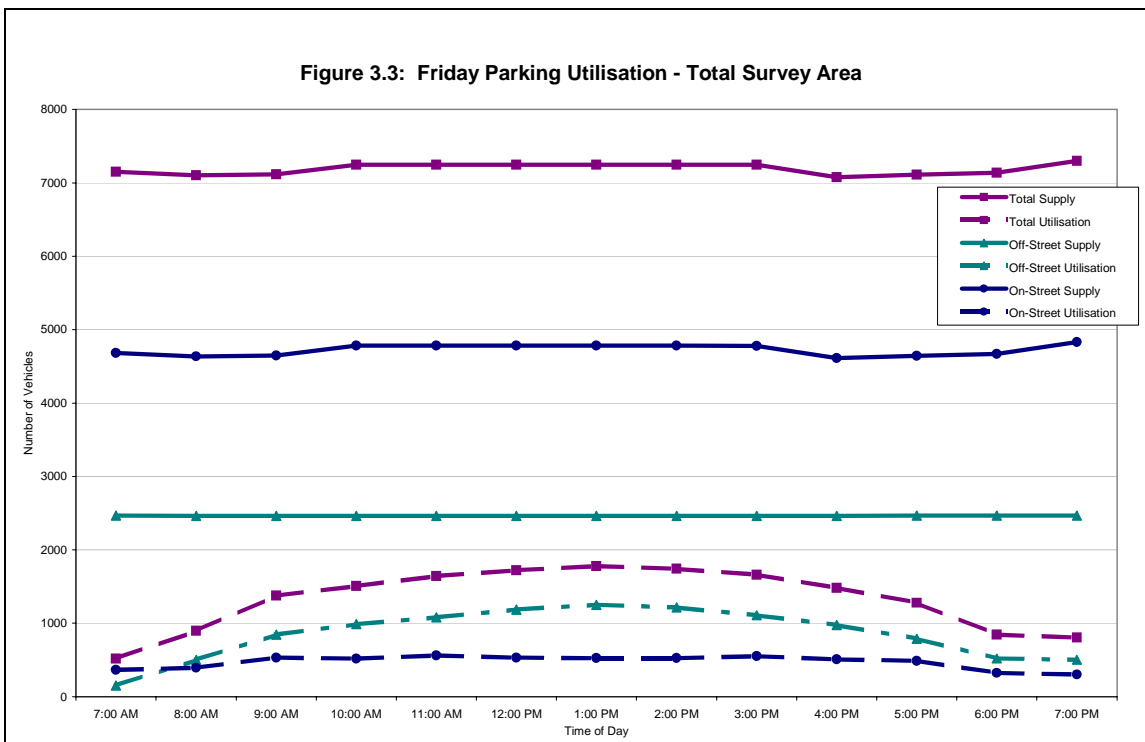


Figure 3.2: Saturday Parking Utilisation - Precincts Only





4 FORMULATION OF A CAR PARKING MODEL

4.1 CAR PARKING RATE BY LAND USE

Table 4.1 summarises the size of the existing land uses by precinct² and groups them into similar land uses. These groups have been listed below in ascending order of the sizes of the uses in the Doncaster Hill Precincts.

TABLE 4.1: ASCENDING ORDER OF LAND USE GROUP PRECINCT IN DONCASTER HILL

USE GROUP [1]	SIZE	COMMENT
Office	24,856m ²	Mostly Office (15,001m ²)
Retail	11,220m ²	Mostly Showroom (8,434m ²)
Other	5,792m ²	
Service Industry	3,388m ²	Mostly Car Sales Yard (2,850m ²)
Food and Drink Premises	3,243m ²	Mostly Restaurant (3,014m ²)
Accommodation	2,607m ²	
Recreational	802m ²	
Place of Assembly	800m ²	An additional 400 seats exist within Function Centre
Residential	362 dwellings	
TOTAL	52,708m²	
[1] Ignoring the vacant group.		

As can be seen from Table 4.1, about 85% of the floor space can be accounted for by four (4) uses along with a significant contribution from the 362 residential dwellings. As a consequence, the modelling of the car parking characteristics is relatively sensitive to the car parking rates adopted for these uses and relatively insensitive to the car parking rates adopted for the balance of the uses.

Table 4.2 summarises the assumed car parking rates by use for inclusion into the model together with the source of each rate. The Table also identifies those rates which are critical since they represent the vast majority of the land usage in Doncaster Hill.

² Excluding Doncaster Shoppingtown.

TABLE 4.2: ASSUMED CAR PARKING RATES

LAND USE	CAR PARKING RATE		SOURCE
Recreational			
BOWLING CLUB	30 15	spaces for first green spaces for each additional green	RTANSW
RECREATION RESERVE			
Service Industry			
CAR SALES YARD [1]	1.33	spaces / 100m ² site area	GTA surveys at Worrells Motors June 2002 (assume no servicing)
CAR WASH			
SERVICE STATION	NO ON STREET PARKING EXPECTED		
Place of Assembly			
CHURCH/PLACE OF WORSHIP	0.35	spaces / seat	GTA Surveys of three churches
HALL/AUDITORIUM	0.3	spaces / seat or 1m ² floor area, whichever is greater	PLANNING SCHEME
FUNCTION CENTRE	0.3	spaces / seat	Meldrum Burrows and Partners (1987) 'Melbourne Metropolitan Parking Update Study'
Food and Drink Premises			
CONVENIENCE STORE/FAST FOOD	0.36	spaces / seat	85th percentile of GTA data
RESTAURANT [1]	0.42	spaces / seat	85th percentile BOLOUTIS data
Accommodation			
HOTEL	13.6	spaces / 100m ²	Average of IMPS data
Office			
OFFICE [1]	2.8	spaces / 100m ² GROSS floor area	85th percentile IMPS data
MUNICIPAL OFFICE	2.8	spaces / 100m ² GROSS floor area	85th percentile IMPS data
OFFICE/FACILITY	2.8	spaces / 100m ² GROSS floor area	85th percentile IMPS data
OFFICE/WAREHOUSE	2.8	spaces / 100m ² GROSS floor area	85th percentile IMPS data
MEDICAL CENTRE/SURGERY	4.25	spaces / consulting room	85th percentile of GTA data
BANK	2.8	spaces / 100m ² GROSS floor area	85th percentile IMPS data (Office)
Residential - Number of Dwellings			
OYO STRATA UNIT [1]	1.3	spaces / dwelling	Soverign Point
OYO SUBDIVIDED DWELLING [1]	1.3	spaces / dwelling	Soverign Point
OYO SUBDIVIDED UNIT [1]	1.3	spaces / dwelling	Soverign Point
HOUSE [1]	1.3	spaces / dwelling	Soverign Point
RENTAL FLAT - TENANTED [1]	1.3	spaces / dwelling	Soverign Point
Educational			
PRIMARY SCHOOL - AM PEAK	0.124	spaces / student	85th percentile of GTA data
PRIMARY SCHOOL - PM PEAK	0.241	spaces / student	85th percentile of GTA data
Retail			
SHOP	4	spaces / 100m ² GROSS floor area	Bridge Road, Richmond & Glenferrie Road, Hawthorn
SHOP AND DWELLING	4	spaces / 100m ² GROSS floor area	Bridge Road, Richmond & Glenferrie Road, Hawthorn
SHOWROOM [1]	2.5	spaces / 100m ² GROSS floor area	GTA rates
UNSPECIFIED - RETAIL TRADE	4	spaces / 100m ² GROSS floor area	Bridge Road, Richmond & Glenferrie Road, Hawthorn
Other			
FACTORY - Industrial & Manufacturing	1.3	spaces / 100m ² GFA	RTANSW
GYMNASIUM/HEALTHCLUB	5.42	spaces / 100m ² GFA	GTA Surveys for Healthland Gymnasium
PUBLIC UTILITY - TELECOMMUNIC.			
SUBDIVISIONAL LAND (EN-GLOBO)			
UNSPECIFIED - COMMERCIAL			
WAREHOUSE	1	spaces / 100m ² GFA	RTANSW

[1] Critical car parking rates given propensity of use in Doncaster Hill.

4.2 TEMPORAL DISTRIBUTIONS

Each use has a characteristic profile of parking accumulation throughout the day which is often called the temporal profile. Different uses peak at different times, with office typically peaking late morning, retail early afternoon and residential in the late evening.

Figures 4.1 and 4.2 show graphically the profile of parking accumulation over the day for the critical uses for a Friday and Saturday respectively. Another way of representing the information is a tabular form with each time of the day represented as a percentage of the peak accumulation of the use.

4.3 MODELLING CAR PARKING SUPPLY AND DEMAND

For each precinct a model was constructed which linked the land uses in their precinct as per Table 2.1 with the car parking rates set out in Table 4.2 and the temporal profiles shown in Figures 4.1 and 4.2.

The modelled spreadsheets are reproduced in the Technical Report associated with this study together with the graphical representation of the data corresponding to the modelled Friday and Saturday for Precincts 1-7.

Given the location of precincts 1, 3 & 4 and 5 & 6 it has been considered appropriate to combine the precincts for modelling purposes due to likely car parking and land use interactions between these precincts. A graphical representation of these combined precincts is shown in Figures 4.3 to 4.10.

