TRAFFIC
AUTHORITY OF
NEW SOUTH WALES

LAND USE TRAFFIC GENERATION DATA AND ANALYSIS 9 —CAR SALES AND SPARES

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— CAR SALES AND SPARES

Prepared by ÷
TRAFFIC AUTHORITY OF
NEW SOUTH WALES
52 ROTHSCHILD AVENUE,
ROSEBERY N.S.W 2018.
TELEPHONE : (02) 663 0725
In association with ÷
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Foreword

This report documents the data and analysis at one of a series of studies of traffic generation of particular land use types, conducted by the Traffic Authority of New South Wales in association with the New South Wales Planning and Environment Commission.

The information contained herein is expected to be of value to developers, councils and interested authorities in assessing the traffic impacts of proposed developments. This report does not represent any policy or standards of either the Traffic Authority or the Planning and Environment Commission. The latter are contained in the Traffic Authority's "Policy and Standards for Traffic Generating Development."

C O N T E N T S

Summary

The aim of this report is to quantify the traffic generation characteristics of car sales yards. Linear regression models were developed to enable predictions to be made for proposed new developments.

Use of the models should take into consideration their accuracy and the ranges for which they are applicable. In situations where a proposed development has very similar characteristics and location to one of the survey sites, a direct comparison of the developments might prove more accurate than an application of the analysis models.

A secondary use of the models is to compare the traffic generation of an existing car sales yard with some proposed new use.

Table (i) lists the models developed. The accuracy of each equation is represented by the "fit" or R^2. (An R^2 0.90 means that 90% of the variation in the dependent variable - specific impact being predicted - is explained by the independent variable.).

1. INTRODUCTION

The aim of this report is to quantify the traffic generation characteristics of car sales yard developments. This report presents the results of the surveys conducted together with an analysis of the base data. The surveys gathered information on the following important factors:

* the peak vehicular flows generated by the car sales yard and the time of day at which these peaks occur;
* the parking provision necessary if the parking demand is to be met without constraint.

This report is one of a series of reports on individual land uses and is supplementary to the Traffic Authority publication titled "POLICY AND STANDARDS FOR TRAFFIC GENERATING DEVELOPMENT", which gives generalised advice on development policies, parking requirements and site access geometric standards. This report on the other hand provides a better numerical basis for the estimation of traffic generation than the above. The analysis has been carried out using multiple linear regression techniques. These results must be used with caution, taking due consideration of the stated accuracy of each of the models and the ranges over which each are applicable. In situations where a proposed development has very similar characteristics and location to one of the survey sites, a direct comparison of the developments might prove more accurate than an application of the analysis models.

2. SURVEY METHODOLOGY

2.1 Selection of Survey Sites

Ten examples of car sales yards were selected for study. A long list of possible sites was chosen first, from which a short list was produced by considering the following desirable characteristics:

1. Some on-site parking provision.
2. Ease in isolating the site from other developments, for survey purposes.
3. Geographic spread.
4. A range of new car and used car yards (in most cases each site had both new and used cars for sale).
5. Half of the sites relatively isolated from other car sales yards with the other half occurring in areas of high concentration of car sales activities.

2.2 Survey Procedure

The data has been collected in two ways. Firstly, from a site inspection and an interview with the site manager from which the number of employees, site descriptions, site layout plans and site data about areas and dimensions, facilities, entrances and exits and parking availability were obtained. Areas and dimensions were measured up at the site inspection. As well, all people leaving the site on a Friday afternoon and either on a Saturday morning or afternoon were interviewed to determine travel mode and trip purpose. Travel mode is divided into 'car driver', 'car passenger' and 'other' which would include walking, public transport, etc. Trip purpose is divided into 'car buyer', 'servicing', 'spares', and 'other' which would include staff movements, deliveries, etc.

2.3 Data Collected

Site Data

The 'Area of the Site', the 'Area of Buildings' and the 'Frontage to the Main Road' are derived from measurements made during the site inspection. The 'Area of the Site' is divided into two sections, i.e. the area used for the display of vehicles which are for sale and other areas. The area used for display includes undercover showrooms.

'Number of Cars on Display', is the number of vehicles which are on display for the purpose of sale. This does not include vehicles which are in storage or which are being prepared for sale.

'Service and Fitting Bays', are parking spaces which are reserved for vehicles which will be worked on.

'On-Site Parking Supply', number of parking spaces set aside for staff and customers.

'Off-Site Parking Availability', is a subjective judgement of off-site parking availability near the particular site at off-peak times. The ranking is based on the percentage of potential parking spaces on the main road, in side streets and other off-site areas, which are within 100 metres walking distance of the site and which are legal and not restricted to less than 1 hour in non-peak periods. The ranking is as follows:

- High — Above 50% of potential spaces are legal and not restricted to less than 1 hour parking.
- Medium — 25-50%
- Low — 0-25%

'Number of Employees', number of people working at the site on a typical working day; the employees are categorised into sales, mechanics, administration/clerical and other.

The AADT for each site is the 1977 AADT from the Department of Main Roads' publication "Traffic Flow Maps 1977", for the main road to which the site has a frontage or is nearest to.

Survey Data

The 'Peak Hour' refers to the time of peak hourly generation of that type during the survey hours.

The 'Peak Number' is the generation during the 'peak hour'. It is a one-way figure.

The 'Hourly Average' generation rates are total trips of that type divided by the number of hours of the survey.

'Vehicle Occupancy' is calculated by dividing the sum of total car drivers and car passengers by the number of car drivers.

'Persons Travelling by Motor Vehicle' is calculated by dividing the total number of trips by the sum of the total car drivers and passengers.

'Parking Accumulation' figures includes customers' cars, delivery vehicles, vehicles waiting for and being serviced, vehicles awaiting detailing and reconditioning. They exclude vehicles on display for sale and vehicles in storage. The figures are for vehicles both on-site and off-site but associated with the site. This was generally easily determined during the survey. Interviews with staff at the start of the survey period established those vehicles already parked off-site and associated with the site.

A summary table of the data is presented.

3. ANALYSIS

3.1 Background

The analysis of the data required the formulation of relationships or models which could be used to both explain observed behaviour and to predict likely reactions to alternative conditions.

In selecting ten survey points, it was considered that ten was the minimum survey number that would allow statistically significant relationships to be developed. A wide geographic spread was also desirable. The sites are seen as being average. Depending on the demand/supply situation in a given area, some sites could potentially have considerably lower generation rates. The converse is also true. Nevertheless, there is confidence that the results from the analysis are applicable to practical situations and are as good as any results that could have been expected.

In consideration of the relatively small number of sample points, the use of complex statistical methods is not considered appropriate, particularly in view of the intended general use of the results. The emphasis was thus on simpler manipulations based on multiple linear regressions.

The multiple linear regression equation is of the form -

$$Y = a(0) + a(1)x(1) + a(2)x(2) + \ldots + a(k)x(k)$$

where Y is the dependent variable - the particular parameter you wish to predict and x(1) to x(k) are the independent variables used for the prediction. As their name implies, independent variables should ideally have no relationships with each other. Examples of independent variables are site area and number of employees. It is an important point to remember that the equation is only valid within the ranges of values of the independent variables which were used to derive it. Thus although a(0) may be non-zero in a given equation it does not imply that the equation is valid when all the independent variables are zero.

The degree of accuracy of the regression equations is represented by the correlation coefficient, R^2, where

$$R^2 = \frac{A}{B}$$

where

A = variation in Y explained by the combined linear influence of the independent variables.

B = total variation in Y.

Thus if the R^2 for an equation is 0.85, then it means that 85% of the variation in the dependent variable can be explained by the independent variables. An R^2 of 1.0 is a perfect fit. An "acceptable" R^2 should generally be greater than 0.80.

In addition to an acceptable R^2, the independent variables must not be highly intercorrelated. If this condition exists then there is no acceptable way of performing a regression analysis with the given set of independent variables.

The equations that are presented satisfy the above conditions, for use in the ranges of independent variables stated.

3.2 Data Analysis

Table 3.1 represents a summary of the data at the ten sites. The analysis relates to the data obtained on Fridays, (comparison with the Saturdays' data is made.)

Independent Variables

A large number of independent variables were initially tested for correlation with the principal dependent variables. The independent variables eliminated as having minimal correlations or lower correlations than other similar variables were: area of building (A_B), area of selling (A_C), AADT (A_T), on-site parking supply (P_S), and number of used cars on display (UC). The lack of relationships between people/vehicles attracted to the site and AADT, is of interest. The following variables were then used in the analysis:

- Area of Site, A_S
- Frontage to Main Road, F
- Employees, E
- Vehicles on Display for Sale (new and used), C
- New Vehicles on Display for Sale, NC
- Number of Service Bays, B
- Number of Car Yards within 500m, Y

The relationships between each of these supposed independent variables is shown in the correlation matrix. A high correlation -R- between a given pair of variables indicates a close relationship, i. e. multicollinearity and thus they are not independent of each other.

CORRELATION, R.

	A_S	F	E	C	B	Y	NC
A_S	1.00						
F	.73	1.00					
E	.91	.64	1.00				
C	.57	.67	.39	1.00			
B	.68	.28	.86	.07	1.00		
Y	.58	-.03	.63	-.07	.63	1.00	
NC	.59	.49	.51	.90	.27	.20	1.00

Table 3.1

ANALYSIS DATA

ITEM \ LOCATION	SYMBOL	ARNCLIFFE	LAKEMBA	MOSMAN	CHULLORA	HORNSBY	PARRAMATTA	ASHFIELD	NARRABEEN	LIVERPOOL	HOMEBUSH (MOTOR CYCLE)
Area of Site (M^2)	A_S	1800	4100	1960	4620	1862	11370	10060	2930	7400	2550
Frontage to Main Road (M)	F	62	67	49	95	38	92	244	70	124	58
Employees	E	21	38	33	7	4	97	82	34	71	10
Total Vehicles on Display	C	70	80	21	97	40	150	260	42	95	230
New Vehicles on Display	NC	30	30	6	0	30	100	110	12	45	115
Number of Service Bays	B	8	15	25	0	0	45	22	20	18	N/A
Number of Car Yards Within 500m	Y	3	4	1	1	3	9	1	1	5	N/A
Peak Person Trips	PPT	29	23	12	14	6	70	82	41	52	17
Time of Peak Person Trips		2.00 3.00pm	4.30-5.30pm	3.30-4.30pm	2.00-3.00pm	3.00-4.00pm	4.00-5.00pm	4.00-5.00pm	4.30-5.30pm	2.00-3.00pm	10.00-11.00am 11.00am 12.00
Average Person Trips	APT	18	15	9	6	3	57	62	24	36	15
Peak Vehicle Trips	PVT	18	15	8	9	4	55	60	30	37	11
Time of Peak Vehicle Trips		2.00-3.00pm	4.30-5.30pm	2.00-3.00pm 2.30-3.30pm	2.00 3.00pm	3.00-4.00pm	4.00-5.00pm	2.30-3.30pm	4.30-5.30pm	2.00-3.00pm	11.00-12.00
Average Vehicle Trips	AVT	12	11	6	4	2	38	46	18	25	8
Peak Parking Accumulation	PA	16	44	20	8	10	107	53	46	67	14
Time of Peak Parking Accumulation		2.30pm	1.30pm	1.30pm	4.30pm 5.00pm 5.30pm	1.30pm	1.30pm	2.30pm	1.30pm	2.00pm	11.00am
Average Trips-Vehicle Buyer	ATB	4	4	2	3	2	18	13	8	10	3

Thus it can be seen that several pairs of variables cannot be used in the same prediction equation. The strong relationship between area of site (A_S) and employees (E) is of interest. It might also have been expected that the correlation between number of vehicles on display (C) and (i) area of site (A_S), (ii) employees (E) would have been greater. If the number of new vehicles on display is representative of new vehicle sales, then the correlation with the number of service bays is lower than would have been expected.

