

## **Consumer Preferences in Urban Buses and Bus Services, Part B - Onboard Survey**

### **Report**

This Report presents the second onboard part of the results of a consumer preference survey into bus design and bus service characteristics. The survey was conducted by the BTE together with the Metropolitan (Perth) Transport Trust, and consisted of two parts: household interviews carried out by the Australian Bureau of Statistics; and questionnaires distributed to travellers using the Perth suburban bus service.

Subject

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Date

A to Z

Search

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DEPARTMENT OF TRANSPORT AND TOURISM  
MEMBER SERVICES — CANBERRA

CONSUMER PREFERENCES  
IN URBAN BUSES AND BUS SERVICES

PART B  
ONBOARD SURVEY

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## CONTENTS

	<u>Page</u>
<u>PART B - ONBOARD SURVEY</u>	
INTRODUCTION	1
CHAPTER B 1    DETAILS OF THE SURVEY	3
Perth Bus Service Characteristics	3
Survey Sample	6
Survey Methodology	6
Survey Forms	8
CHAPTER B 2    RESULTS	11
Preliminary Processing	11
Detailed Results and Analyses	11
Bus Design Feature and Service Characteristics	12
ANNEX B A      ONBOARD SURVEY FORMS	19
Questionnaire Form	19
Route Description Form	24
ANNEX B B      SAMPLE CHARACTERISTICS AND COMPARISONS	27
ANNEX B C      RESPONDENTS TRAVEL CHARACTERISTICS	31
ANNEX B D      BUS DESIGN FEATURES AND SERVICE CHARACTERISTICS RATING ANALYSIS	35
ANNEX B E      TYPES OF BUSES SAMPLED AND TYPICAL PATRON FACILITIES	65
ANNEX B F      ONBOARD SURVEY DATA FILE FORMAT	83
Route Description Data File	83
Questionnaire Results Data File	85

## (ii)

TABLES		<u>Page</u>
BB.1	Age Distribution	28
BB.2	Occupation Distribution	28
BB.3	Marital Status	30
BC.1	Licence Holder Distribution	31
BC.2	Trips per Month	32
BC.3	Transfer Details	33
BC.4	Trip Purpose	33
BD.1	Design Feature Rating by Bus Type	53
BD.2	Service Feature Rating by Trips per Month	64
FIGURES		
B1.1	Proposed Perth Public Transport Network	4
B2.1	Grouped Response to Design Features and Service Characteristics	13
B2.2	Overall Response to Design Features and Service Characteristics	14
BA.1	Information and Instructions, Onboard Questionnaire	20
BA.2	Postal Reply Envelope Face, Onboard Questionnaire	21
BA.3	Personal and Trip Questions, Onboard Questionnaire	22
BA.4	Rating Questions, Onboard Questionnaire	23
BA.5	Route Description Form	25
BB.1	Comparison in Age Distribution	29
BE.1	MTT AEC Regal Mk VI	68
BE.2	MTT Hino	70
BE.3	MTT Leyland Leopard	72
BE.4	MTT Leyland Panther	74
BE.5	MTT Leyland Tigercub	76
BE.6	MTT Leyland Worldmaster	78
BE.7	Perth Central Bus Station	81
BE.8	MTT Bus Shelter	82

## INTRODUCTION

In this volume the results of the onboard phase of the study are presented in detail.

The onboard survey was conducted over four weeks commencing in late August 1974. Two MTT employees were seconded to the BTE to distribute and collect questionnaires to patrons travelling on scheduled MTT routes.

In the survey respondents were asked to complete a questionnaire which contained, personal, trip making and rating questions. For the rating questions respondents were asked to rate (poor, fair and good) the design features of the bus they were travelling on at the time and the service characteristics as it affected them personally.

Because respondents were asked to rate existing buses and the bus service the technique affords the opportunity to analyse the results against quantifiable options and levels of service. A limitation of this type of survey is that preferences can only be obtained on options and characteristics already incorporated. A further limitation is the necessary brevity and simplicity of the questionnaire itself. Some results of the brevity are:

- . Ambiguity tends to arise out of the brief questions despite the attention paid to the wording.
- . Multiple questions, where rephrasing and/or different emphasis are used, are not possible.
- . Extensive demographic and trip making categorisation cannot be obtained to undertake extensive variational analyses.

Limitations also arise because there is only restricted control over the respondents completion of the form. Consequently completed questionnaires are returned by:

- . Respondents who were not able to fully understand the questions.
- . Hostile respondents who are not prepared to give sufficient time or thought to their replies.