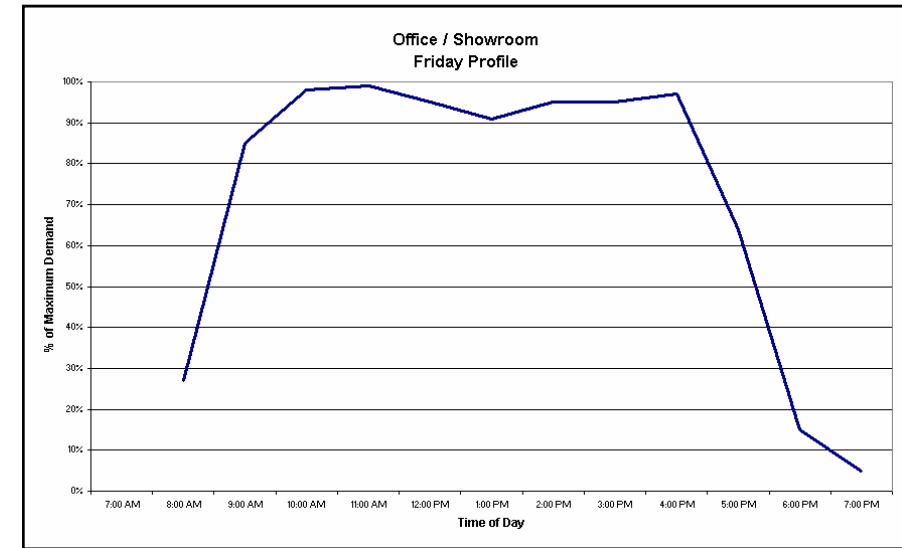
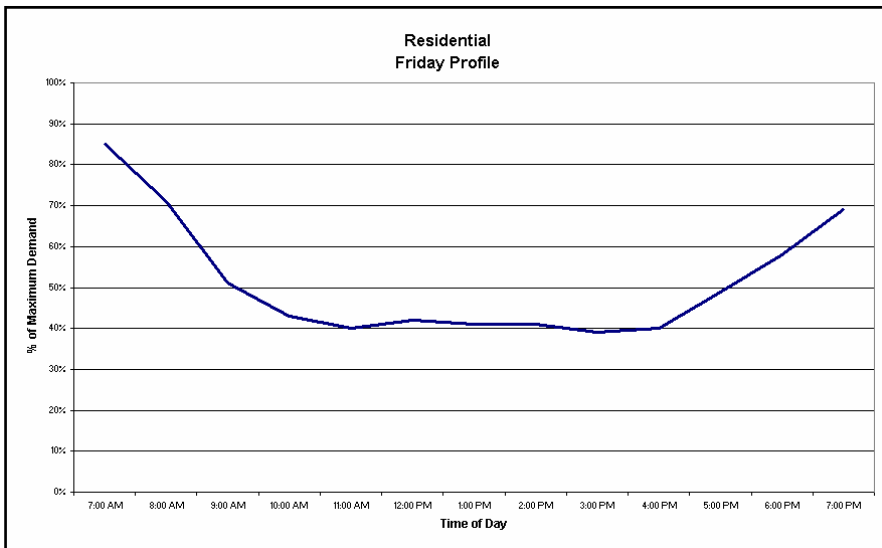
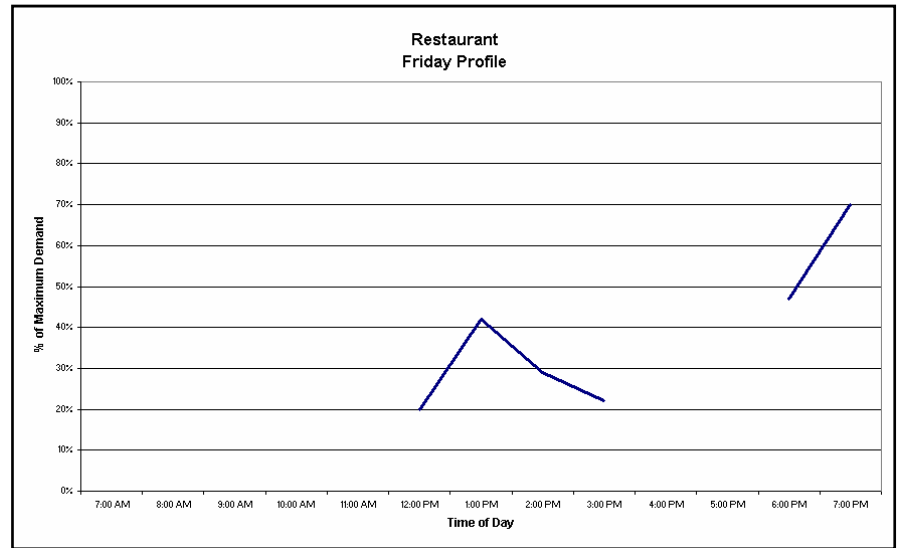
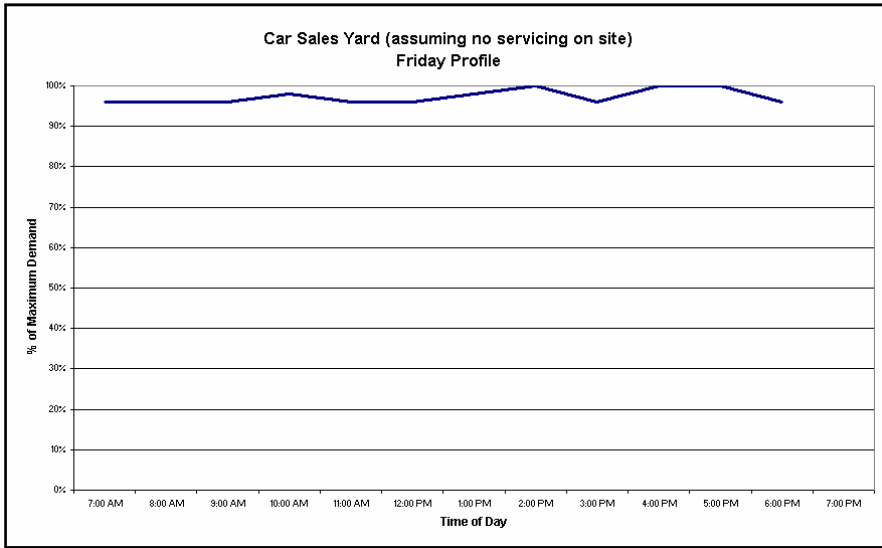


FIGURE 4.1: FRIDAY TEMPORAL PROFILES

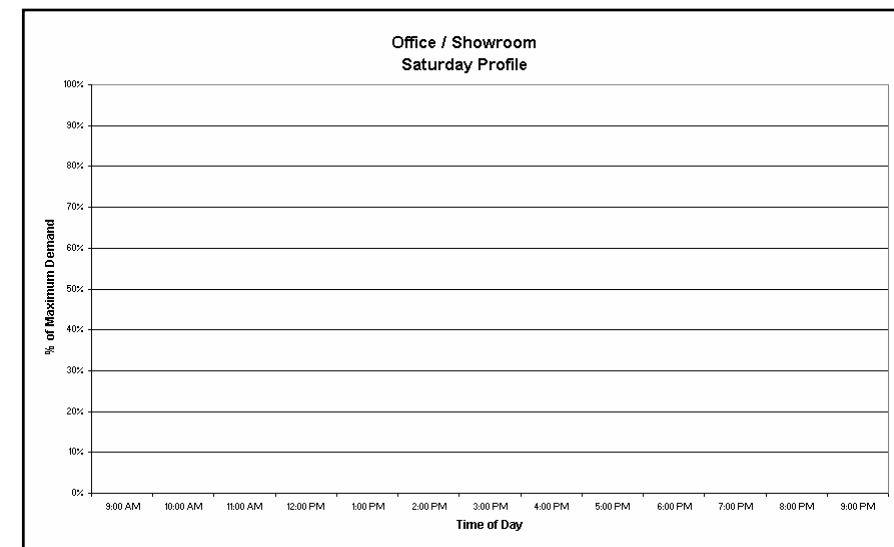
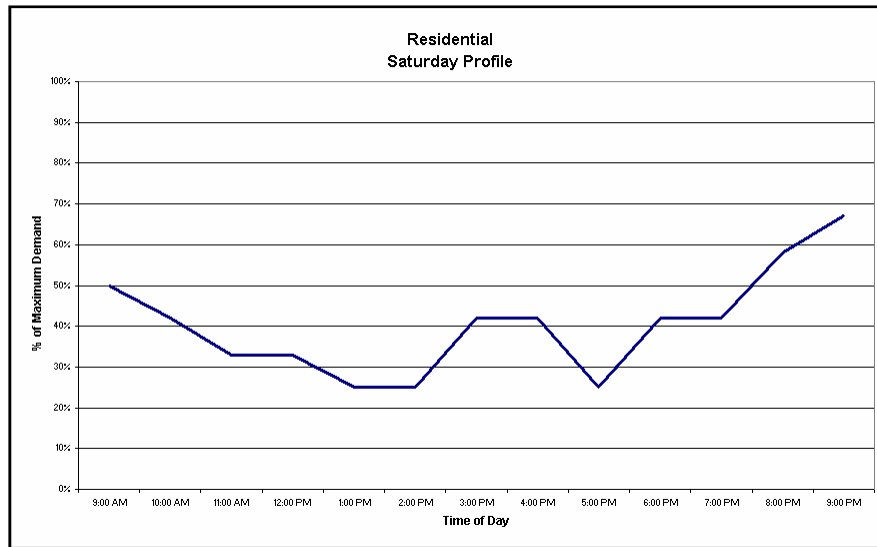
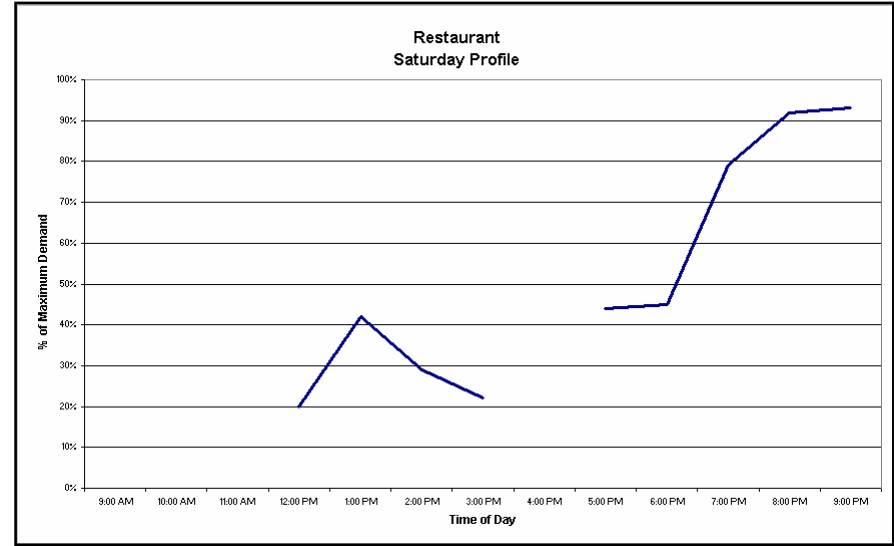
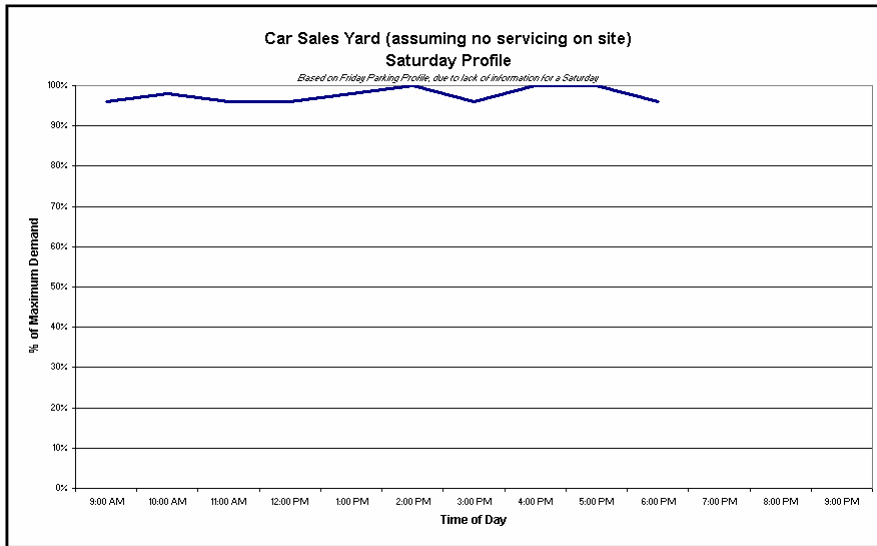