Dependent Variables

(i) Peak Person Trips, PPT - the maximum number of person trips per hour during the survey period.

Seven equations were tested, each with one of the seven independent variables. The accuracy of the equations, as represented by the correlation coefficient, R^2, can be summarised:

PPT	INDEPENDENT VARIABLES						
	A_S	F	E	C	B	Y	NC
R^2	.78	.64	.84	.31	.48	.18	.35

Employees, E is the best single predictor of peak person trips. Combination with vehicles on display, C - the only other independent variable it can desirably be linked with - produces no increase in accuracy of prediction. The model developed is

$$PPT = 6 + 0.73E \qquad R^2 = 0.84$$

The range of E for which this is applicable is 4 - 97.

(Area of site, A_S gives a prediction model which can best be described as only marginal:

$$PPT = 3 + 0.0065A_S \qquad R^2 = 0.78)$$

(ii) Time of Peak Person Trips - the hour during which person trips were at a maximum, in the survey period.

No particular patterns were evident. Of the car sites, the peak hour varied from 2.00 - 3.00 p.m. to 4.30 - 5.30 p.m. The motorcycle site had its peak period in the morning - 10.00 a.m. - 12.00 noon.

(iii) Average Person Trips, APT - the average number of person trips per hour during the survey period. (i.e. total person trips ÷ hours of survey.).

The seven equations tested revealed the following prediction accuracies, as represented by the correlation coefficient, R^2:

APT	INDEPENDENT VARIABLES						
	A_S	F	E	C	B	Y	NC
R^2	.83	.60	.87	.38	.52	.21	.46

Both area of site, A_S and employees, E, are acceptable predictors. In addition, the combination of E and total vehicles on display, C, produces an improvement of accuracy of the model. The equations are:

(a) $APT = -4 + 0.51E + 0.077C$ $\quad R^2 = 0.95$

Range of E applicable: 4 - 97
Range of C applicable: 21 - 260

(b) $APT = 1 + 0.59E$ $\quad R^2 = 0.87$

Range of E applicable: 4 - 97

(c) $APT = -1 + 0.0053A_S$ $\quad R^2 = 0.83$

Range of A_S applicable: 1800 -11370m^2

This variable is a measure of the trip attraction of the development. Its prediction and the prediction of peak person trips are of more interest to the developer than to the public authority. Predictions should not however be based on artificial values of E; as shown by the strong relationship between A_S and E, there is an optimum number of employees for a given site. This is no doubt arrived at over a period of time by the development's management. The ten sites surveyed have no doubt achieved a certain equilibrium in this regard. For a new development, if there is uncertainty about the required number of employees, area of site, A_S, would be a more appropriate predictor, even though it has a lower R^2.

(iv) Peak Vehicle Trips, PVT - the maximum number of vehicle trips per hour during the survey period.

The seven equations tested revealed the following prediction accuracies, as represented by the correlation coefficient, R^2:

PVT	INDEPENDENT VARIABLES						
	A_S	F	E	C	B	Y	NC
R^2	.81	.60	.86	.30	.52	.21	.36

Both area of site, A_S and employees, E, are acceptable predictors. The equations are:

(a) $PVT = 2 + 0.57E$ $\quad R^2 = 0.86$

Range of E applicable: 4 - 97

(b) $PVT = 0.0051A_S$ $\quad R^2 = 0.81$

Range of A_S applicable: 1800 - 11,370m^2.

Prediction of this variable enables an appreciation to be made of the impact of the development on the surrounding street system.

(v) Time of Peak Vehicles Trips - this followed no pattern, varying from 2.00 - 3.00 p.m. to 4.30 - 5.30 p.m., with the exception of the motor cycle site which peaked in the period 11.00 a.m. - 12.00 noon.

(vi) Average Vehicle Trips, AVT - the average number of vehicle trips per hour during the survey period.

The seven equations tested revealed the following prediction accuracies, as represented by the correlation coefficient, R^2:

AVT	INDEPENDENT VARIABLES						
	A_S	F	E	C	B	Y	NC
R^2	.81	.66	.86	.36	.50	.17	.41

Area of site, A_S, and employees, E, both were acceptable predictors, the resulting equations being:

(a) $AVT = 0.42E$ $\quad R^2 = 0.86$

Range of E applicable: 4 - 97

(b) $AVT = -1 + 0.0038A_S$ $\quad R^2 = 0.81$

Range of A_S applicable: 1800 - 11370m^2.

Prediction of this variable assists the appreciation of the impact of the development on the surrounding street system. Average arrival headways can be calculated.

In the prediction of AVT and PVT the comments made in (iii) (Average Person Trips) about use of E and A_S as prediction variables are just as applicable.

(vii) Peak Parking Accumulation, PA - the maximum number of vehicles parked both on-site and off-site but associated with the site, during the survey period.

The seven equations tested revealed the following prediction accuracies, as represented by the correlation coefficient, R^2:

PA	INDEPENDENT VARIABLES						
	A_S	F	E	C	B	Y	NC
R^2	.71	.15	.86	.06	.76	.61	.20

Employees, E, was the only suitable single predictor, in the equation:

(a) $PA = 3 + 0.89E$ $\quad R^2 = 0.86$

Range of E applicable: 4 - 97

(The equation with A_S was unfortunately not very accurate:

$PA = 2 + 0.0075A_S$: $\quad R^2 = 0.71$)

However combination of the local competition factor, Y, with both E and A_S did produce acceptable models. The positive correlation of PA with Y was interesting, indicating an extra attraction factor for high competitition areas, a factor which was not reflected in the person and vehicle generation rates. The resulting models are:

(b) $PA = 0.69E + 3.9Y$ $\quad R^2 = 0.93$

Range of E applicable: 4 - 97
Range of Y applicable: 0 - 9

(c) $PA = -1 + 0.0052A_S + 5.2Y$ $\quad R^2 = 0.84$

Range of A_S applicable: 1800 - 11370m^2
Range of Y applicable: 0 - 9

Prediction of this variable enables a check to be made of the on-site parking to be provided.

(viii) Time of Peak Parking Accumulation - The peak parking accumulation generally occurred in the early afternoon, 1.30 p.m. being the time at five sites. The Chullora site was an exception, with peaking in the late afternoon. At the motor cycle site, the peak occurred at 11.00 a.m.

(ix) Average Trips - Vehicle Buyer, ATB - the average number of person trips per hour made for the purpose of inspecting/buying vehicles for sale.

The seven equations tested revealed the following prediction accuracies, as represented by the correlation coefficient, R^2:

ATB	INDEPENDENT VARIABLES						
	A_S	F	E	C	B	Y	NC
R^2	.85	.36	.87	.21	.64	.41	.33

Employees, E and area of site, A_S, were both suitable predictors, in the equations.

(a) ATB = 0.16E $R^2 = 0.87$

Range of E applicable: 4 - 97

(b) ATB = - 1 + 0.0014A_S $R^2 = 0.85$

Range of A_S applicable: 1800 - 11370m^2

Comparison of Friday/Saturday Generation Rates

Comparison of the peak person trips and average person trips on the Friday and the Saturday surveys showed that the person trips on the Saturday were significantly greater than the person trips on the Friday (two tailed t - test, a = 5%).

Comparison of the peak vehicle trips and average vehicle trips however, showed no significant difference between the Friday and Saturday figures, nor did the peak parking accumulation figures significantly differ.

In terms of the development of prediction models, the Saturday figures were a lot more inconsistent than the Friday figures. Equations were tested for the dependent variables PPT, APT, PVT, AVT and PA, with the independent variables A_S and E. Only in one case (PPT) was an equation able to be developed with the correlation coefficient - R^2 - greater than 0.80.

Effect of Proximimity of Other Car Yards

As shown by the individual results for each dependent/independent variable combination, the car yard proximity variable - Y - had some correlation with generation rates, though not strong enough in any case to stand by itself, i.e. it has an effect though it is never the major effect.

Combinations of Y with A_S and E, did not produce any more acceptable equations for the person and vehicle generation rates, PPT, APT, PVT and AVT, (the equations showed higher R^2 values but the coefficients for Y were not significantly different from zero).

The effect of Y was more pronounced with the peak parking accumulation, PA. The correlation in this case was positive, indicating an extra alteration factor for high competition areas. It also combined with both A_S and E, in acceptable equations (higher R^2 values and coefficients for Y significantly different to zero).

3.3 Car Sales Yard Model

Table 3.2 summarises these equations which explain the traffic generation of car sales yards together with the ranges of values for which the equations are valid. The principal equations are presented graphically on Graphs 3.1 - 3.5. Note that the graphs are only valid for the range of independent variable observed. They cannot be extrapolated with confidence. Also shown is the 90% prediction interval, which illustrates the range of variation of the predicted dependent variable at a given value of independent variable. This means that for a given independent variable - for example, site area - the prediction of the dependent variable - for example, peak vehicles trips - will be inside the prediction interval limits in 90% of cases. (This prediction interval should not be confused with the confidence interval. The latter is based on mean values of the data. The confidence interval is always smaller than the prediction interval.). For prediction purposes, the value as taken from the equation (or off the line of the equation on the graphs), should be used, in the absence of any information indicating that a high or a low estimate would be more appropriate.

Table 3.2 *CAR SALES YARD MODEL*

SPECIFIC IMPACT	INDEPENDENT VARIABLE USED FOR PREDICTION	EQUATION	FIT R^2	RANGE OF INDEPENCENT VARIABLES
Peak Person Trips,PPT	Employees, E	PPT=6+0.73E	.84	4-97
Average Person Trips, APT	Employees, E Cars on Display,C	APT=-4+0.51E +0.077C	.95	E: 4-97 C: 21-260
Average Person Trips, APT	Employees, E	APT=1+0.59E	.87	4-97
Average Person Trips, APT	Area of Site,A_S	APT=-1+0.0053A_S	.83	1800-11370m^2
Peak Vehicle Trips,PVT*	Employees, E	PVT=2+0.57E	.86	4-97
Peak Vehicle Trips,PVT*	Area of Site,A_S	PVT=0.0051A_S	.81	1800-11370m^2
Average Vehicle Trips AVT	Employees, E Cars on Display,C	AVT=-3+0.37E +0.052C	.92	E: 4-97 C: 21-260
Average Vehicle Trips, AVT*	Employees, E	AVT=0.42E	.86	4-97
Average Vehicle Trips, AVT*	Area of Site, A_S	AVT=-1+0.0038A_S	.81	1800-11370m^2
Peak Parking Accumulation, PA	Employees, E Car Yard Proximity, Y	PA=0.69E+3.9Y	.93	E: 4-97 Y: 0-9
Peak Parking Accumulation, PA	Area of Site, A_S Car Yard Proximity, Y	PA=-1+0.0052A_S +5.2Y	.84	A_S:1800-11370m^2 Y: 0-9
Peak Parking Accumulation, PA*	Employees, E	PA=3+0.89E	.86	4-97
Average Trips-Buyer,ATB	Employees, E	ATB=0.16E	.87	4-97
Average Trips-Buyer,ATB	Area of Site,A_S	ATB=-1+0.0014A_S	.85	1800-11370m^2

* Graphed

3.4 Examples of Use of the Model

Case 1

A Development Appplication is submitted for a car sales yard on a minor road, giving the site area as 4,000m^2 and on-site parking provision for 20 vehicles. No other information is available. It is wished to evaluate the effect of the development on the surrounding road system and to ensure that all parking for the development can be catered for on-site.