FIGURE 4.2: SATURDAY TEMPORAL PROFILES

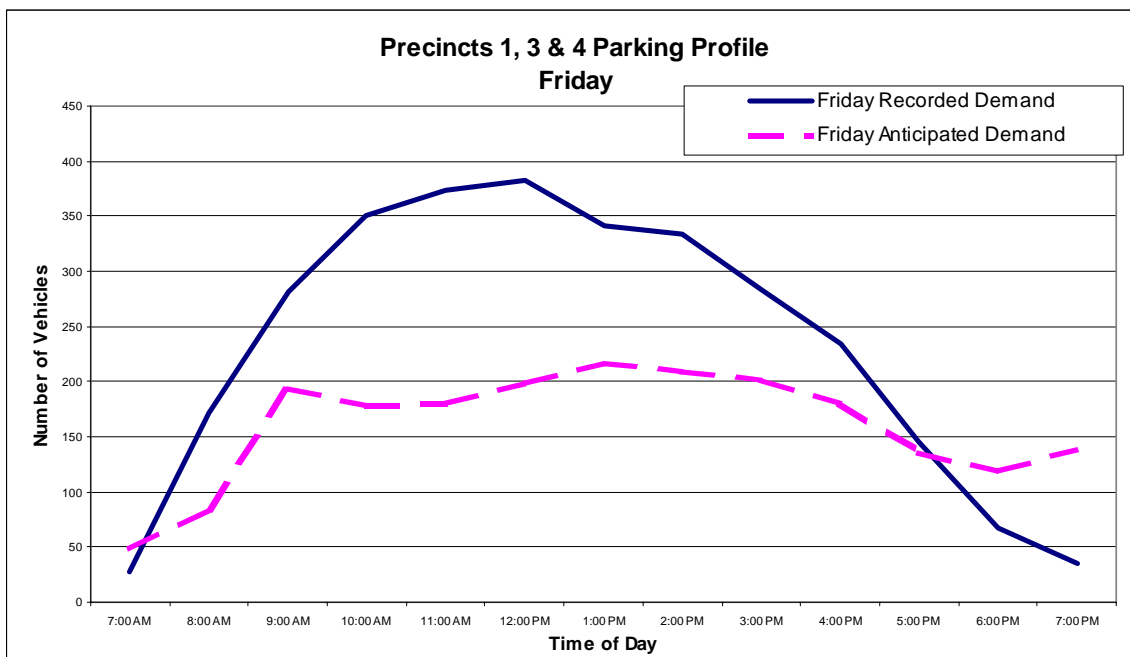


FIGURE 4.3: PRECINCT 1, 3 & 4 PARKING PROFILE – FRIDAY

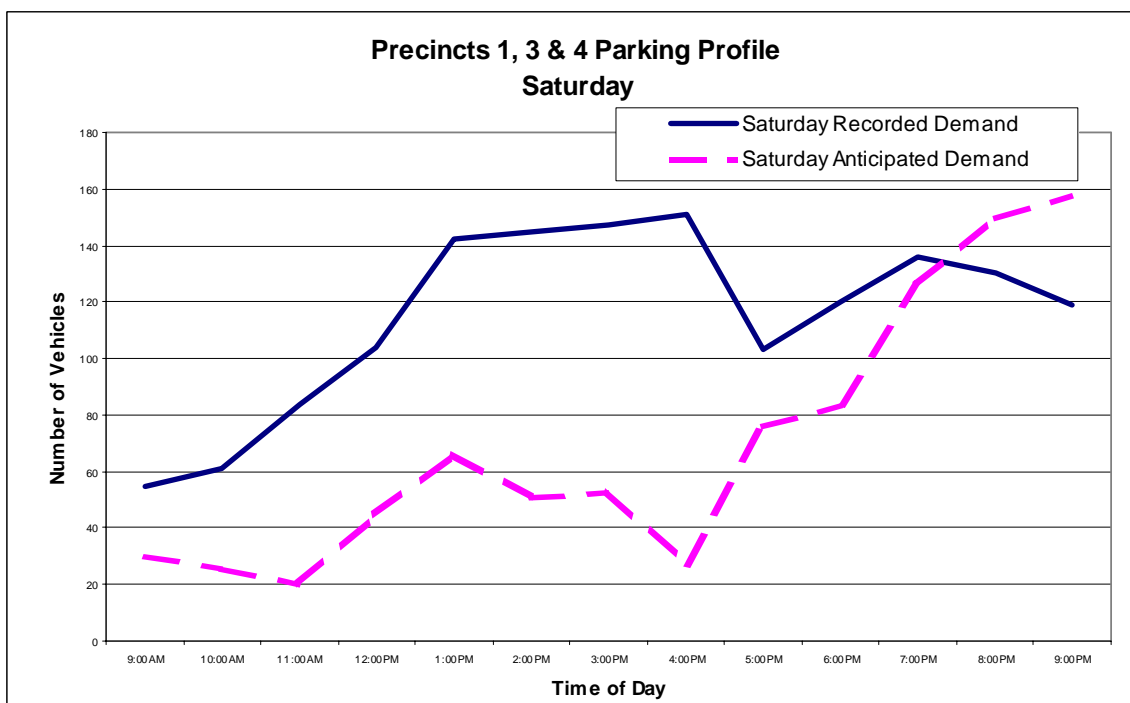


FIGURE 4.4: PRECINCT 1, 3 & 4 PARKING PROFILE - SATURDAY

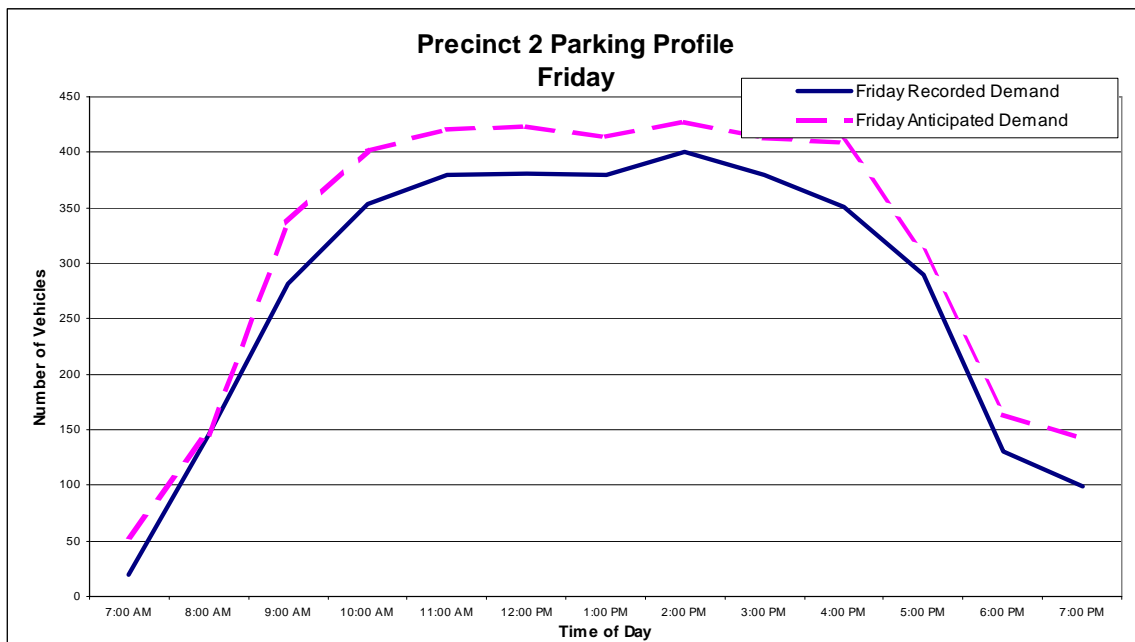


FIGURE 4.5: PRECINCT 2 PARKING PROFILE - FRIDAY

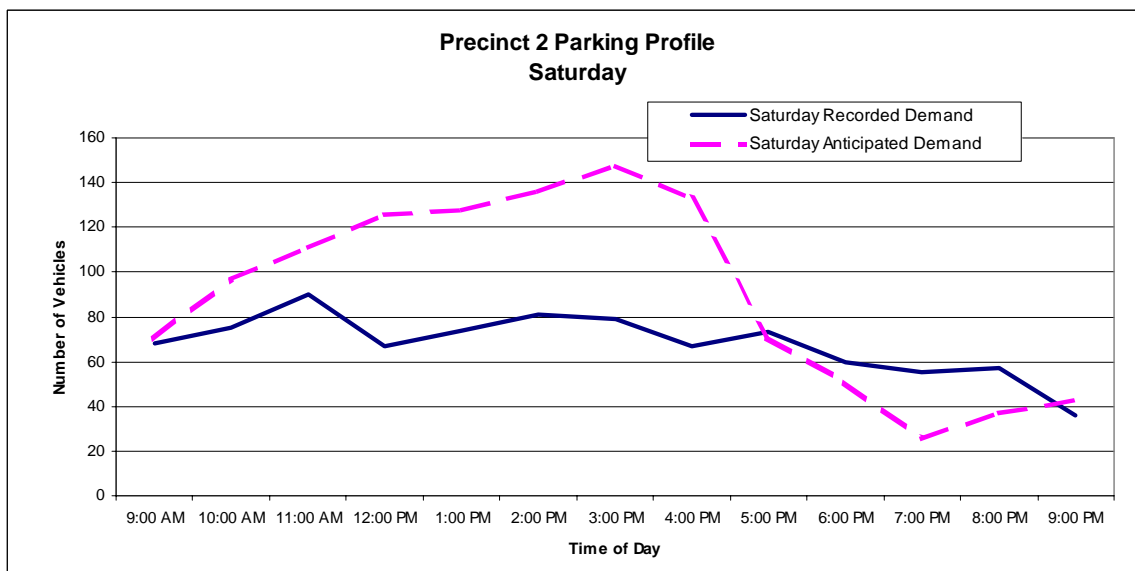


FIGURE 4.6: PRECINCT 2 PARKING PROFILE - SATURDAY

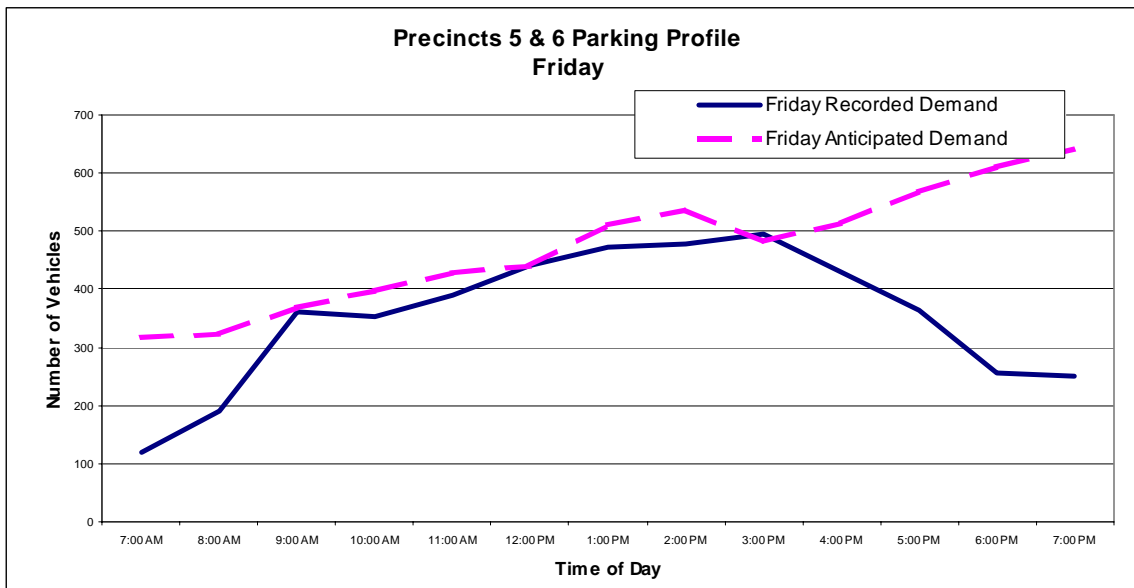


FIGURE 4.7: PRECINCT 5 & 6 PARKING PROFILE - FRIDAY

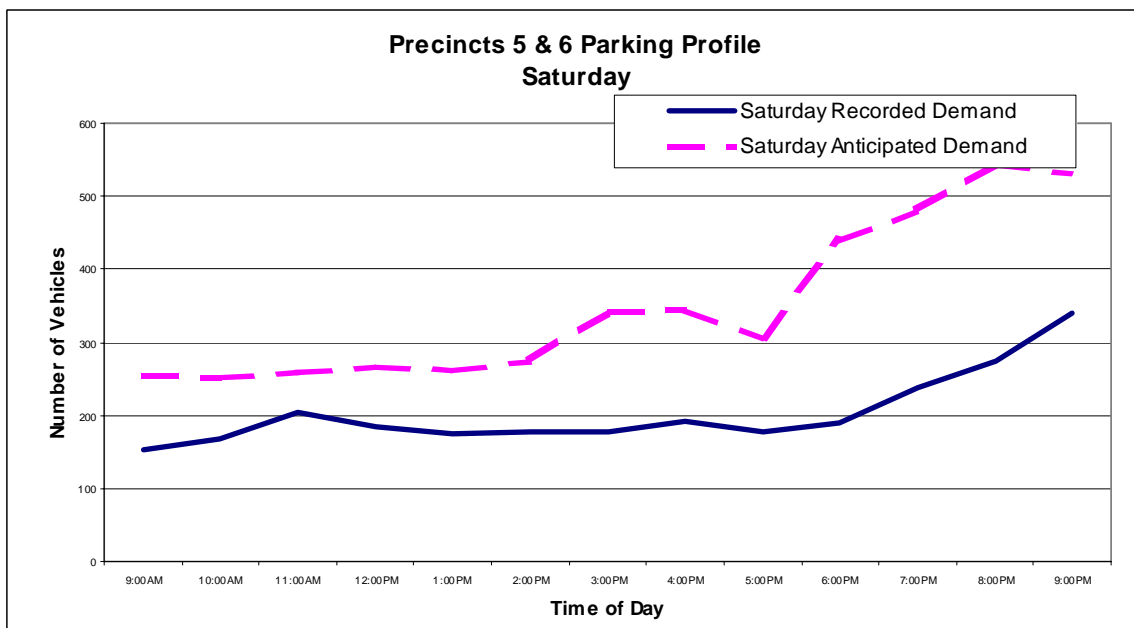


FIGURE 4.8: PRECINCT 5 & 6 PARKING PROFILE - SATURDAY

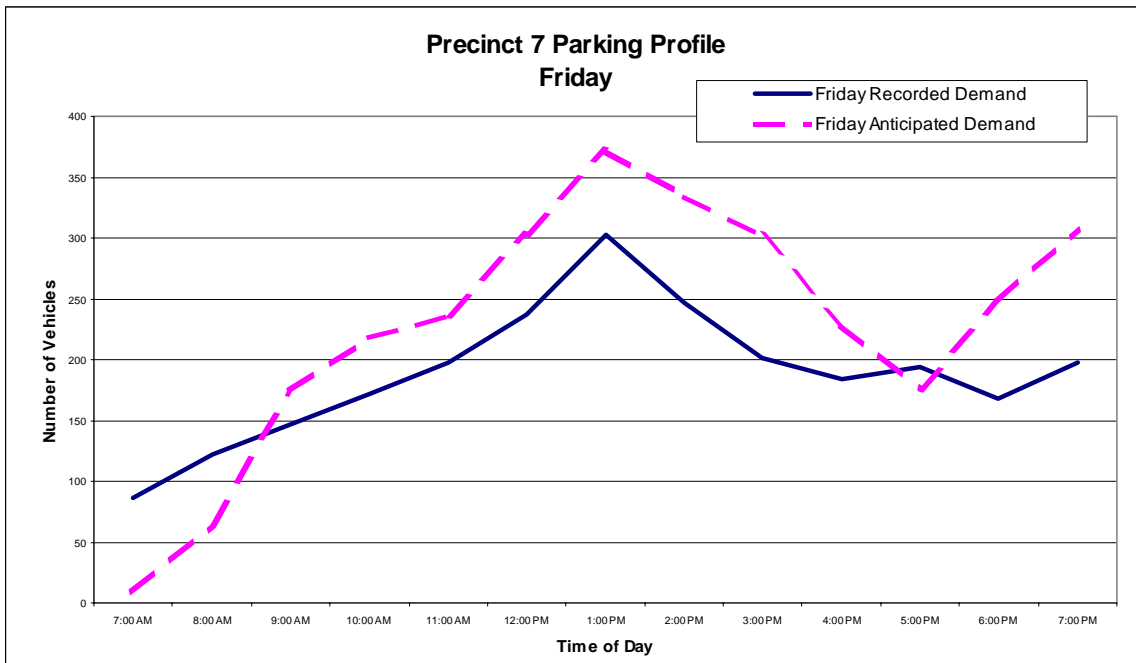


FIGURE 4.9: PRECINCT 7 PARKING PROFILE - FRIDAY

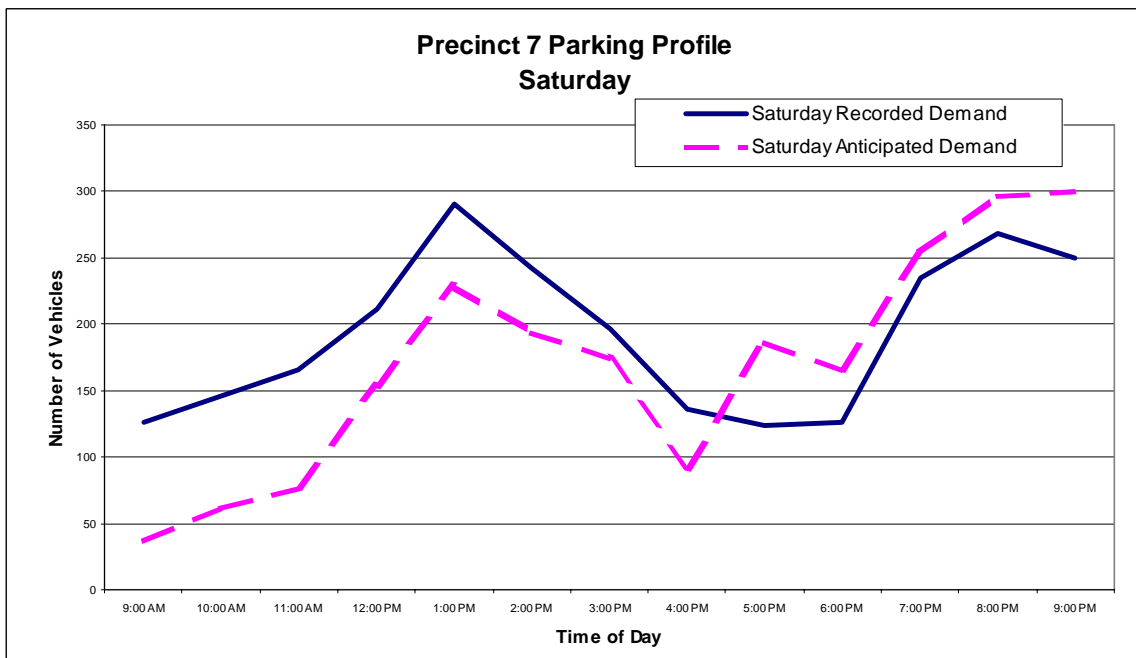


FIGURE 4.10: PRECINCT 7 PARKING PROFILE - SATURDAY

4.4 INTERPRETATION OF THE MODEL

In general, a comparison of the actual car parking demand and the anticipated (modelled) car parking demand are encouragingly similar with similar profiles and similar magnitudes in terms of peak accumulation. Moreover it is to be expected that some deficiencies will exist necessitating the calibration of the generic rates and profiles to reflect the specific situations existing at Doncaster Hill.

Each of the Friday models show a fair representation of anticipated car parking demand compared with the actual recorded car parking demands. These models were therefore calibrated to match the recorded car parking demand through the adjustments to the car parking rates and temporal profiles.

The Saturday car parking models for Precincts 5 & 6 and Precinct 7 again show a fair representation between the anticipated car parking demand and the actual recorded car parking demand. These were also calibrated to match the recorded car parking demands through adjustments to the car parking rates and temporal profiles.

The car parking models for Precinct 1, 3 & 4 and Precinct 2 on Saturday have not been calibrated for further analysis on the following basis:

- (i) Precinct 1, 3 & 4 contains a number of sports fields supporting both active and passive recreational activities. Activities such as these make it difficult to calibrate the model and that enough car parking was considered to be available within this precinct.
- (ii) Precinct 2 on Saturday shows significantly reduced actual and anticipated car parking demand to that on Friday. However, given that the dominant use is office it is likely that any parking policies that may be considered for this precinct would be heavily governed by the car parking demands generated on a Friday.

4.4.1 Model Calibration

The calibration of the models has resulted in the adoption of the following car parking rates and temporal profiles for the existing land uses within Doncaster Hill to match the recorded car parking demand during surveys undertaken by GTA Consultants.

The adopted car parking rates for each of the precincts are set out in Table 4.3.

As a consequence Figures 4.11 to 4.16 show the calibrated anticipated demand compared with the actual demand for each of the four precincts.

TABLE 4.3: ADOPTED LAND USE CAR PARKING RATES

LAND USE	ADOPTED CAR PARKING RATES			
	PRECINCT 1,3 & 4	PRECINCT 2	PRECINCT 5 & 6	PRECINCT 7
Bank	-	2.8 spaces / 100m ² GFA	-	-
Car Sales Yard	-	1.33 spaces / 100m ² site area	1.33 spaces / 100m ² site area	1.33 spaces / 100m ² site area
Factory	-	-	1.0 spaces / 100m ² GFA	-
Function Centre	0.3 spaces / seat	-	-	-
Gymnasium / Health Club	-	-	5.42 spaces / 100m ² GFA	-
Hotel	-	-	7 spaces / 100m ² floor area	-
Medical / Centre Surgery	-	-	4.25 spaces / consulting room	-
Municipal Office	6.5 spaces / 100m ² GFA	-	-	-
Office	2.5 spaces / 100m ² GFA	2.5 spaces / 100m ² GFA	2.5 spaces / 100m ² GFA	2.5 spaces / 100m ² GFA
Office / Factory	-	-	-	2.5 spaces / 100m ² GFA
Office / Warehouse	-	-	-	2.5 spaces / 100m ² GFA
Primary School (AM)	0.124 spaces / student	-	-	-
Primary School (PM)	0.241 spaces / student	-	-	-
Residential	1.3 spaces / dwelling	1.3 spaces / dwelling	1.3 spaces / dwelling	1.3 spaces / dwelling
Restaurant	-	-	-	0.36 spaces / seat
Retail Trade Unspecified	-	-	4 spaces / 100m ² GFA	-
Shop	4 spaces / 100m ² GFA	4 spaces / 100m ² GFA	-	-
Shop / Dwelling	-	4 spaces / 100m ² GFA	-	-
Showroom	-	1.5 spaces / 100m ² GFA [1]	1.5 spaces / 100m ² GFA [1]	1.5 spaces / 100m ² GFA [1]
Warehouse	-	-	1 spaces / 100m ² GFA	-

[1] All car parking rates are similar on Saturday except Showroom use which increases to 2.5 spaces / 100m² GFA on Saturday