Step 1: Calculate Peak Vehicle Trips, PVT:

For A_S = 4,000, Graph 3.2 estimates
PVT = 20 (+/- 18 @ 90% prediction interval)

The extra traffic imposed on the surrounding road system is thus a maximum of 20 vehicles per hour.

Step 2: Calculate Peak Parking Accumulation, PA:

Since the number of employees is not known, the prediction equation relating PA to area of site, A_S and car yard proximity, Y, will need to be used. While Y is not known, it can be easily measured on-site.

Site inspection reveals 4 car yards within 500m of the proposed development.

Thus for A_S = 4,000, Y = 4, from the equation -

$$PA = -1 + .0052A_S + 5.2Y \qquad \therefore PA = 41$$

(While it can be mathematically calculated, the prediction interval cannot be graphically presented since there are two independent variables.).

It would appear that the parking provision for 20 vehicles is inadequate and thus if the development went ahead then parking would overflow onto the adjacent road(s) to a substantial degree.

Case 2

A Development Application is submitted for a car sales yard at a particular location. The application shows a site area of 8,000m^2 and no further information.

The location has limited sight distance and the accident record at a nearby intersection is bad. The road authorities are concerned that the new development will cause a significant increase in accidents.

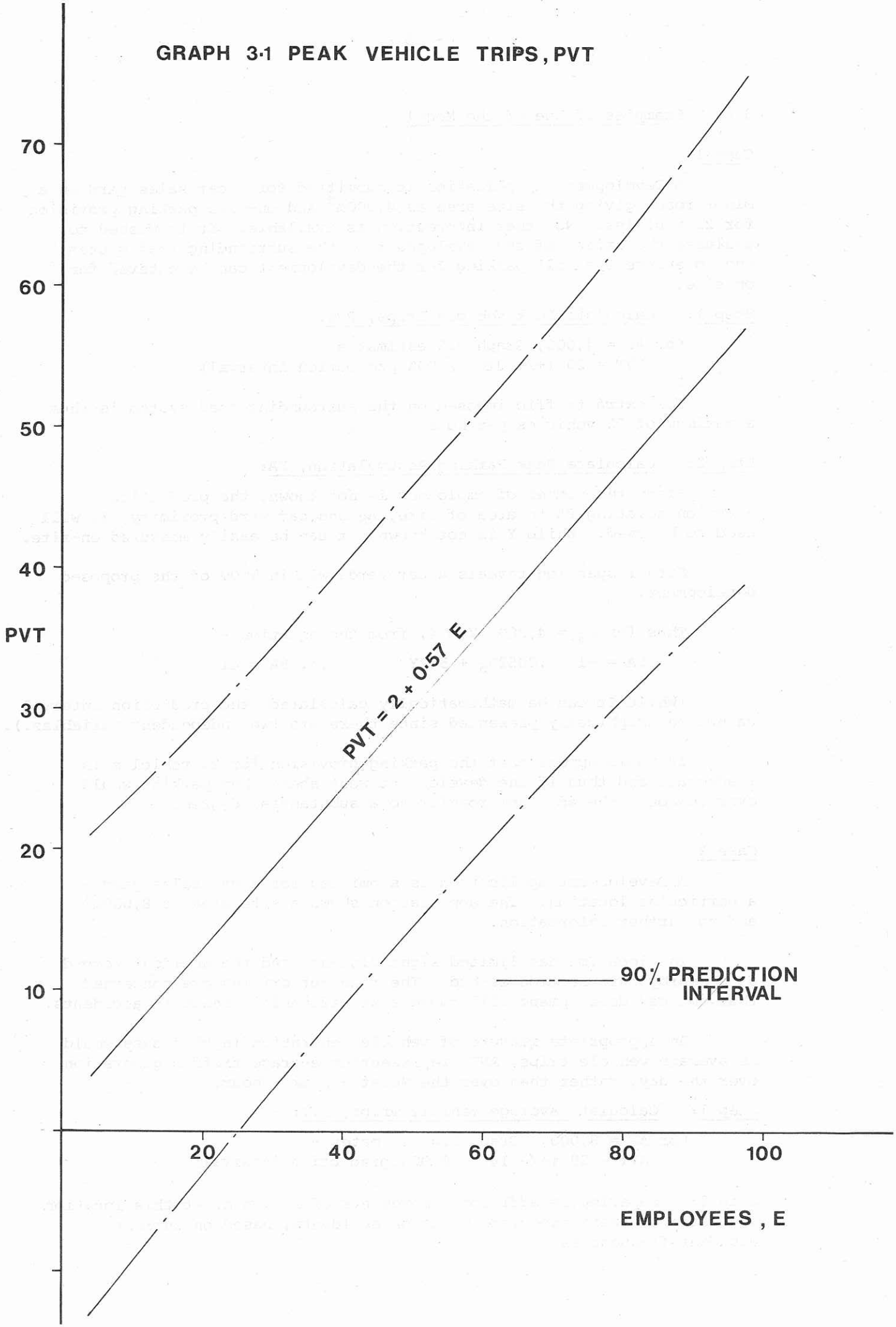
An appropriate measure of vehicle generation in this case would be average vehicle trips, AVT, representing average traffic generation over the day, rather than over the worst - peak - hour.

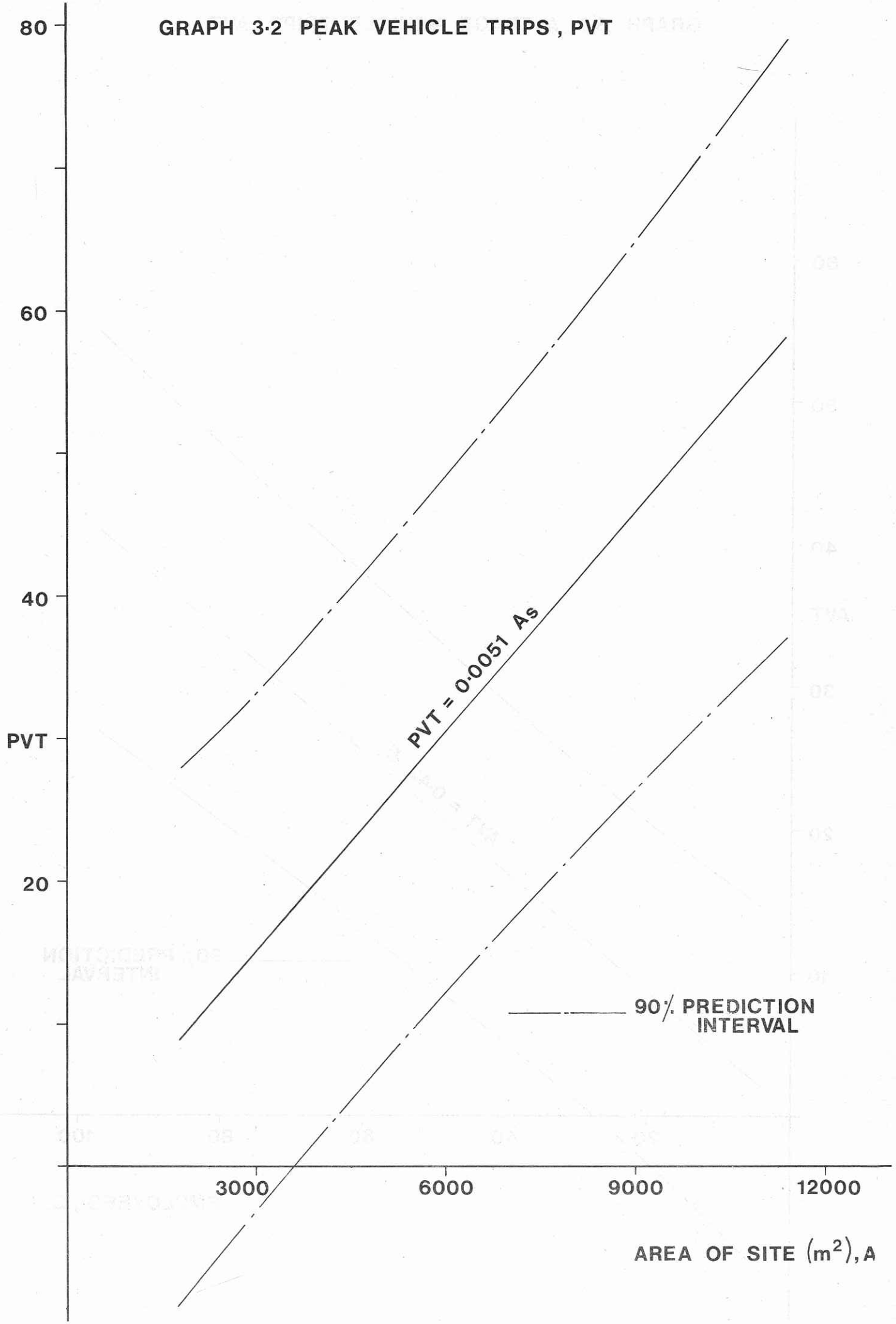
Step 1: Calculate Average Vehicle Trips, AVT:

For A_S = 8,000, Graph 3.4 estimates -
AVT = 29 (+/- 14 @ 90% prediction interval)

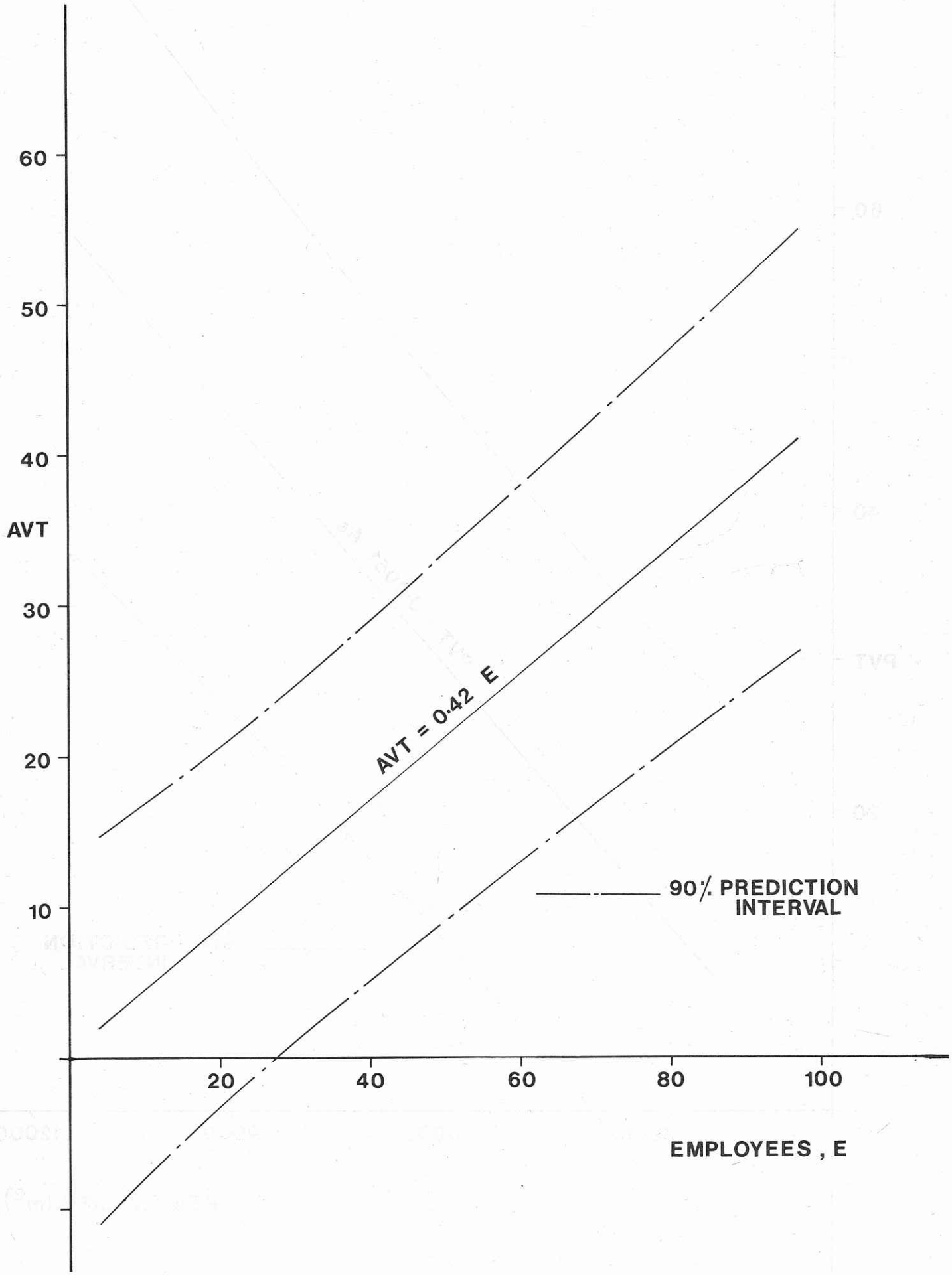
Step 2: Superimpose additional movements of 29 v.p.h. at this location and estimate their expected impact on accidents, based on current accident frequencies.