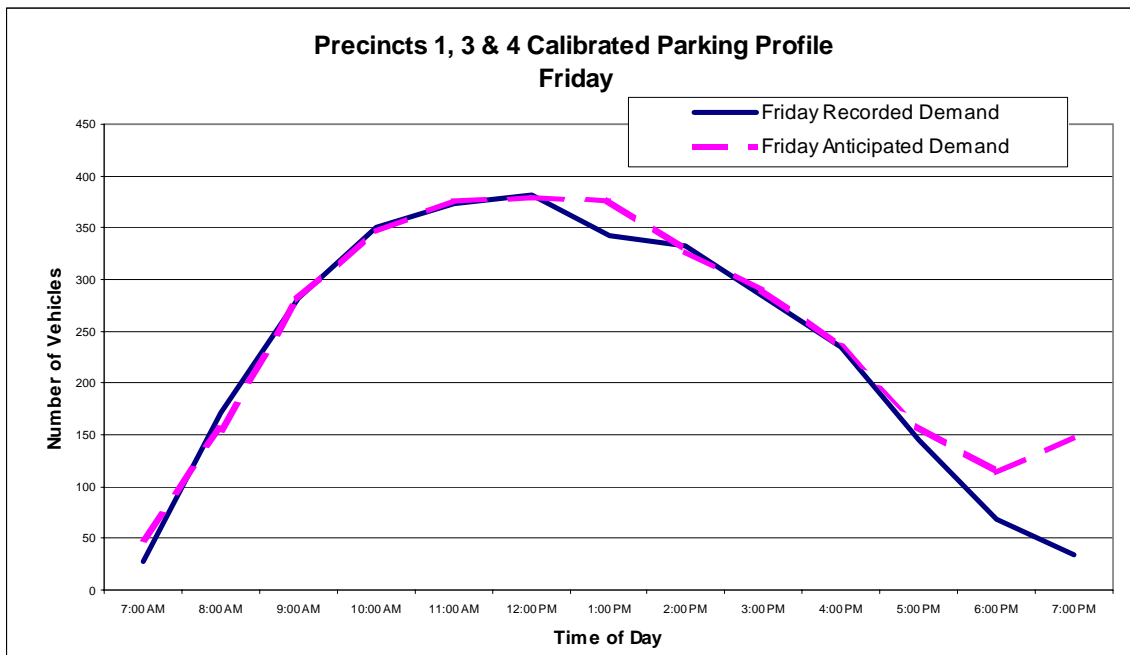


FIGURE 4.11: PRECINCT 1, 3 & 4 CALIBRATED PARKING PROFILE - FRIDAY

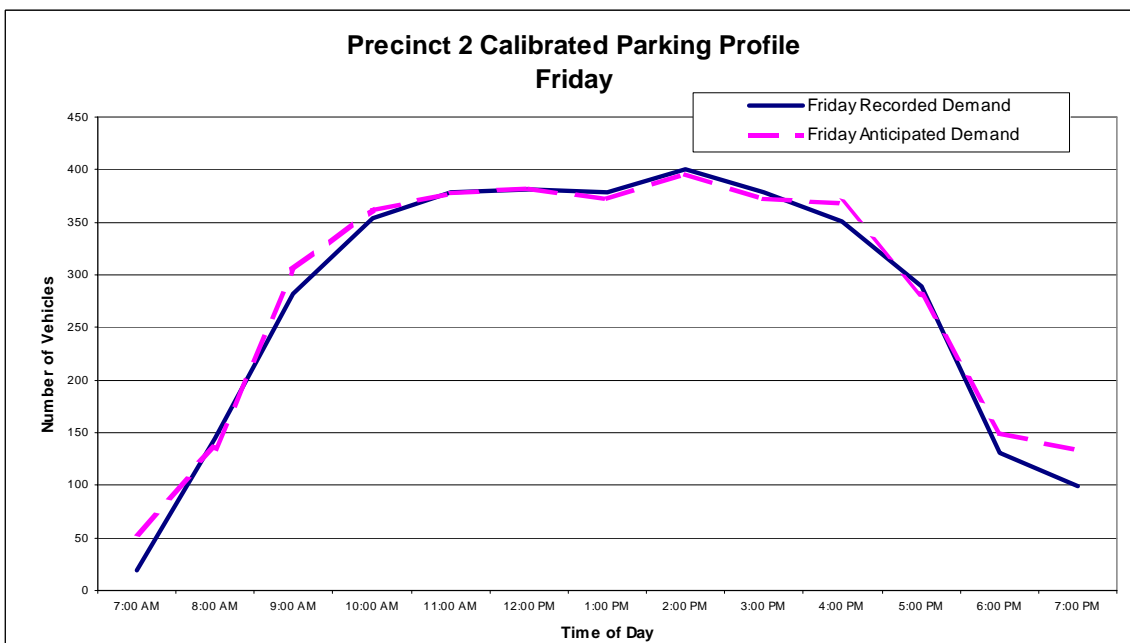


FIGURE 4.12: PRECINCT 2 CALIBRATED PARKING PROFILE - FRIDAY

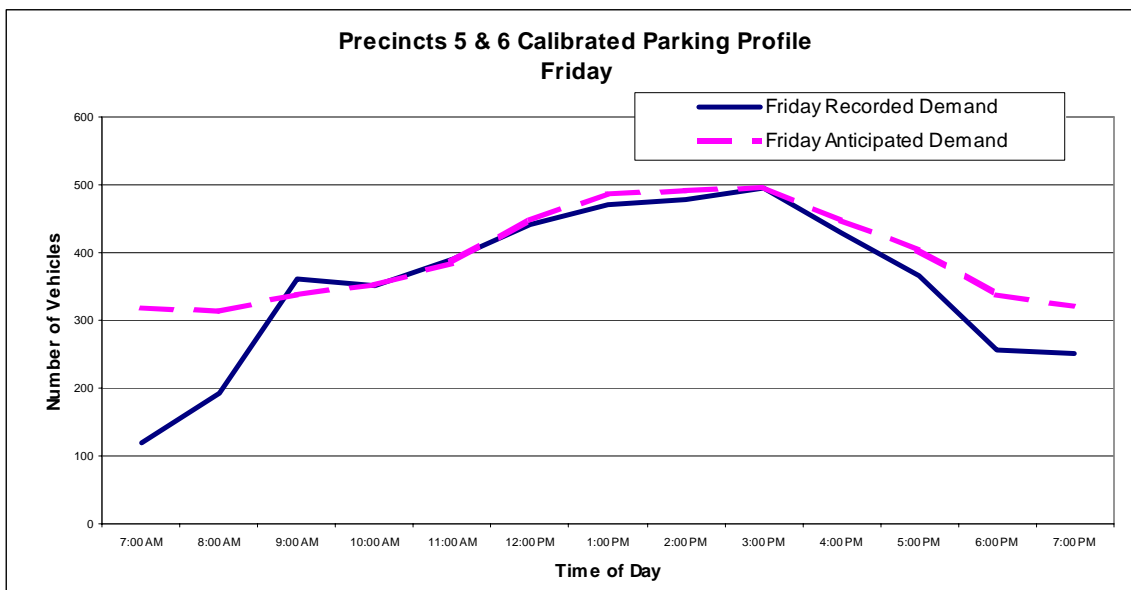


FIGURE 4.13: PRECINCT 5 & 6 CALIBRATED PARKING PROFILE - FRIDAY

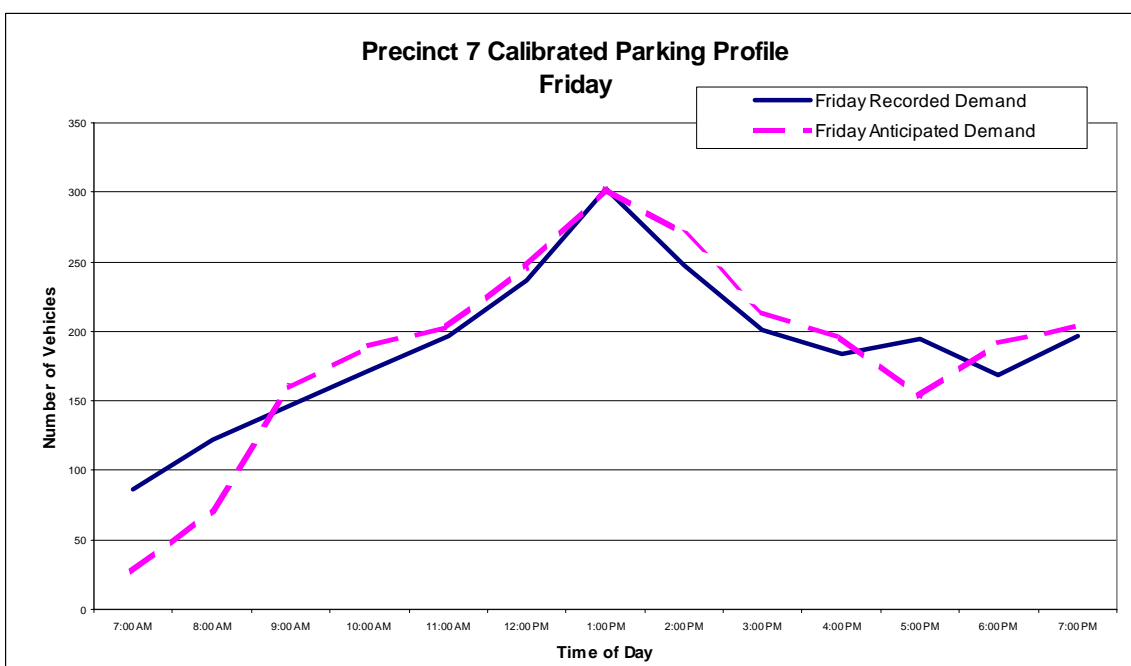


FIGURE 4.14: PRECINCT 7 CALIBRATED PARKING PROFILE - FRIDAY

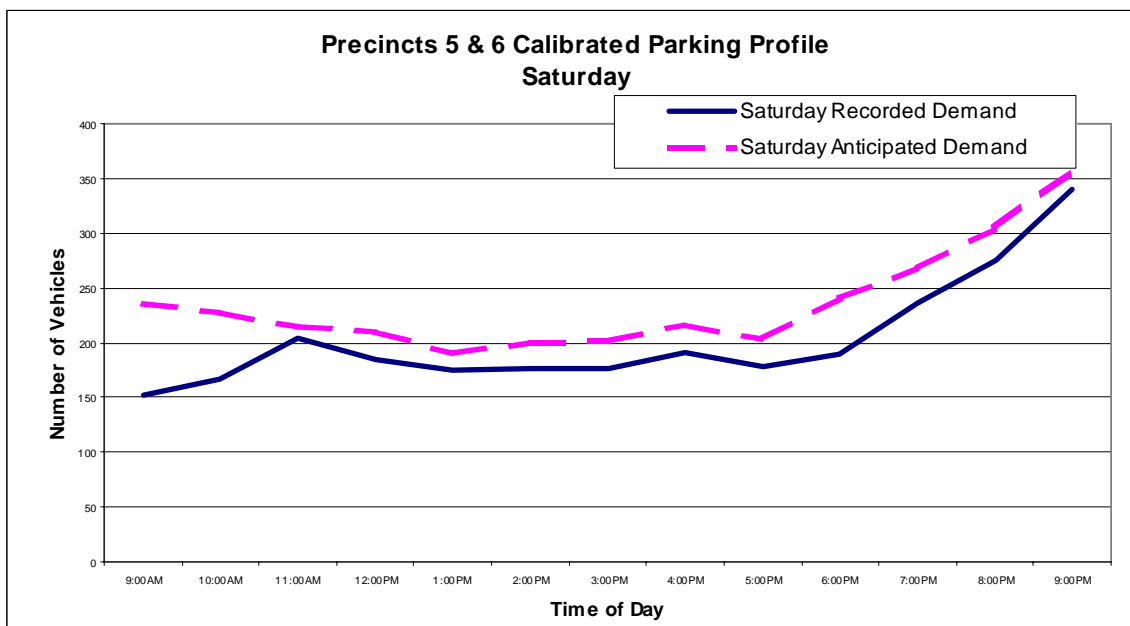


FIGURE 4.15: PRECINCT 5 & 6 CALIBRATED PARKING PROFILE - SATURDAY

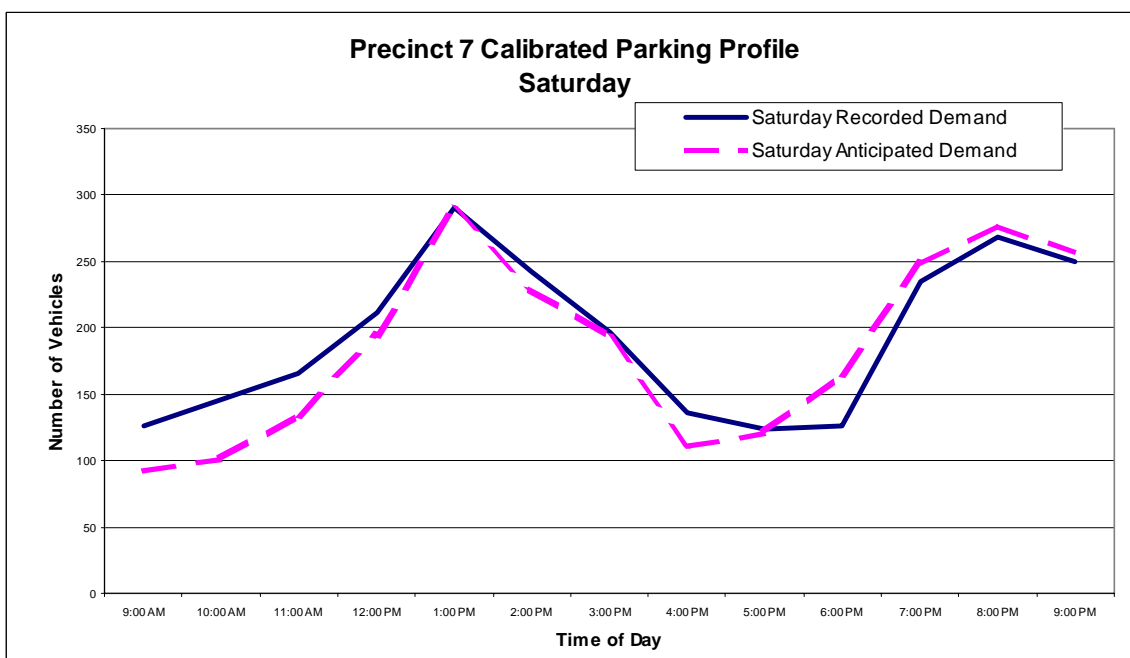


FIGURE 4.16: PRECINCT 7 CALIBRATED PARKING PROFILE - SATURDAY

4.4.2 Visitor Car Parking

Visitor car parking has also been included into the model to anticipate the split between short term and long-term car parking for the major land use components in Doncaster Hill.

Visitor car parking has been included for the following uses:

- Residential;
- Restaurant;
- Retail;
- Office; and
- Municipal Office;

Visitor car parking rates for the above uses are shown in Table 4.4 with the relevant profiles documented in the Technical Report.

TABLE 4.4: VISITOR CAR PARKING RATES

LAND USE	VISITOR PARKING RATE	SOURCE
Residential	0.1 spaces / dwelling	IMPS data
Restaurant	88.5% of total parking	Average of IMPS data
Retail	80% of total parking demand	Colston Budd Hunt & Kafes Pty Ltd ³
Office	7% of parking demand	IMPS data
Municipal Office	3.0 spaces / 100m ² GFA	Approximation

³ "Report on Traffic and Parking survey results – Westfield Shopping town Southland", Colston Budd Hunt & Kafes Pty Ltd, May 2002

5 MODELLING FUTURE CONDITIONS

The modelling of future car parking conditions has included both expected increases to land use floor area and also targeted changes in mode split with the improvement of public transport services to Doncaster Hill. These changes in both land use floor area and mode split are detailed below.

5.1 LAND USE CHANGES

Future development levels have been taken from those adopted within the *“Doncaster Hill Strategy Traffic Modelling and Analysis”* undertaken by GTA Consultants in September 2002. The future development levels adopted in the above study indicated changes in land use for the year 2011 and 2021 as shown in Table 5.1.

TABLE 5.1: NET CHANGES IN FLOOR AREA

YEAR	2011			2021		
	RESIDENTIAL UNITS (No. of)	RETAIL	COMMERCIAL / OFFICE	RESIDENTIAL UNITS (No. of)	RETAIL	COMMERCIAL / OFFICE
Precinct 1	63	0	-315	63	0	-315
Precinct 2	1105	1652	10179	1105	1652	10179
Precinct 3	624	1577	2516	624	1577	2516
Precinct 4 [1]	51	49900	79	51	55045	167
Precinct 5	447	3005	4488	447	3005	4488
Precinct 6	346	-158	-6888	773	1796	-1922
Precinct 7	775	1769	5054	775	1769	5054
Total	3411	57565	15113	3838	64664	20167

[1] Land use changes within Precinct 4 also reflect increases in retail floor area associated with Doncaster Shoppingtown.

The net changes in land use floor area have been added to the existing floor area data for each precinct and can be seen in Table 5.2.

In order to growth each individual land use for future modelling, the percentage change in land use has been evenly applied to each specific land use within each category of residential, retail and commercial / office.

TABLE 5.2: FUTURE FLOOR AREA

YEAR	2001			2011			2021		
PRECINCT	RESIDENTIAL UNITS (No. OF)	RETAIL	COMMERCIAL / OFFICE	RESIDENTIAL UNITS (No. OF)	RETAIL	COMMERCIAL / OFFICE	RESIDENTIAL UNITS (No. OF)	RETAIL	COMMERCIAL / OFFICE
Precinct 1	0	0	6641	63	0	6326	63	0	6326
Precinct 2	49	3536	10509	1154	5188	20688	1154	5188	20688
Precinct 3	29	0	229	653	1577	2745	653	1577	2745
Precinct 4	16	46	1592	67	46 [1]	1671	67	46 [1]	1759
Precinct 5	98	0	2607	545	3005	7095	545	3005	7095
Precinct 6	162	3647	11040	508	3489	4152	935	5443	9118
Precinct 7	8	3991	9947	783	5760	15001	783	5760	15001
Total	362	11220	42565	3773	19065	57678	4200	21019	62732