GRAPH 3·1 PEAK VEHICLE TRIPS, PVT

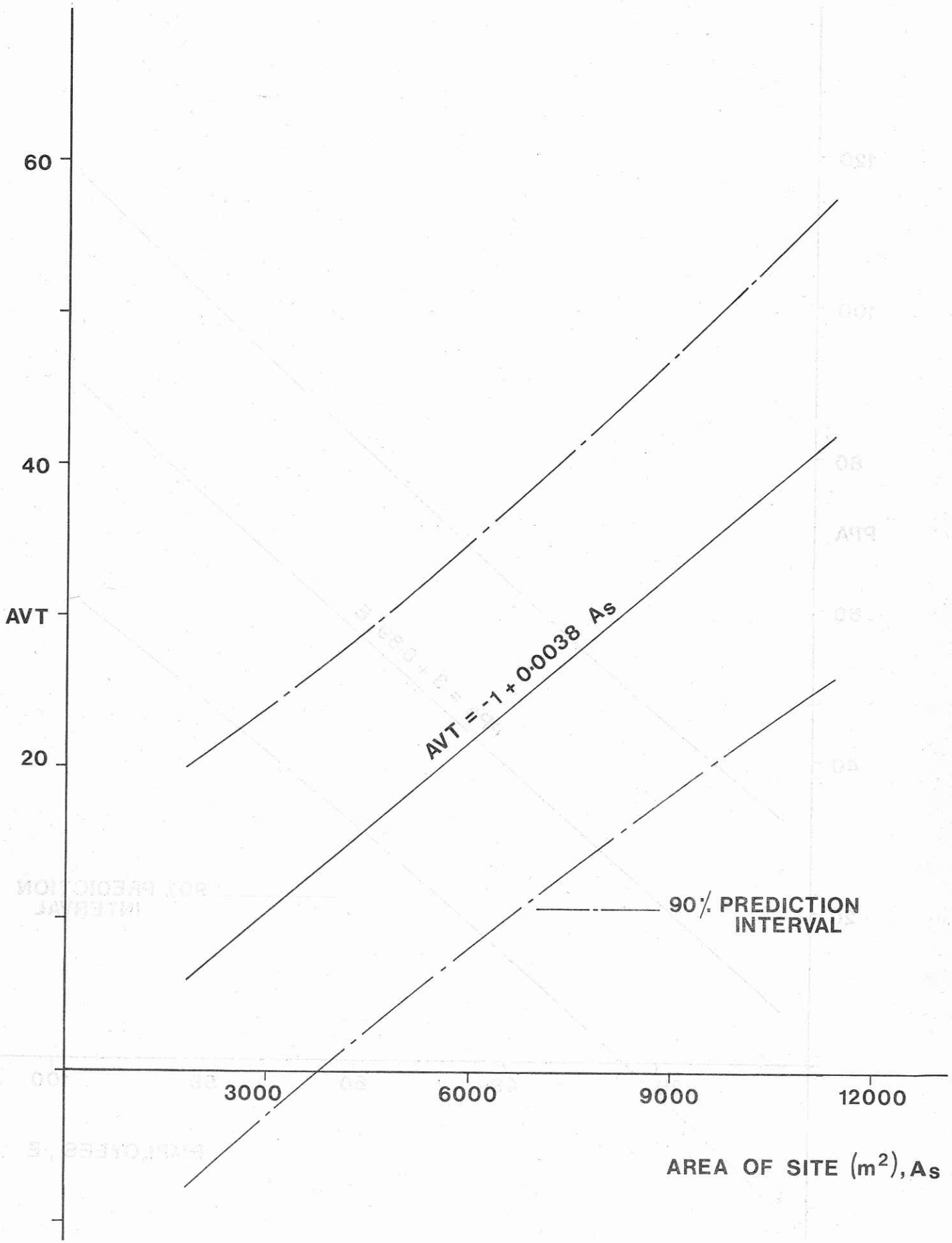



GRAPH 3·2 PEAK VEHICLE TRIPS , PVT
80
60
40
20
PVT
PVT = 0·0051 As
90% PREDICTION INTERVAL
3000
6000
9000
12000
AREA OF SITE (m²), A

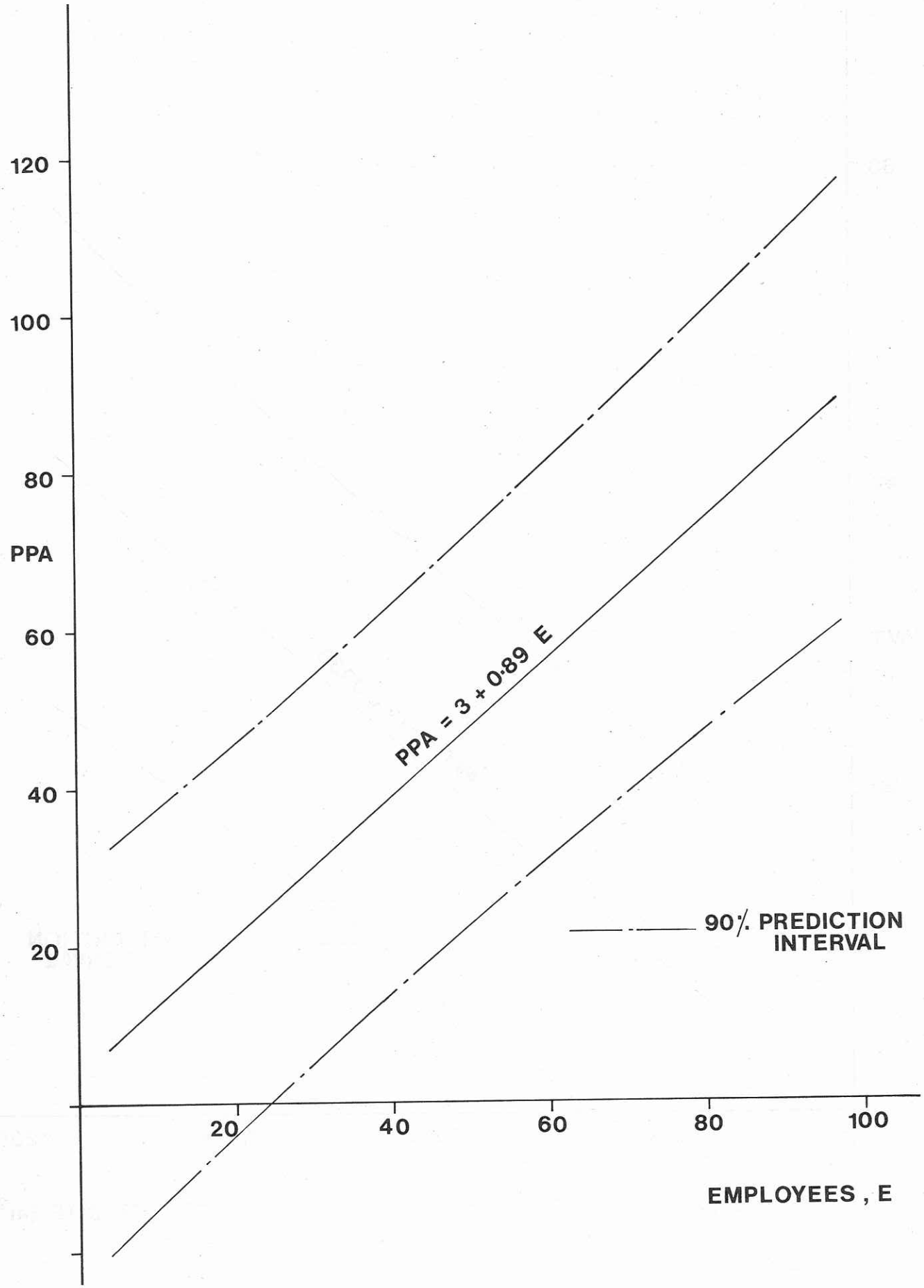
GRAPH 3·3 AVERAGE VEHICLE TRIPS , AVT



GRAPH 3·4 AVERAGE VEHICLE TRIPS, AVT



GRAPH 3·5 PEAK PARKING ACCUMULATION , PPA



4. DATA RESULTS

4.1 Car Sales - Arncliffe

General Site Description

The site is located on the Princes Highway at Arncliffe, just south of the Cooks River Bridge. The adjacent land uses are car accessory and car repair. Along the Highway the land use is a mixture of industrial and commercial with some residential dwellings. The service and spare part section is at the rear of the site with an entrance to a side street.

Dates and Times of Survey:

Friday,	11.5.79	1.00 - 5.00 p.m.
Saturday,	12.5.79	1.00 - 5.00 p.m.