[1] Assumes that all retail floor area growth in Precinct 4 is attributed to Doncaster Shoppingtown which is not included in this study

5.2 MODE SPLIT ADJUSTMENTS

Mode split adjustments have again been referenced from those utilised in the *“Doncaster Hill Strategy Traffic Modelling and Analysis”*. This report indicates that a Government target of 20% of motorised trips is to be taken by public transport in 2020 up from the existing 9%. There is however no commonly available information on case studies of growth of public transport use in urban villages that could be applied. As a result, an indicative target was adopted of roughly doubling the public transport mode share over the next 20 years.

As a result of the above the *“Doncaster Hill Strategy Traffic Modelling and Analysis”* adopted a change in mode share of approximately 10% away from private car use by 2011 and remaining constant to 2021. This ability to obtain this change in mode split by 2011 is however dependant on the timing of the implementation of future public transport facilities to Doncaster Hill.

It should be noted that it has been assumed that car ownership within Doncaster Hill will not change to 2021 therefore indicating no expected change in the parking requirements for residential land uses.

In summary a 10% shift in mode split from private car usage is expected for all commercial / office, retail and all visitor parking requirements however no change is expected in the car parking requirements for residential usage, given it has been assumed that no change in private car ownership is expected.

5.3 MODELLING FUTURE CAR PARKING DEMAND

Future car parking conditions have consequently been modelled incorporating the land use floor area changes and mode split adjustments. A summary of the modelled car parking results are shown in Tables 5.3 – 5.4 indicating scenarios of increases to land use floor areas and the combination of increases to land uses floor areas and mode split adjustments.

Tables 5.3 – 5.4 indicate the marginal future car parking for visitor, office and other parking needs across the day indicating the temporal car parking patterns for both 2011 and 2021 conditions.

**TABLE 5.3A: VISITOR / LONG TERM PARKING SUMMARY – 2011 MODEL
NON MODE SPLIT ADJUSTMENTS – MARGINAL**

PRECINCT	TYPE	PROFILE FOR TIME OF DAY (FRIDAY)												
		7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM
1, 3 & 4	VISITOR	10	4	12	38	35	29	41	42	39	26	35	26	26
	OFFICE STAFF [1]	0	1	1	1	1	1	1	1	1	1	0	0	0
	SUB TOTAL	10	5	13	39	36	30	42	43	40	27	35	26	26
	OTHER LONG TERM	807	680	488	393	375	404	386	387	366	387	557	612	737
	TOTAL	817	685	501	432	411	434	428	430	406	414	592	638	763
2	VISITOR	15	12	27	74	74	55	72	73	66	48	54	31	32
	OFFICE STAFF	0	70	225	255	251	248	237	271	249	254	171	40	13
	SUB TOTAL	15	82	252	329	325	304	309	344	315	303	225	71	45
	OTHER LONG TERM	1181	994	708	565	537	582	552	550	522	547	663	807	1022
	TOTAL	1196	1076	960	894	862	886	861	894	837	850	888	878	1067
5 & 6	VISITOR	12	16	41	88	90	92	105	105	96	75	83	67	68
	OFFICE STAFF	0	-16	-51	-59	-59	-58	-54	-57	-58	-59	-40	-9	-3
	SUB TOTAL	12	0	-11	29	31	34	51	48	38	17	43	58	65
	OTHER LONG TERM	961	804	549	427	451	596	628	625	627	558	607	682	809
	TOTAL	973	804	538	456	482	630	679	673	665	575	650	740	874
7	VISITOR	10	2	3	24	17	25	68	48	24	5	13	56	74
	OFFICE STAFF	0	15	51	57	57	57	52	56	57	57	40	8	3
	SUB TOTAL	10	17	55	81	73	82	121	104	81	61	53	64	77
	OTHER LONG TERM	796	680	551	463	435	469	438	462	428	447	474	639	723
	TOTAL	806	697	606	544	508	551	559	566	509	508	527	702	800
TOTAL	VISITOR	46	34	83	224	215	202	286	267	226	154	186	180	201
	OFFICE STAFF	0	70	226	254	250	249	236	271	249	254	171	39	13
	SUB TOTAL	46	104	309	478	465	450	522	539	475	408	357	219	214
	OTHER LONG TERM	3746	3158	2296	1848	1798	2051	2005	2024	1942	1939	2300	2739	3290
	TOTAL	3782	3245	2550	2245	2190	2419	2406	2459	2336	2286	2604	2895	3427