Site Data:

Nature of Business	:	New & used car sales. Service & spare parts.
Area of Site	:	Selling space 1,300m^2 Other 500m^2 Total 1,800m^2
Area of Buildings	:	925m^2
Frontage to Main Road	:	62m
Number of Vehicle Entrances	:	2 Yard 1 Service/Spare
Number of Cars on Display	:	New 30 Used 40
Number of Service Bays	:	8
On-Site Parking Availability	:	5 - 10 spaces
Off-Site Parking Availability	:	Medium
Number of Employees	:	21 - 4 Sales, 11 Mechanics, 3 Office, 3 Other
Peak Periods	:	No peak day or peak time
Number of Car Yards within 500m	:	3
A.A.D.T. 1977	:	31,250

CAR SALES, ARNCLIFFE

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.00 - 1.30	0	0	0	4	4
1.30 - 2.00	1	1	0	1	3
2.00 - 2.30	4	0	9	6	19
2.30 - 3.00	4	1	0	5	10
3.00 - 3.30	2	1	2	2	7
3.30 - 4.00	2	4	3	4	13
4.00 - 4.30	2	1	5	1	9
4.30 - 5.00	1	0	0	5	6
Total	16	8	19	28	71
Peak Hour	2.00-3.00pm	3.00-4.00pm	2.00-3.00pm	2.00-3.00pm	2.00-3.00pm
Peak Number	8	5	9	11	29
Hourly Average	4	2	5	7	18

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
1.00 - 1.30	12	-	-	1	13
1.30 - 2.00	3	-	-	1	4
2.00 - 2.30	6	-	-	0	6
2.30 - 3.00	11	-	-	0	11
3.00 - 3.30	9	-	-	0	9
3.30 - 4.00	8	-	-	0	8
4.00 - 4.30	13	-	-	0	13
4.30 - 5.00	4	-	-	0	4
Total	66	N/A	N/A	2	68
Peak Hour	3.30-4.30pm	N/A	N/A	1.00-2.00pm	3.30-4.30pm
Peak Number	21	N/A	N/A	2	21
Hourly Average	17	N/A	N/A	1	17

CAR SALES, ARNCLIFFE

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.00 - 1.30	4	0	0	4
1.30 - 2.00	2	0	1	3
2.00 - 2.30	12	7	0	19
2.30 - 3.00	6	1	3	10
3.00 - 3.30	5	1	1	7
3.30 - 4.00	8	3	2	13
4.00 - 4.30	4	1	3	9
4.30 - 5.00	6	0	0	6
Total	49	13	9	71
Peak Hour	2.00-3.00pm	2.00-3.00pm	3.30-4.30pm	2.00-3.00pm
Peak Number	18	8	5	29
Hourly Average	12	3	2	18

SATURDAY

	Car Driver	Passenger	Other	Total
1.00 - 1.30	4	5	4	13
1.30 - 2.00	3	1	0	4
2.00 - 2.30	4	2	0	6
2.30 - 3.00	3	4	4	11
3.00 - 3.30	3	3	3	9
3.30 - 4.00	4	3	1	8
4.00 - 4.30	4	6	3	13
4.30 - 5.00	1	3	0	4
Total	26	27	15	68
Peak Hour	3.30-4.30pm	3.30-4.30pm	2.30-3.30pm	3.30-4.30pm
Hourly Average	7	7	4	17

Vehicle Occupancy : Friday : 1.27 persons/vehicle
Saturday : 2.04 persons/vehicle

Persons travelling by motor vehicle : Friday : 87%
Saturday : 78%

CAR SALES - ARNCLIFFE

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.00	7	1.00	2
1.30	8	1.30	2
2.00	5	2.00	1
2.30	12	2.30	6
3.00	16	3.00	4
3.30	15	3.30	5
4.00	8	4.00	6
4.30	10	4.30	4
5.00	10	5.00	3
Peak Accumulation	16		6
Peak Time	3.00pm		2.30pm

4.2 Car Sales - Lakemba

General Site Description

The site is located on the eastern side of the Canterbury Road in Lakemba. Adjacent to the site is a motor boat sales outlet and flats. Opposite the site there are three car yards. The site can be broken up into three distinct areas:

1. Second hand vehicle display area office and storage area.
2. Main building which houses the main office, new car showroom and the servicing and spares section.
3. An open area which is a mixture of customer parking, vehicle storage area and vehicle display area.

Dates and Times of Survey:

Friday,	6.4.79	1.30 - 5.30 p.m.
Saturday,	7.4.79	9.00 a.m. - 1.00 p.m.

Site Data:

Nature of Business	:	Car Sales - new & used. Spare parts & servicing
Area of Site	:	Selling space 1,520m^2 Other 2,580m^2 Total 4,100m^2
Area of Buildings	:	1,830m^2
Frontage to Main Road	:	67m
Number of Vehicle Entrances	:	2
Number of Cars on Display	:	New 30 Used 50
Number of Service Bays	:	15 including 3 for secondhand vehicles
On-Site Parking Availability	:	20
Off-Site Parking Availability	:	Medium
Number of Employees	:	38 - 16 Sales, 15 Mechanics, 4 Office, 3 Other
Peak Periods	:	Sales - no particular peak Service - 7.30-9.00a.m. drop off cars 4.00-5.00p.m. pick up
Number of Car Yards within 500m	:	4
A.A.D.T. 1977	:	29,500

CAR SALES, LAKEMBA

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30 - 2.00	0	2	2	0	4
2.00 - 2.30	3	2	4	0	9
2.30 - 3.00	0	2	1	0	3
3.00 - 3.30	3	6	3	0	12
3.30 - 4.00	3	0	3	0	6
4.00 - 4.30	2	0	0	1	3
4.30 - 5.00	2	2	6	0	10
5.00 - 5.30	3	0	10	0	13
Total	16	14	29	1	60
Peak Hour	3.00-4.00pm	2.30-3.30pm	4.30-5.30pm	4.00-5.00pm	4.30-5.30pm
Peak Number	6	8	16	1	23
Hourly Average	4	4	7	0	15

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
9.00 - 9.30	3	7	2	0	12
9.30 -10.00	5	11	0	1	17
10.00-10.30	11	5	1	1	17
10.30-11.00	5	19	0	0	24
11.00-11.30	4	14	0	0	18
11.30-12.00	4	9	0	0	13
12.00-12.30	6	3	0	0	9
12.30- 1.00	17	1	0	1	19
Total	55	69	3	2	129
Peak Hour	12.00am-1.00pm	10.30-11.30am	9.00-10.00am	9.00-10.00am	10.30-11.30
Peak Number	23	33	2	1	42
Hourly Average	14	17	1	1	32

CAR SALES, LAKEMBA

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	4	0	0	4
2.00 - 2.30	8	1	0	9
2.30 - 3.00	3	0	0	3
3.00 - 3.30	8	4	0	12
3.30 - 4.00	4	0	2	6
4.00 - 4.30	1	1	1	3
4.30 - 5.00	7	3	0	10
5.00 - 5.30	8	3	2	13
Total	43	12	5	60
Peak Hour	4.30 - 5.30	4.30 - 5.30	3.30 - 4.30	4.30 - 5.30
Peak Number	15	6	3	23
Hourly Average	11	3	1	15

SATURDAY

	Car Driver	Passenger	Other	Total
9.00 - 9.30	10	2	0	12
9.30 - 10.00	11	3	3	17
10.00 - 10.30	10	6	1	17
10.30 - 11.00	17	5	2	24
11.00 - 11.30	14	3	1	18
11.30 - 12.00	8	5	0	13
12.00 - 12.30	6	3	0	9
12.30 - 1.00	8	11	0	19
Total	84	38	7	129
Peak Hour	10.30 - 11.30	12.00 - 1.00	9.30 - 10.30	10.30 - 11.3
Peak Number	31	14	4	42
Hourly Average	21	10	2	32

Vehicle Occupancy — Friday : 1.28 persons/vehicle
Saturday : 1.45 persons/vehicle

Persons Travelling by Motor Vehicle — Friday : 92%
Saturday : 95%

CAR SALES - LAKEMBA

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	44	9.00	18
2.00	38	9.30	16
2.30	38	10.00	20
3.00	33	10.30	15
3.30	31	11.00	14
4.00	36	11.30	14
4.30	35	12.00	13
5.00	24	12.30	15
5.30	36	1.00	15
Peak Accumulation	44		20
Peak Time	1.30pm		10.00am

4.3 Car Sales - Mosman

General Site Description

The site is located on the eastern side of Military Road in Mosman. Adjacent to the site there is a nursery and a number of small shops, behind the site the land use is residential with a mixture of single unit dwellings and flats. Opposite the site there is a new car dealership under the same management as the survey site, in the immediate area there is a bank, car accessories outlet and an art gallery. There are no new cars stored on-site only one of each model in the new car showroom.

Dates and Times of Survey:

Friday,	30.3.79	1.30 - 5.30 p.m.
Saturday,	31.3.79	1.30 - 5.30 p.m.

Site Data:

Nature of Business	:	Car sales - new and used. Spare parts, Mechanical Repairs and Panel Beating.
Area of Site	:	Selling space 500m^2 Other 1,460m^2 Total 1,960m^2
Area of Buildings	:	1,590m^2
Frontage to Main Road	:	49m 40m Side Street
Number of Vehicle Entrances	:	2
Number of Cars on Display	:	6 new, 15 used
Number of Service Bays	:	25
On-Site Parking Availability	:	16 spaces
Off-Site Parking Availability	:	Low
Number of Employees	:	33 - 11 Sales, 13 Mechanics, 7 Office, 2 Other
Peak Periods	:	Service - Fridays New cars - Saturdays
Number of Car Yards within 500m	:	1
A.A.D.T. 1977	:	48,790

CAR SALES, MOSMAN

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30 - 2.00	1	0	0	1	2
2.00 - 2.30	1	2	0	1	4
2.30 - 3.00	0	2	0	3	5
3.00 - 3.30	1	2	0	1	4
3.30 - 4.00	0	0	3	2	5
4.00 - 4.30	0	2	5	0	7
4.30 - 5.00	2	0	2	0	4
5.00 - 5.30	1	0	1	2	4
Total	6	8	11	10	35
Peak Hour	4.30-5.30pm	2.30-3.30pm	3.30-4.30pm	2.30-3.30pm	3.30-4.30pm
Peak Number	3	4	8	4	12
Hourly Average	2	2	3	3	9

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30 - 2.00	0	-	0	2	2
2.00 - 2.30	2	-	0	5	7
2.30 - 3.00	4	-	3	2	9
3.00 - 3.30	10	-	3	0	13
3.30 - 4.00	4	-	0	0	4
4.00 - 4.30	1	-	0	4	5
4.30 - 5.00	5	-	0	0	5
5.00 - 5.30	0	-	0	1	1
Total	26	N/A	6	14	46
Peak Hour	2.30-3.30pm 3.00-4.00pm	N/A	2.30-3.30pm	2.00-3.00pm	2.30-3.30pm
Peak Number	14	N/A	6	7	22
Hourly Average	7	N/A	2	4	12

CAR SALES, MOSMAN

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	2	0	0	2
2.00 - 2.30	3	0	1	4
2.30 - 3.00	5	0	0	5
3.00 - 3.30	3	0	1	4
3.30 - 4.00	1	1	3	5
4.00 - 4.30	4	1	2	7
4.30 - 5.00	2	1	1	4
5.00 - 5.30	2	0	2	4
Total	22	3	10	35
Peak Hour	2.00 - 3.00 2.30 - 3.30	3.30 - 4.30 4.00 - 5.00	3.30 - 4.30	3.30 - 4.30
Peak Number	8	2	5	12
Hourly Average	6	1	3	9

SATURDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	1	1	0	2
2.00 - 2.30	3	3	1	7
2.30 - 3.00	5	1	3	9
3.00 - 3.30	9	4	0	13
3.30 - 4.00	3	1	0	4
4.00 - 4.30	3	2	0	5
4.30 - 5.00	2	3	0	5
5.00 - 5.30	1	0	0	1
Total	27	15	4	46
Peak Hour	2.30 - 3.30	4.00 - 5.00	2.00 - 3.00	2.30 - 3.30
Peak Number	14	5	4	22
Hourly Average	7	4	1	12

Vehicle Occupancy — Friday : 1.14 persons/vehicle
Saturday: 1.56 persons/vehicle

Persons Travelling by Motor Vehicle — Friday : 71%
Saturday: 91%

CAR SALES - MOSMAN

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	20	1.30	8
2.00	18	2.00	8
2.30	16	2.30	6
3.00	17	3.00	7
3.30	15	3.30	7
4.00	14	4.00	6
4.30	11	4.30	6
5.00	9	5.00	4
5.30	7	5.30	2
Peak Accumulation	20		8
Peak Time	1.30pm		1.30pm

4.4 Car Sales - Chullora

General Site Description

The business occupies a site on the northern side of the Hume Highway near the Chullora Railway Yards. On the same side of the road the roadside frontage land is mainly vacant. Across the Highway is a Motor Registry and a larger car yard. Next to the Registry and back from the main road the land use is low density residential.