[1] OFFICE STAFF DOES NOT INCLUDE MUNICIPAL OFFICE

**TABLE 5.3B: VISITOR / LONG TERM PARKING SUMMARY – 2011 MODEL
MODE SPLIT ADJUSTMENTS - MARGINAL**

PRECINCT	TYPE	PROFILE FOR TIME OF DAY (FRIDAY)												
		7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM
1, 3 & 4	VISITOR	9	-2	1	20	17	13	24	27	24	16	27	24	24
	OFFICE STAFF [1]	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0
	SUB TOTAL	9	-2	0	20	16	12	23	26	23	15	26	24	24
	OTHER LONG TERM	758	664	437	325	302	342	294	326	297	331	493	518	587
	TOTAL	767	662	437	345	318	354	317	352	320	346	519	542	611
2	VISITOR	13	9	21	60	58	41	57	57	51	37	42	22	23
	OFFICE STAFF	0	57	183	209	204	202	193	224	203	207	140	33	11
	SUB TOTAL	13	66	204	268	263	243	250	281	254	244	182	55	34
	OTHER LONG TERM	1183	993	705	564	534	578	548	547	519	544	661	805	1020
	TOTAL	1196	1059	909	832	797	821	798	828	773	788	843	860	1054
5 & 6	VISITOR	10	13	34	75	75	77	89	89	81	63	70	57	58
	OFFICE STAFF	0	-17	-54	-62	-61	-60	-57	-60	-61	-61	-42	-10	-4
	SUB TOTAL	10	-4	-20	13	14	16	32	29	20	2	28	47	54
	OTHER LONG TERM	962	801	544	423	439	565	588	585	583	525	586	672	801
	TOTAL	972	797	524	436	453	581	620	614	603	527	614	719	855
7	VISITOR	9	0	0	17	9	12	47	31	14	-2	6	36	49
	OFFICE STAFF	0	9	35	39	38	39	35	39	39	38	26	6	2
	SUB TOTAL	9	9	34	56	47	51	82	70	54	37	33	42	51
	OTHER LONG TERM	794	722	695	628	596	627	587	619	587	608	582	659	728
	TOTAL	803	686	582	517	478	515	515	527	478	479	503	674	770
TOTAL	VISITOR	41	20	56	172	159	142	217	203	170	114	146	139	154
	OFFICE STAFF	0	49	163	185	180	180	170	202	181	183	123	29	9
	SUB TOTAL	41	69	219	357	340	323	387	405	351	297	269	168	163
	OTHER LONG TERM	3697	3181	2380	1940	1871	2112	2017	2078	1987	2009	2322	2654	3136
	TOTAL	3729	3240	2565	2241	2164	2383	2322	2413	2283	2269	2558	2780	3248

[1] OFFICE STAFF DOES NOT INCLUDE MUNICIPAL OFFICE

**TABLE 5.4A: VISITOR / LONG TERM PARKING SUMMARY – 2021 MODEL
NON MODE SPLIT ADJUSTMENTS – MARGINAL**

PRECINCT	TYPE	PROFILE FOR TIME OF DAY (FRIDAY)												
		7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM
1, 3 & 4	VISITOR	10	4	12	38	35	29	41	42	39	26	35	26	26
	OFFICE STAFF [1]	0	1	2	2	2	2	2	2	2	2	1	0	0
	SUB TOTAL	10	5	14	40	37	31	43	44	41	28	36	26	26
	OTHER LONG TERM	807	680	488	393	375	404	386	387	366	387	557	612	737
	TOTAL	817	685	502	433	412	435	429	431	407	415	593	638	763
2	VISITOR	15	12	27	74	74	55	72	73	66	48	54	31	32
	OFFICE STAFF	0	70	225	255	251	248	237	271	249	254	171	40	13
	SUB TOTAL	15	82	252	329	325	304	309	344	315	303	225	71	45
	OTHER LONG TERM	1181	1123	1122	1035	1000	1041	988	1029	981	1016	978	882	1047
	TOTAL	1196	1076	960	894	862	886	861	894	837	850	888	878	1067
5 & 6	VISITOR	17	21	55	120	125	121	142	142	129	101	112	87	88
	OFFICE STAFF	0	-7	-20	-24	-23	-23	-22	-23	-23	-23	-16	-4	-2
	SUB TOTAL	17	15	34	97	102	98	120	119	106	78	96	83	86
	OTHER LONG TERM	1444	1217	864	696	709	867	893	891	879	824	913	1039	1208
	TOTAL	1461	1232	898	793	811	965	1013	1010	985	902	1009	1122	1294
7	VISITOR	10	2	3	24	17	25	68	48	24	5	13	56	74
	OFFICE STAFF	0	15	51	57	57	57	52	56	57	57	40	8	3
	SUB TOTAL	10	17	55	81	73	82	121	104	81	61	53	64	77
	OTHER LONG TERM	796	680	551	463	435	469	438	462	428	447	474	639	723
	TOTAL	806	697	606	544	508	551	559	566	509	508	527	702	800
TOTAL	VISITOR	51	39	97	256	251	231	323	304	259	180	214	200	221
	OFFICE STAFF	0	79	257	291	286	284	269	307	284	290	196	44	14
	SUB TOTAL	51	118	354	547	537	515	593	611	544	470	411	244	235
	OTHER LONG TERM	4229	3700	3026	2587	2519	2781	2705	2770	2654	2674	2921	3171	3714
	TOTAL	4270	3673	2911	2583	2520	2755	2741	2797	2657	2614	2964	3277	3847

[1] OFFICE STAFF DOES NOT INCLUDE MUNICIPAL OFFICE

**TABLE 5.4A: VISITOR / LONG TERM PARKING SUMMARY – 2021 MODEL
MODE SPLIT ADJUSTMENTS – MARGINAL**

PRECINCT	TYPE	PROFILE FOR TIME OF DAY (FRIDAY)												
		7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM
1, 3 & 4	VISITOR	9	-2	1	21	17	13	24	27	24	16	27	24	24
	OFFICE STAFF [1]	0	0	0	0	0	0	0	0	0	0	0	0	0
	SUB TOTAL	9	-2	1	21	17	13	24	27	24	16	27	24	24
	OTHER LONG TERM	758	664	437	325	302	342	294	326	297	331	493	518	587
	TOTAL	767	662	438	346	319	355	318	353	321	347	520	542	611
2	VISITOR	13	9	21	60	58	41	57	57	51	37	42	22	23
	OFFICE STAFF	0	57	183	209	204	202	193	224	203	207	140	33	11
	SUB TOTAL	13	66	204	268	263	243	250	281	254	244	182	55	34
	OTHER LONG TERM	1183	993	705	564	534	578	548	547	519	544	661	805	1020
	TOTAL	1196	1059	909	832	797	821	798	828	773	788	843	860	1054
5 & 6	VISITOR	15	18	46	104	107	104	122	122	111	86	96	75	77
	OFFICE STAFF	0	-9	-26	-31	-30	-29	-28	-29	-29	-30	-21	-5	-2
	SUB TOTAL	15	9	20	74	78	75	94	93	82	56	76	70	75
	OTHER LONG TERM	1443	1214	857	690	693	832	849	847	832	789	889	1025	1199
	TOTAL	1458	1223	877	764	771	907	943	940	914	845	965	1095	1274
7	VISITOR	9	0	0	17	9	12	47	31	14	-2	6	36	49
	OFFICE STAFF	0	9	35	39	38	39	35	39	39	38	26	6	2
	SUB TOTAL	9	9	34	56	47	51	82	70	54	37	33	42	51
	OTHER LONG TERM	794	722	695	628	596	627	587	619	587	608	582	659	728
	TOTAL	803	686	582	517	478	515	515	527	478	479	503	674	770
TOTAL	VISITOR	46	25	68	202	192	169	249	236	200	137	172	157	173
	OFFICE STAFF	0	58	192	217	213	213	201	234	213	216	146	34	11
	SUB TOTAL	46	83	260	419	404	382	450	471	414	353	317	191	184
	OTHER LONG TERM	4178	3593	2693	2207	2125	2379	2278	2339	2236	2272	2625	3007	3534
	TOTAL	4215	3666	2919	2570	2483	2710	2646	2740	2595	2588	2910	3156	3667

[1] OFFICE STAFF DOES NOT INCLUDE MUNICIPAL OFFICE

6 PARKING POLICY FORMULATION

Expressed at its most fundamental level the City contemplates substantial development in the next 20 years which will be accompanied by substantial increases in the demand for car parking.

At this early stage in the development the City has options in the manner in which that increased car parking demand can be accommodated.

Figure 6.1 sets out a Flow Chart of decisions which are required in order to decide the best way to manage the increased car parking demand. The Figure is somewhat generic and therefore relies on the specifics of any specific area in order to formulate the preferred approach in any specific instance.

As such the balance of this chapter is directed at working through the Figure by considering the specifics of Doncaster Hill and describing the decision process at each step.

6.1 OVERALL DEMAND

As is demonstrated in this report car parking demand is multi-dimensional with it being dependent on at least the following;

- (i) Nature of the use;
- (ii) Size of the use;
- (iii) Time of day;
- (iv) Day or week;
- (v) Cost of parking; and
- (vi) Long term or short term.

For the most part the analysis has been simplified by specifying the nature and size of the uses and assuming, at least for the time being, that car parking is free.

Time of day and day of week are important but to simplify the analysis and to aid decision making the text in this document refers to the estimated demand for a Friday⁴. All related data has nevertheless been included in the "Technical Report".

However a key aspect of the subsequent analysis is the differentiation between long term and short term parking since, in general, long term parking is often better accommodated onsite and short term parking is more suitable to be provided publicly whether on street or off street in parking stations.

Given the above, Tables 5.3 and 5.4 set out the marginal forecast car parking demands⁵.

⁴ The Friday generally recorded high demands than the Saturday therefore defining the design criterion.

⁵ Marginal demands since the existing demands are already accommodated in the precincts.

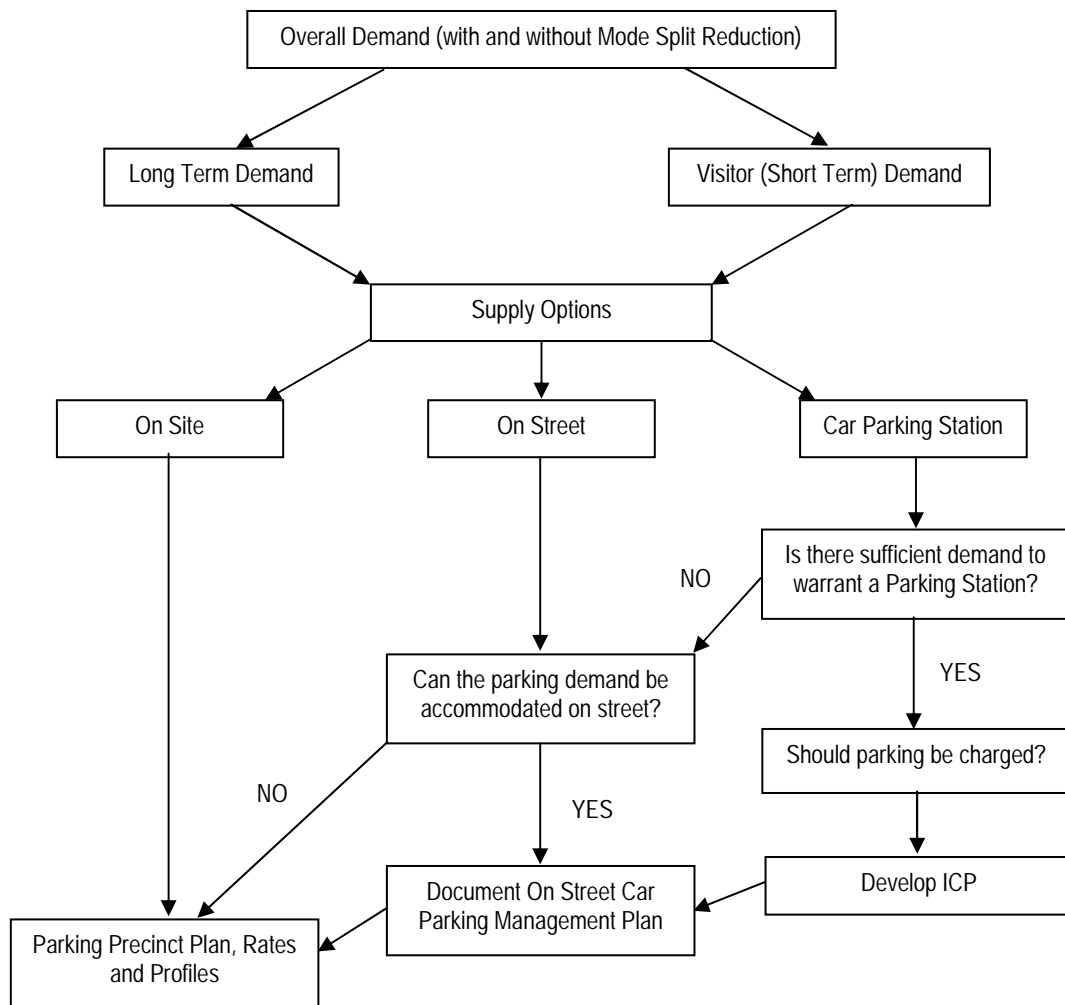


FIGURE 6.1: FLOW CHART FOR DECIDING THE PREFERRED SUPPLY OF CAR PARKING

From the Tables the following observations can be noted:

- (i) The short term visitor marginal demands are very low or generally lower after mode adjustment. This is particularly true of Precincts (1, 3 and 4) but also true of the other precincts⁶;
- (ii) Mode adjustment has a significant effect on small numbers when related to car parking provision. The difference in the total marginal car parking (based on peaks) between mode adjusted and non-mode adjusted estimates is some 74 spaces for all precincts;
- (iii) Even if the existing on street parking was added to the marginal short term (visitor) demand in 2021 as shown in Table 6.1, the total short term car parking demand totals are still reasonably low and would not necessitate significant restrictions on existing on street car parking; and

TABLE 6.1: YEAR 2021 – NON MODE ADJUSTED

PRECINCT	MARGINAL SHORT TERM DEMAND (NON-MODE ADJUSTED)	TOTAL EXISTING ON STREET CAR PARKING	TOTAL
1, 3 & 4	42	61	103
2	74	42	116
5, 6	142	126	268
7	68	40	108

- (iv) The overwhelming demand relates to long term parking.