Dates and Times of Survey:

Friday,	23.3.79	2.00 - 6.00 p.m.
Saturday,	24.3.79	2.00 - 6.00 p.m.

Site Data:

Nature of Business	:	Car sales - used	
Area of Site	:	Selling space	4,320m^2
		Other	300m^2
		Total	4,620m^2
Area of Buildings	:	150m^2	
Frontage to Main Road	:	95m	
Number of Vehicle Entrances	:	2 (1 not used)	
Number of Cars on Display	:	New 0 Used 97	
Number of Service Bays	:	0	
On-Site Parking Availability	:	4 but may vary depending on the number of vehicles for sale	
Off-Site Parking Availability	:	High	
Number of Employees	:	7 - 3 Sales, 4 Mechanics, 0 Office, 4 Other	
Peak Periods	:	Weekend particularly	
Number of Car Yards within 500m	:	1	
A.A.D.T. 1977	:	44,660	

CAR SALES, CHULLORA

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30-2.00	0	-	-	0	0
2.00-2.30	2	-	-	3	5
2.30-3.00	2	-	-	7	9
3.00-3.30	0	-	-	0	0
3.30-4.00	1	-	-	1	2
4.00-4.30	5	-	-	2	7
4.30-5.00	0	-	-	2	2
5.00-5.30	0	-	-	0	0
Total	10	-	-	15	25
Peak Hour	3.30-4.30pm	N/A	N/A	2.00-3.00pm	2.00-3.00pm
Peak Number	6	N/A	N/A	10	14
Hourly Average	3	N/A	N/A	4	6

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
2.00-2.30	15	-	-	1	16
2.30-3.00	17	-	-	1	18
3.00-3.30	15	-	-	0	15
3.30-4.00	6	-	-	0	6
4.00-4.30	16	-	-	0	16
4.30-5.00	16	-	-	0	16
5.00-5.30	8	-	-	1	9
5.30-6.00	0	-	-	0	0
Total	93	N/A	N/A	3	96
Peak Hour	2.00-3.00pm 2.30-3.30pm 4.00-5.00pm	N/A	N/A	2.00-3.00pm	2.00-3.00pm
Peak Number	32	N/A	N/A	2	34
Hourly Average	3	N/A	N/A	1	24

CAR SALES, CHULLORA

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	0	0	0	0
2.00 - 2.30	2	1	2	5
2.30 - 3.00	7	2	0	9
3.00 - 3.30	0	0	0	0
3.30 - 4.00	1	0	2	2
4.00 - 4.30	3	4	0	7
4.30 - 5.00	2	0	0	2
5.00 - 5.30	0	0	0	0
Total	15	7	3	25
Peak Hour	2.00 - 3.00	4.00 - 5.00	2. 00 - 3.00	2.00 - 3.00
Peak Number	9	4	2	14
Hourly Average	4	2	1	6

SATURDAY

	Car Driver	Passenger	Other	Total
2.00 - 2.30	8	8	0	16
2.30 - 3.00	10	8	0	18
3.00 - 3.30	7	6	2	15
3.30 - 4.00	2	3	1	6
4.00 - 4.30	4	11	1	16
4.30 - 5.00	5	11	0	16
5.00 - 5.30	4	5	0	9
5.30 - 6.30	0	0	0	0
Total	40	52	4	96
Peak Hour	2.00 - 3.00	4.00 - 5.00	3.00 - 4.00	2.00 - 3.00
Peak Number	18	22	3	34
Hourly Average	10	13	1	24

Vehicle Occupancy	Friday	:	1.47 persons/vehicle
	Saturday	:	2.30 persons/vehicle
Persons Travelling by Motor Vehicle	Friday	:	88%
	Saturday	:	96%

CAR SALES - CHULLORA

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
2.00	0	2.00	0
2.30	1	2.30	3
3.00	5	3.00	8
3.30	5	3.30	12
4.00	5	4.00	3
4.30	8	4.30	4
5.00	8	5.00	2
5.30	8	5.30	0
Peak Accumulation	8		12
Peak Time	4.30pm 5.00pm 5.30pm		3.30pm

4.5 Car Sales - Hornsby

General Site Description

The site is located on the western side of the Pacific Highway on the southern edge of the Hornsby commercial centre. Adjacent to the site are a hotel and a service station, opposite a motor registry and a large Holden dealership. Behind the site there are single unit houses. There are three other car yards close by, as well there is a spare parts outlet and a caravan sales yard.

Dates and Times of Survey:

Friday,	30.3.79	1.30 - 5.30 p.m.
Saturday,	31.3.79	9.00a.m. - 1.00 p.m.

Site Data:

Nature of Business	:	Car sales - new and used
Area of Site	:	Selling space 1,064m^2 Other 798m^2 Total 1,862m^2
Area of Buildings	:	525m^2
Frontage to Main Road	:	38m
Number of Vehicle Entrances	:	1
Number of Cars on Display	:	New 30 Used 10
Number of Service Bays	:	0
On-Site Parking Availability	:	6
Off-Site Parking Availability	:	Medium
Number of Employees	:	4 - 3 Sales, 0 Mechanics, 1 Office, 0 Other
Peak Periods	:	All days much the same, busiest between 2.00 - 4.00 p.m.
Number of Car Yards within 500m	:	3
A.A.D.T. 1977	:	41,260

CAR SALES, HORNSBY

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30-2.00	0	-	-	0	0
2.00-2.30	1	-	-	1	2
2.30-3.00	1	-	-	1	1
3.00-3.30	1	-	-	2	3
3.30-4.00	1	-	-	2	3
4.00-4.30	0	-	-	0	0
4.30-5.00	0	-	-	0	0
5.00-5.30	3	-	-	0	3
Total	6	N/A	N/A	6	12
Peak Hour	4.30-5.30pm	N/A	N/A	3.00-4.00	3.00-4.00
Peak Number	3	N/A	N/A	4	6
Hourly Average	2	N/A	N/A	2	3

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30-2.00	0	-	-	0	0
2.00-2.30	6	-	-	0	6
2.30-3.00	7	-	-	1	8
3.00-3.30	7	-	-	0	7
3.30-4.00	4	-	-	0	4
4.00-4.30	3	-	-	1	4
4.30-5.00	12	-	-	0	12
5.00-5.30	3	-	-	0	3
Total	42	N/A	N/A	2	44
Peak Hour	4.00-5.00 4.30-5.30	N/A	N/A	2.30-3.30	4.00-5.00pm
Peak Number	15	N/A	N/A	1	16
Hourly Average	1	N/A	N/A	1	11

CAR SALES, HORNSBY

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	9	0	0	0
2.00 - 2.30	2	0	0	2
2.30 - 3.00	1	0	0	1
3.00 - 3.30	2	1	0	3
3.30 - 4.00	2	0	1	3
4.00 - 4.30	0	0	0	0
4.30 - 5.00	0	0	0	0
5.00 - 5.30	2	0	1	3
Total	9	1	2	12
Peak Hour	3.00 - 4.00	3.00 - 4.00	3. 00 - 4.00	3.00 - 4.00
Peak Number	4	1	1	6
Hourly Average	2	0	1	3

SATURDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	-	-	-	-
2.00 - 2.30	4	2	0	6
2.30 - 3.00	6	2	0	8
3.00 - 3.30	4	3	0	7
3.30 - 4.00	3	1	0	4
4.00 - 4.30	3	1	0	4
4.30 - 5.00	4	7	1	12
5.00 - 5.30	2	1	0	3
Total	26	17	1	44
Peak Hour	2.00 - 3.00 2.30 - 3.30	4.00 - 5.00 4.30 - 5.30	4.00 - 5.00	4.00 - 5.00
Peak Number	10	8	1	16
Hourly Average	7	4	0	11

Vehicle Occupancy — Friday : 1.22 persons/vehicle
Saturday : 1.65 persons/vehicle

Persons Travelling By Motor Vehicle — Friday : 83%
Saturday : 98%

CAR SALES - HORNSBY

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	10	1.30	2
2.00	7	2.00	3
2.30	8	2.30	5
3.00	7	3.00	6
3.30	8	3.30	5
4.00	9	4.00	5
4.30	8	4.30	2
5.00	5	5.00	3
5.30	2	5.30	2
Peak Accumulation	10		6
Peak Time	1.30pm		3.00pm

4.6 Car Sales - Parramatta

General Site Description

The site is on Church Street, Parramatta. It is part of one of Sydney's largest car dealerships and is one of the largest car yard sites. It is located in the centre of what is perhaps the highest concentration of car yards in Sydney. The adjacent and nearby land use along Church Street is dominated by car yards which stretch almost uninterrupted along Church Street, between Parramatta Road and the Great Western Highway. The site is at the southern end of the Parramatta commercial and retail area. Behind the site the land use is mainly residential.

Dates and Times of Survey:

Friday,	27.4.79	1.30 - 5.30 p.m.
Saturday,	28.4.79	9.00a.m. - 1.00p.m.

Site Data:

Nature of Business	:	Car sales - new and used. Spare parts, servicing and rustproofing.
Area of Site	:	Selling space 5,750m^2 Other 5,620m^2 Total 11,370m^2
Area of Buildings	:	3,900m^2
Frontage to Main Road	:	92m
Number of Vehicle Entrances	:	8
Number of Cars on Display	:	New 100 Used 50
Number of Service Bays	:	45 including 14 bays for rustproofing
On-Site Parking Availability	:	20 spaces
Off-Site Parking Availability	:	Low
Number of Employees	:	97 - 34 Sales, 45 Mechanics, 6 Office, 12 Other
Peak Periods	:	Saturday, Sunday - all day
Number of Car Yards within 500m	:	9
A.A.D.T. 1977	:	50,490

CAR SALES, PARRAMATTA

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30 - 2.00	4	0	3	3	10
2.00 - 2.30	8	3	12	3	26
2.30 - 3.00	11	5	2	9	27
3.00 - 3.30	4	5	9	6	24
3.30 - 4.00	9	16	10	3	38
4.00 - 4.30	7	3	11	10	31
4.30 - 5.00	11	6	5	16	38
5.00 - 5.30	18	0	0	14	32
Total	72	38	52	64	226
Peak Hour	4.30-5.30pm	3.00-4.00pm	3.30-4.30pm	4.30-5.30pm	4.30-5.30pm
Peak Number	29	21	1	30	70
Hourly Average	18	10	13	16	57

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
9.00 - 9.30	6	2	-	1	9
9.30 -10.00	19	4	-	1	24
10.00-10.30	36	1	-	1	38
10.30-11.00	24	10	-	0	34
11.00-11.30	37	7	-	1	45
11.30-12.00	42	6	-	0	48
12.00-12.30	38	4	-	2	44
12.30- 1.00	48	0	-	1	49
Total	250	34	0	7	291
Peak Hour	12.00am-1.00pm	10.30-11.30am	N/A	12.00am 1.00pm	11.00-12.00am 12.00am-1.00pm
Peak Number	86	17	N/A	3	93
Hourly Average	63	9	N/A	2	73