6.2 SUPPLY OPTIONS

The policy framework for the provision of car parking includes the following considerations:

- (i) Consistent with the draft Melbourne 2030 Metropolitan Strategy, the Doncaster Hill Strategy adopts a target increase in public transport use from an average of 10% to an average of 20%. For the purpose of the analysis this increase of 10% is assumed to be in place by 2011 and continue thereafter;
- (ii) In general the demand for long term parking of residents should be accommodated on site;
- (iii) Other long term parking as for retail and commercial / office can, beyond some convenient minimum amount, be located in public car parking stations if these exist. Otherwise these need to be accommodated on site;
- (iv) In general, long term parking should not be planned to be accommodated on street;

⁶ In part this is because office (other than Municipal Office) does not generate many visitors or residential which does not generate many visitors during a weekday.

- (v) Visitor (short term) parking can either be accommodated on site, on street or in car parking stations. Visitor parking is however by its very nature short term and characteristically occurs at different times for different uses. Visitors and customers (retail visitors) typically occur during the day for retail and commercial / office whereas residential visitors tend to occur outside business hours. In these circumstances a clear opportunity exists to share the same spaces for visitors of different uses which implies that it is very inefficient to provide visitor spaces on site. As a consequence visitor parking is best provided either on street or in a public car parking facility which could be funded through an infrastructure contributions plan;
- (vi) While historically visitor parking has often been provided on street the Doncaster Hill Strategy has the opportunity to plan to accommodate visitor car parking in public facilities with only limited if any car parking on street.

The advantages and disadvantages of accommodating visitor parking within public parking facilities such as satellite car parking stations are discussed in Section 6.2.1.

Given the above it is convenient to assess the car parking supply options by reference to the opportunities for car parking stations first, the capacity and suitability of accommodating car parking on street secondly and then directing the remainder of the demand to be accommodated on site.

6.2.1 Car Parking Station Supply

Tables 5.3 and 5.4 show, in addition to visitors the parking demand for office staff (excluding municipal offices) and expresses them as the marginal demand over the existing (2001) measured demand. If it is assumed that existing demands are already catered for, then the profiles shown in Tables 5.3 and 5.4 for each precinct represents an estimate of the demand for parking in a car parking station if one was to be provided in the precinct.

Again the Tables show the projections for 2011 and 2021 and also the effect with and without mode adjustment.

From an examination of the Tables it is noted that:

- (i) The profiles indicate that, based on the marginal demand alone, car parking stations would not be warranted in Precincts (1, 3 & 4), Precinct (5, 6) and Precinct 7;
- (ii) More over when a comparison is made between existing on street car parking demand, projected car parking station demand and available on street car parking supply as shown in Table 6.2 it is clear that Precincts (1, 3 & 4), Precinct (5, 6) and Precinct 7 generate moderate demands which can or are being accommodated on street. On the other hand Precinct 2 generates significant demands which exceed the on street supply. If it is assumed that office staff should be accommodated in parking stations then justification exists for the construction of a parking station in Precinct 2; and

TABLE 6.2: COMPARISON OF EXISTING DEMAND, PROJECTED DEMAND AND ON STREET CAR PARKING SUPPLY

PRECINCT	EXISTING ON STREET DEMAND	PROJECTED CAR PARKING STATION DEMAND [1]	TOTAL	ON STREET CAR PARKING SUPPLY
1, 3 & 4	61	27	88	319
2	42	281	323	103
5, 6	126	94	220	265
7	40	82	122	128

[1] Based on peak estimated demand Year 2021 including visitors and office staff, mode adjusted.

- (iii) On the basis of the preceding analysis a car park station in Precinct 2 ought to be of the order of 200 - 300 spaces.

The above analysis has assumed that only the parking demands for residents, and staff (excluding office staff) have been catered for on-site with the remainder of parking demands including residential visitors, office staff and visitors, restaurant, shop and showroom customers, being catered for within car parking stations.

On this basis as discussed in the above assessment, no parking station would be required within Precincts (1, 3 & 4), Precinct (5, 6) and Precinct 7, however a significant future car parking demand exists in Precinct 2 which exceeds the on-street parking supply and could be catered for through the use of parking stations.

Should however, the calibrated parking rates for Doncaster Hill (shown in Table 4.2) or similar rates be adopted as the on-site parking requirement for all precincts, then it is expected that there would be no increase in demand of off-site car parking in Doncaster Hill.

In this case the requirement for the installation of a car parking station would no longer be required as all expected increases in demand for parking will be catered for through the provision of on-site parking for residents employees and visitors. In this instance the need for a car parking station would not be necessary.

Understandably given the above discussion the development of a car parking station represents a major element of infrastructure in Doncaster Hill. Table 6.3 sets out clearly the implications expressed as advantages and disadvantages of the use of satellite car parking stations within the Doncaster Hill area.

TABLE 6.3: ADVANTAGES & DISADVANTAGES OF SATELLITE PARKING STATIONS

ADVANTAGES	COMMENTS
1. Short term parking more efficiently provided publicly.	Car parking demands vary for different uses over the day and the week with the peak parking demands for each use not necessarily occurring at the same time. The use of satellite car parks is therefore more efficient in catering for the area wide visitor car parking demands as opposed to inefficiently catering for each demand individually on-site. However it should be noted that the demand for short term parking could in some precincts be provided on-street at no additional cost.
2. Long term commuter parking can be charged to make parking situations viable.	This is the key to the viability of car parking stations.
3. Overcomes problem where short-term and commuter demand in Precinct 2 exceeds on-street supply.	Probably only true when commuter parking is included. Visitors or short term parking could park on-street.
4. Satellite car parks will reduce on-street parking demand.	Enables a better urban design outcome with streets uncluttered by parked cars. Better traffic functioning of streets or enabling streets to be constructed with narrower pavements given that the road network parallel to Doncaster Road has not yet been created. The construction of narrow access roads without on-street parking provides a self enforcing use of off-street parking stations.
5. Makes development cheaper making development in Doncaster Hill more viable.	May be marginal and for marketing reasons developers may prefer to provide parking on site. Moreover development may be cheaper but there would still be a need to contribute to an ICP for parking not included in development.
6. Concentrate motorists destination to few rather than more places enabling purpose designed high quality access (ie through new traffic lights on Doncaster Road).	Concentrates movements rather than spreading throughout network. However all developments will require access for service vehicles and the delivery / despatch of goods.
7. Supports in policy of charging for parking which in turn provides: <ul style="list-style-type: none"> ▪ A revenue stream; ▪ An effective demand management tool. 	
DISADVANTAGES	COMMENTS
1. Car parking less proximate. Involves walking to complete trip.	While this may not be the experience in Doncaster short walks from parking stations to a building address maynot be seen as acceptable
2. The lack of proximity may be seen as a safety issue.	This can be seen both ways. Pedestrians walking on streets can also be seen as adding security / surveillance.
3. Requires statutory and administration system to enforce outcome, collect funds and implement proposals.	Rather than mandating that parking needs should be justified on site(s) by developers the provision of satellite car parking stations necessitates substantial work to be conducted by Council.
4. Increase risk of parking spill over into adjacent areas.	Necessitates strict parking restrictions (and parking bans) close to parking stations. These can be seen as draconian and where convenient on-street parking exists it can be seen as unnecessary. Some on-street parking may be desirable ie. parking on Doncaster Road associated with the restaurants.

Following the discussions above it is considered that the installation of a parking station within the Doncaster Hill area is not warranted given the relatively low demand for such a station in all

but one (1) of the Doncaster Hill Precincts and the availability of other parking supply options which are discussed in detail below.

6.2.2 On Street Supply

It follows from the discussion in 6.2.1 that in Doncaster Hill there is no overwhelming warrants for the construction of parking stations and accordingly visitor parking will need to either be accommodated on street or factored into the on site provision.

As a consequence it is recommended to continue to permit on street parking in the Doncaster Hill Precincts.

6.2.3 On Site Car Parking Supply

Given the above, it is concluded that the on site parking supply for developments be required to cater for the total parking demands of the site unless a permit is granted for the varying the car parking demands by the responsible authority.

This parking should be provisioned as development occurs at the rate for those uses as calibrated in the car parking model with the exception of the residential parking rate.

The model has adopted a parking rate of 1.3 spaces per dwelling which was consistent with the surveyed car parking rate at Sovereign Point and because the future split of bedrooms by 1, 2 and 3 bedrooms was unknown. In any event a rate of 1.3 spaces per dwelling is likely to represent a reasonable estimate of the average rate which would correspond to the more widely accepted ResCode rates for residential long term parking which are:

- 1 space per 1 and 2 bedroom dwelling; and
- 2 spaces per 3 or more bedroom dwelling.

However a rate for residential visitors of 0.1 spaces per dwelling is recommended given that it is more consistent with available (limited) empirical data, that has been used in the calibration of the model and reflects the fact that some visitor car parking can be accommodated on street if that was necessary.

The provision of on-site car parking should be provided in accordance with the rates set out in Table 6.4.

TABLE 6.4: PROVISION OF ON-SITE CAR PARKING

USE	CAR SPACE MEASURE	RATE
Office	Car spaces to each 100 sq m of gross leasable floor area	2.5
Dwelling [1]	Car spaces to each 1 bedroom dwelling	1.1
	Car spaces to each 2 bedroom dwelling	1.1
	Car spaces to each 3 or more bedroom dwelling	2.1
Restaurant	Car spaces to each seat available to the public	0.36
Shop, other than Supermarket, Department Store and Restricted Retail Premises	Car spaces to each 100 sq m of gross leasable floor area	4
Restricted Retail Premises [2]	Car spaces to each 100 sq m of gross leasable floor area	1.5
[1] Previously defined as Residential and including the 0.1 spaces per dwelling for visitor parking.		
[2] Previously defined as Showroom		

6.3 ON STREET CAR PARKING MANAGEMENT PLAN

Given that an abundance of on-street parking exists within Doncaster Hill and future car parking within Doncaster Hill is recommended to be provided on-site at the rates set out in Table 6.4, then no need exists to introduce any car parking restrictions within Doncaster Hill above and beyond that which already exists.