CAR SALES, PARRAMATTA

TRAVEL MODE

FRIDAY

	Car Buyer	Spares	Servicing	Total
1.30 - 2.00	8	2	0	10
2.00 - 2.30	17	8	1	26
2.30 - 3.00	16	7	4	27
3.00 - 3.30	17	5	2	24
3.30 - 4.00	19	16	3	38
4.00 - 4.30	27	3	1	31
4.30 - 5.00	28	9	1	38
5.00 - 5.30	21	10	1	32
Total	153	60	13	226
Peak Hour	4.00-5.00pm	3.00-4.00pm	2.30-3.30pm	4.30-5.30pm
Peak Number	55	1	6	70
Hourly Average	38	15	3	57

SATURDAY

	Car Buyer	Spares	Servicing	Total
9.00 - 9.30	5	2	2	9
9.30 -10.00	13	8	3	24
10.00-10.30	18	12	8	38
10.30-11.00	15	16	3	34
11.00-11.30	22	19	4	45
11.30-12.00	23	25	0	48
12.00-12.30	20	22	2	44
12.30- 1.00	18	31	0	49
Total	134	135	22	291
Peak Hour	11.00-12.00am	12.00am-1.00pm	9.30-10.30am 10.00-11.00am	11.00-12.00am 12.00am-1.00pm
Peak Number	45	53	11	93
Hourly Average	34	34	6	73

Vehicle Occupancy : Friday : 1.39 persons/vehicle
Saturday : 2.02 persons/vehicle

Persons travelling by motor vehicle : Friday : 94%
Saturday : 92%

CAR SALES - PARRAMATTA

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	107	9.00	64
2.00	106	9.30	68
2.30	90	10.00	69
3.00	88	10.30	74
3.30	98	11.00	80
4.00	97	11.30	78
4.30	87	12.00	81
5.00	73	12.30	73
5.30	63	1.00	74
Peak Accumulation	107		81
Peak Time	1.30pm		12.00 mid day

4.7 Car Sales - Ashfield

General Site Description

The site consists of three parts, taking up almost all the road frontage of both sides of Parramatta Road of one block and a second smaller part of one side. The land along Parramatta Road in this area is occupied by other car yards and motor vehicle related businesses as well as small shops.

Dates and Times of Survey:

Friday,	6.4.79	1.30 - 5.30 p.m.
Saturday,	7.4.79	9.00a.m. - 1.00p.m.

Site Data:

Nature of Business	:	Car Sales - new and used. Spare parts and servicing.
Area of Site	:	Selling space 7,140m^2 Other 2,920m^2 Total 10,060m^2
Area of Buildings	:	3,380m^2
Frontage to Main Road	:	244m^2
Number of Vehicle Entrances	:	11
Number of Cars on Display	:	New 110 Used 150
Number of Service Bays	:	22
On-Site Parking Availability	:	28
Off-Site Parking Availability	:	High
Number of Employees	:	82 - 36 Sales, 31 Mechanics, 5 Office, 10 Other
Peak Periods	:	Sites: Weekends 10.00 - 12.00 a.m. 3.00 - 6.00 p.m. Parts: Saturday 9.00 - 12.00 a.m. Service: Tuesday 7.30 - 9.00 a.m. arrivals
Number of Car Yards within 500m	:	1
A.A.D.T. 1977	:	41,370 to 48,750

CAR SALES, ASHFIELD

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30 - 2.00	1	4	0	1	6
2.00 - 2.30	9	18	4	5	36
2.30 - 3.00	8	12	2	15	37
3.00 - 3.30	14	16	8	5	43
3.30 - 4.00	4	14	2	15	35
4.00 - 4.30	5	15	3	11	34
4.30 - 5.00	9	14	5	20	48
5.00 - 5.30	0	9	0	1	10
Total	50	102	24	73	249
Peak Hour	2.30-3.30pm	2.00-3.00pm	2.30-4.30pm 3.00-4.00pm	4.00-5.00pm	4.00-5.00pm
Peak Number	22	30	10	31	82
Hourly Average	13	26	6	18	62

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
9.00 - 9.30	6	18	-	5	29
9.30 -10.00	13	27	-	5	45
10.00-10.30	18	20	-	0	38
10.30-11.00	14	24	-	4	42
11.00-11.30	2	44	-	0	46
11.30-12.00	11	25	-	2	38
12.00-12.30	23	29	-	2	56
12.30- 1.00	12	15	-	1	28
Total	99	202	-	21	322
Peak Hour	12.00am- 1.00pm	11.00-12.00am	N/A	9.00-10.00am	11.30am- 12.30pm
Peak Number	35	69	N/A	10	94
Hourly Average	25	51	N/A	5	81

CAR SALES, ASHFIELD

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	6	0	0	6
2.00 - 2.30	27	9	0	36
2.30 - 3.00	30	7	0	37
3.00 - 3.30	30	13	0	43
3.30 - 4.00	29	6	0	35
4.00 - 4.30	24	8	2	34
4.30 - 5.00	32	16	0	48
5.00 - 5.30	7	3	0	10
Total	185 185	62	2	249
Peak Hour	2.30 - 3.30	4.00 - 5.00	4.00 - 5.00	4.00 - 5.00
Peak Number	60	24	2	82
Hourly Average	46	16	1	62

SATURDAY

	Car Driver	Passenger	Other	Total
9.00 - 9.30	21	8	0	29
9.30 - 10.00	32	13	0	45
10.00 - 10.30	24	14	0	38
10.30 - 11.00	29	11	2	42
11.00 - 11.30	21	24	1	46
11.30 - 12.00	24	13	1	38
12.00 - 12.30	29	24	3	56
12.30 - 1.00	15	13	0	28
Total	195	120	7	322
Peak Hour	9.30 - 10.30	11.00 - 12.00 11.30 - 12.30 12.00 - 1.00	11.30 - 12.30	11.30 - 12.30
Peak Number	56	37	7	94
Hourly Average	49	30	2	81

Vehicle Occupancy — Friday : 1.34 persons/vehicles
Saturday : 1.62 persons/vehicle

Persons Travelling by Motor Vehicle — Friday : 99%
Saturday : 98%

CAR SALES - ASHFIELD

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	46	9.00	29
2.00	48	9.30	35
2.30	53	10.00	37
3.00	45	10.30	32
3.30	42	11.00	36
4.00	41	11.30	37
4.30	35	12.00	40
5.00	30	12.30	29
5.30	18	1.00	28
Peak Accumulation	53		40
Peak Time	2.30pm		12.00 mid day

4.8 Car Sales - Narrabeen

General Site Description

The site is located on the eastern side of Pittwater Road, North Narrabeen. The site is one kilometre away from the Narrabeen commercial centre and about three kilometres away from the Mona Vale commercial centre. Adjacent to and behind the site the land use is residential. Opposite the site is a large high school. In the surrounding area there is an oval, caravan park, golf driving range and a fast food establishment. One hundred metres further up Pittwater Road is a car yard which sells new recreational vehicles. There are no other car yards within 2km. of the site.

Dates and Times of Survey:

Friday,	6.4.79	1.30 - 5.30 p.m.
Saturday	7.4.79	9.00a.m.-1.00p.m.

Site Data:

Nature of Business	:	Car sales - new and used. Spare parts and servicing
Area of Site	:	Selling space 1,130m^2 Other 1,800m^2 Total 2,930m^2
Area of Buildings	:	1,500m^2
Frontage to Main Road	:	70m
Number of Vehicle Entrances	:	3
Number of Cars on Display	:	New 12 Used 30
Number of Service Bays	:	20
On-Site Parking Availability	:	23
Off-Site Parking Availability	:	High
Number of Employees	:	34 - 8 sales, 18 Mechanics, 6 Office, 2 Other
Peak Periods	:	Sales Saturdays 9.30a.m.-12.30p.m. Services Fridays 7.00 - 8.00a.m. 5.00 - 6.00p.m.
Number of Car Yards within 500m	:	1
A.A.D.T. 1977	:	32,720

CAR SALES, NARRABEEN

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30 - 2.00	0	0	0	3	3
2.00 - 2.30	1	1	8	2	12
2.30 - 3.00	3	2	5	4	14
3.00 - 3.30	2	0	2	6	10
3.30 - 4.00	2	1	3	4	10
4.00 - 4.30	4	2	0	0	6
4.30 - 5.00	6	1	9	2	18
5.00 - 5.30	2	1	5	5	23
Total	30	8	32	26	96
Peak Hour	4.30-5.30pm	4.00-5.00pm	4.30-5.30pm	2.30-3.30pm	4.30-5.30pm
Peak Number	18	3	14	10	41
Hourly Average	8	2	8	7	24

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
9.00 - 9.30	2	2	11	0	15
9.30 -10.00	8	1	3	2	14
10.00-10.30	9	6	6	0	21
10.30-11.00	10	4	3	0	17
11.00-11.30	14	4	5	1	24
11.30-12.00	7	1	2	1	11
12.00-12.30	3	4	6	0	13
12.30- 1.00	10	0	2	1	13
Total	63	22	38	5	128
Peak Hour	10.30-11.30am	10.00-11.00am	9.00-10.00am	11.00-12.00am	10.30-11.30am
Peak Number	24	10	14	2	41
Hourly Average	16	6	10	1	32

CAR SALES, NARRABEEN

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	2	1	0	3
2.00 - 2.30	11	1	0	12
2.30 - 3.00	9	4	1	14
3.00 - 3.30	8	2	0	10
3.30 - 4.00	7	3	0	10
4.00 - 4.30	6	0	0	6
4.30 - 5.00	12	6	0	18
5.00 - 5.30	18	5	0	23
Total	73	22	1	96
Peak Hour	4.30 - 5.30	4.30 - 5.30	2.30 - 3.30	4.30 - 5.30
Peak Number	30	1	1	41
Hourly Average	18	6	0	24

SATURDAY

	Car Driver	Passenger	Other	Total
9.00 - 9.30	8	7	0	15
9.30 - 10.00	8	6	0	14
10.00 - 10.30	9	12	0	21
10.30 - 11.00	13	4	0	17
11.00 - 11.30	13	11	0	24
11.30 - 12.00	9	2	0	11
12.00 - 12.30	10	3	0	13
12.30 - 1.00	7	6	0	13
Total	77	51	0	128
Peak Hour	10.30 - 11.30	9.30 - 10.30	N/A	10.30 - 11.30
Peak Number	26	18	N/A	41
Hourly Average	19	13	N/A	32

Vehicle Occupancy
Friday : 1.30 persons/vehicle
Saturday : 1.66 persons/vehicle

Persons Travelling by Motor Vehicle
Friday : 99%
Saturday : 100%

CAR SALES - NARRABEEN

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	46	9.00	39
2.00	44	9.30	36
2.30	44	10.00	40
3.00	44	10.30	39
3.30	41	11.00	38
4.00	42	11.30	38
4.30	43	12.00	35
5.00	43	12.30	25
5.30	32	1.00	26
Peak Accumulation	46		40
Peak Time	1.30pm		10.00am

4.9 Car Sales - Liverpool

General Site Description

The car sales business is located at the intersection of Macquarie and Copeland Streets. Copeland Street is the major alternative route to Sydney, which bypasses the Liverpool commercial and retail area. The site is located south of the main shopping area. The adjacent and surrounding land use is mainly car sale yards, other motor-oriented land uses and some commercial uses.

Dates and Times of Survey:

Friday,	30.3.79	1.30 - 5.30 p.m.
Saturday,	31.3.79	1.30 - 5.30 p.m.

Site Data:

Nature of Business	:	Car and truck sales - new and used. Spare parts and servicing
Area of Site	:	Selling space 4,200m^2 Other 3,200m^2 Total 7,400m^2
Area of Buildings	:	1,240m^2
Frontage to Main Road	:	124m^2
Number of Vehicle Entrances	:	
Number of Cars on Display	:	New 45 Used 50
Number of Service Bays	:	18
On-Site Parking Availability	:	57
Off-Site Parking Availability	:	High
Number of Employees	:	71 - 17 Sales, 39 Mechanics, 10 Office, 5 Other
Peak Periods	:	Sales Afternoon Saturday Afternoon Sunday Monday Service 7.30-9.30a.m. Weekdays
Number of Car Yards within 500m	:	5
A.A.D.T. 1977	:	59,400

CAR SALES, LIVERPOOL

TRIP PURPOSE

FRIDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30-2.00	3	5	6		18
2.00-2.30	4	9	5	3	21
2.30-3.00	3	5	13	10	31
3.00-3.30	2	8	2	3	15
3.30-4.00	4	1	1	1	7
4.00-4.30	10	12	1	1	24
4.30-5.00	8	3	3	1	15
5.00-5.30	6	2	6	0	14
Total	40	45	37	23	145
Peak Hour	4.00-5.00pm	4.00-5.00pm	2.00-3.00pm	2.00-3.00pm	2.00-3.00pm
Peak Number	18	5	18	3	52
Hourly Average	10	11	9	6	36

SATURDAY

	Car Buyer	Spares	Servicing	Other	Total
1.30-2.00	16	0	2	0	18
2.00-2.30	16	0	2	1	19
2.30-3.00	3	0	2	1	16
3.00-3.30	16	0	2	1	19
3.30-4.00	23	0	0	0	23
4.00-4.30	48	0	0	1	49
4.30-5.00	16	0	0	0	16
5.00-5.30	0	0	0	3	3
Total	148	0	8	7	163
Peak Hour	3.30-4.30	N/A	2.30-3.30	2.30-3.30	3.30-4.30
Peak Number	71	N/A	4	2	72
Hourly Average	37	N/A	2	2	41

CAR SALES, LIVERPOOL

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	11	4	3	18
2.00 - 2.30	16	4	1	21
2.30 - 3.00	21	9	1	31
3.00 - 3.30	12	3	0	15
3.30 - 4.00	6	1	0	7
4.00 - 4.30	14	9	1	24
4.30 - 5.00	9	6	0	15
5.00 - 5.30	9	4	1	14
Total	98	40	7	145
Peak Hour	2.00 - 3.00	4.00 - 5.00	1.30 - 2.30	2.00 - 3.00
Peak Number	37	15	4	52
Hourly Average	25	10	2	36

SATURDAY

	Car Driver	Passenger	Other	Total
1.30 - 2.00	7	11	0	18
2.00 - 2.30	11	8	0	19
2.30 - 3.00	9	7	0	16
3.00 - 3.30	9	10	0	19
3.30 - 4.00	8	12	3	23
4.00 - 4.30	19	28	2	49
4.30 - 5.00	11	5	0	16
5.00 - 5.30	3	0	0	3
Total	77	81	5	163
Peak Hour	4.00 - 5.00	3.30 - 4.30	3.30 - 4.30	3.30 - 4.30
Peak Number	30	40	5	72
Hourly Average	19	20	1	41

Vehicle Occupancy
Friday : 1.40 persons/vehicle
Saturday : 2.05 persons/vehicle

Persons travelling by Motor Vehicle
Friday : 95%
Saturday : 97%

CAR SALES - LIVERPOOL

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
1.30	60	1.30	6
2.00	67	2.00	7
2.30	63	2.30	10
3.00	57	3.00	7
3.30	54	3.30	13
4.00	43	4.00	10
4.30	32	4.30	8
5.00	14	5.00	6
5.30	7	5.30	6
Peak Accumulation	67		13
Peak Time	2.00pm		3.30pm

4.10 Motorcycle Sales - Homebush

General Site Description

The motorcycle sales and repair business is located on the northern side of Parramatta Road. The adjacent land use along Parramatta Road consists of car, caravan and boat sales businesses, as well as other uses such as service station and some industrial sites. Next to the site is a boat sales business with a small park on the other side. The site has on-site parking for vehicles.

Dates and Times of Survey:

Friday,	23.3.79	8.30 a.m. - 12.30 p.m.
Saturday,	24.3.79	10.00 a.m. - 2.00 p.m.

Site Data:

Nature of Business	:	New and used motorcycle sales. Accessories and spare parts sale. Fitting and Servicing.
Area of Site	:	2,550m^2
Area of Sales	:	640m^2
Area of Building	:	2,148m^2
Frontage to Main Road	:	58m
Number of Vehicle Entrances	:	2
Motorcycles on Sale	:	220-240 cycles. Half new, half used.
Fitting and Service Bays	:	N/A
On-Site Parking Avaialability	:	16
Off-Site Parking Availability	:	Low
Number of Employees	:	10 - 8 Sales, 2 Others
Peak Times	:	Saturdays 10.00a.m.-2.30p.m. 4.00 -6.00p.m. Weekdays 9.00 -10.00a.m. 11.30a.m.-2.30p.m.
A.A.D.T. 1977	:	50,470

MOTOR CYCLE SALES, HOMEBUSH

TRIP PURPOSE

FRIDAY

	Motor Cycle Buyer	Spares	Servicing	Other	Total
8.30- 9.00	2	0	2	2	6
9.00- 9.30	2	2	0	3	7
9.30-10.00	0	4	0	3	7
10.00-10.30	0	7	1	2	10
10.30-11.00	2	2	0	2	6
11.00-11.30	1	3	0	5	9
11.30-12.00	2	0	0	6	8
12.00-12.30	3	2	0	2	7
Total	12	20	3	25	60
Peak Hour	11.30am-12.30pm	9.30-10.30am	8.30-9.30am	11.00-12.00am	9.30-10.30am 11.00-12.00am
Peak Number	5	11	2	11	17
Hourly Average	3	5	1	6	15

SATURDAY

	Motor Cycle Buyer	Spares	Servicing	Other	Total
10.00-10.30	3	19	0	2	24
10.30-11.00	7	12	2	6	27
11.00-11.30	4	11	0	7	22
11.30-12.00	3	15	0	6	24
12.00-12.30	12	11	0	8	31
12.30- 1.00	0	8	0	9	12
1.00 - 1.30	8	9	0	9	26
1.30 - 2.00	3	12	0	6	19
Total	40	95	2	48	185
Peak Hour	11.30am-12.30pm	10.00-11.00am	10.30-11.30am	1.30-2.00pm	11.30am 12.30pm
Peak Number	15	31	2	15	55
Hourly Average	10	24	1	12	46

MOTOR CYCLE SALES, HOMEBUSH

TRAVEL MODE

FRIDAY

	Car Driver	Passenger	Other	Motor Cycle Rider	Motor Cycle Passenger	Total
8.30 - 9.00	4	0	1	1	0	6
9.00 - 9.30	4	1	0	2	0	7
9.30 -10.00	2	1	0	3	1	7
10.00-10.30	4	4	0	2	0	10
10.30-11.00	4	2	0	0	0	6
11.00-11.30	6	1	0	2	0	9
11.30-12.00	5	1	0	2	0	8
12.00-12.30	3	2	0	2	0	7
Total	32	12	1	14	1	60
Peak Hour	11.00-12.00am	10.00-11.00am	8.30-9.30am	9.30-10.30am	9.30-10.30am	10.00-11.00am 11.00-12.00am
Peak Number	11	6	1	5	1	17
Hourly Average	8	3	0	4	0	15

SATURDAY

	Car Driver	Passenger	Other	Motor Cycle Rider	Motor Cycle Passenger	Total
10.00-10.30	9	4	0	11	0	24
10.30-11.00	15	7	0	5	0	27
11.00-11.30	9	9	0	3	1	22
11.30-12.00	8	2	0	9	5	24
12.00-12.30	10	13	0	6	2	31
12.30- 1.00	4	0	0	8	0	12
1.00 - 1.30	8	7	0	10	1	26
1.30 - 2.00	8	6	0	3	2	19
Total	71	48	N/A	55	11	185
Peak Hour	10.00-11.00am 10.30-11.30am	10.30-11.30am	N/A	12.30-1.30pm	11.30am-12.30pm	11.30am-12.30pm
Peak Number	24	16	N/A	18	7	55
Hourly Average	18	12	N/A	4	3	46

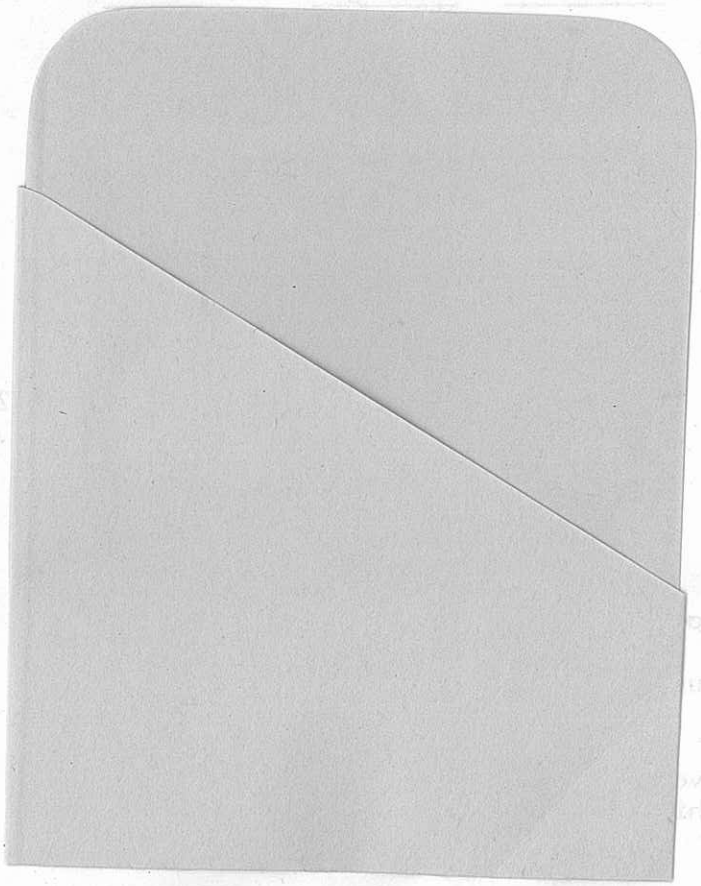
Vehicle Occupancy: Friday : 1.38 persons/vehicle
Saturday: 1.68 persons/vehicle

Persons travelling by motor vehicle : Friday : 73%
Saturday: 64%

MOTOR CYCLE SALES - HOMEBUSH

PARKING ACCUMULATION

TIME	FRIDAY	TIME	SATURDAY
10.00	6	10.00	15
10.30	5	10.30	23
11.00	14	11.00	33
11.30	8	11.30	25
12.00	7	12.00	29
12.30	9	12.30	28
1.00	11	1.00	30
1.30	13	1.30	9
2.00	12	2.00	13
Peak Accumulation	14		33
Peak Time	11.00am		11.00am



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