A full description of the survey is presented in Chapter 1 and the results in Chapter 2. In the Annexes detailed analyses of the sample characteristic, respondents travel characteristics information and ratings from which Chapter 2 was prepared are presented. Also presented in the Annexes are details of the:

- . Survey forms
- . Sampled buses
- . Computer data file organisation

CHAPTER B 1

DETAILS OF THE SURVEY

PERTH BUS SERVICE CHARACTERISTICS

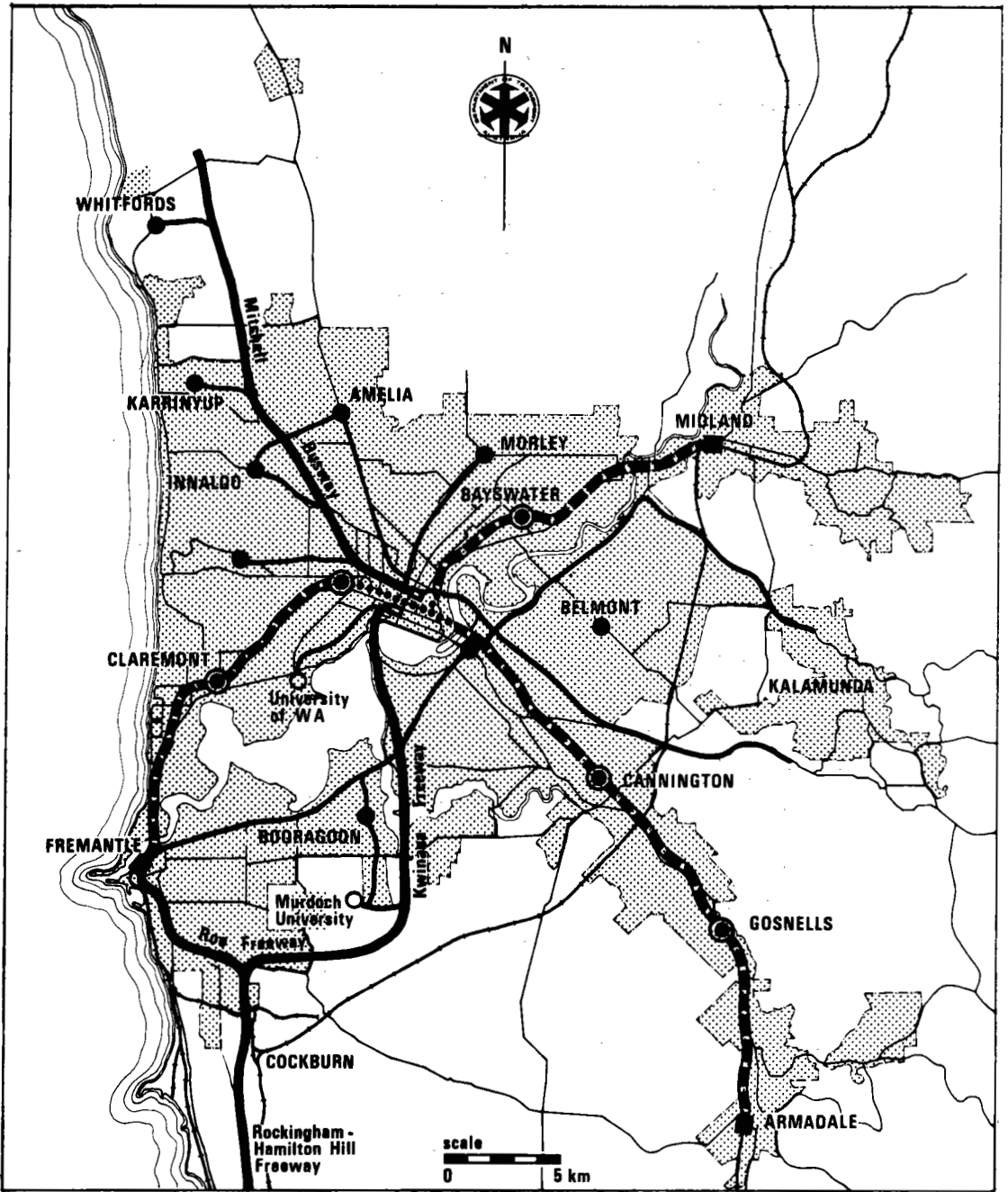
The Metropolitan (Perth) Passenger Transport Trust (MTT) was formed by the amalgamation of private bus companies approximately fifteen years ago. Most of the fleet inherited by the MTT has been replaced or is programmed for replacement. Buses purchased since then have all been single deck, with engines mounted beneath the floor, or at the rear of the bus. The bus bodies have been locally manufactured to the MTT's specifications. In recent years, a policy of providing as many seats as possible for patrons achieved by facing seats forward has resulted in a reduction in standing room. Another feature of the recent MTT bodies is the large opening windows (opening into four quadrants) which allow ample ventilation during the hot summers (mean maximum temperature 23.1°C) and mild winters (mean minimum 13.1°C). Other bus design features or options pertinent to the results of the survey are:

- . Full roof ventilation systems
- . Regular bus maintenance and cleaning
- . Wide opening doors (automatic rear door)
- . Pram racks on the rear of buses and interior luggage racks

Photographs of the main bus types showing exterior, interior and 'door views' together with specifications are presented in Annex B4.

The proposed service network (see Figure B1.1) has been developed to fulfil the Public Transport Plan for Perth; transfer stations have been established at suburban shopping centres for the purpose of consolidating passenger loads so that regular and frequent bus services can more economically be provided between the transfer station and the central business district. In the CBD the two main terminus areas, Perth Central Bus Station (shown in Annex A4) and St. George's Terrace are linked by two free "Clipper" services operating





<b>LEGEND :</b>	Electric suburban railway		Buses on busways or freeways	
	Underground railway		Express buses	
	Park and ride and bus to rail interchange		Park and ride and bus to bus interchange	

**SOURCE :** Annual Report of The Director General of Transport 30 th June , 1974

**FIGURE B1.1  
PROPOSED PERTH PUBLIC TRANSPORT NETWORK**

on ten and twenty minute schedules.

To facilitate the integration of road/rail transportation and improve efficiency, fare charges have been rationalised to a transferable flat fare system based on 15 cents for the first section and 30 cents for travel anywhere on rail or bus within a radius of 30 km of Perth.

A statement from the MTT Annual Report, June 1974, is presented below as an indication of the MTT public relations effort:

"Much of the Trust's success is undoubtedly due to the measures taken to "sell" our services to the public. Every week thousands of leaflets are distributed, giving details of service alterations and other information, as well as nearly thirty thousand timetables which are issued free of charge.

"The Trust maintains three Information Bureaux. In July 1973, the main Bureau in St. George's Terrace was transferred to a larger office in the same building to cater for the selling of periodical tickets. There is an Information Bureau at Perth Central Bus Station and another at Fremantle. The main office is open until 11.00 p.m. daily.

"Regular visits are made by Information Officers to flats, hotels, motels, new housing and industrial areas, institutions, etc. to give details of Trust services and advise patrons, both old and new, on their travel requirements. The Trust now has a fully equipped mobile information van to assist in this purpose."

In summary, the MTT services the Perth Statistical Division which is 564,300 hectares in area with a population of 703,199<sup>(1)</sup>. There are 1,345 km<sup>(2)</sup> of routes, on which 58,765,307 passengers were carried during the 1973-74 fiscal year.

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(1) At the 1971 census.

(2) June 1974.

## SURVEY SAMPLE

This survey was carried out by distributing questionnaires to passengers on selected bus routes. The questionnaires (shown in Annex BA) were distributed by two MTT employees, and were intended for completion and return on the bus. When this was not practical, the questionnaires could be returned by reply-paid mail.

The MTT collectors travelled continuously on buses from 7 a.m. to at least 5 p.m. on each work day for four weeks. Limited surveying was also carried out on Saturdays. As far as possible, every passenger joining the bus was given a questionnaire. Over the survey period, 309 bus 'runs'<sup>(1)</sup> were sampled. Some routes were covered several times to obtain a broader spread of results, and virtually every route on the MTT network was covered at least once.

The fact that only two collectors were used throughout the day dictated that the sample is weighted towards off-peak travellers, since it was not practical to cover the peak services at the same level. The occurrence of the September school holidays during the period of the survey also meant the sample is weighted towards a lower age group. To a lesser extent the influx of visitors, i.e. normally non-users of the MTT service, because of the school holidays or attending the Royal Perth Show (held over the last week of the survey) would have also influenced the representativeness of the sample.

Due to the greater number of sampled off-peak services, the number of questionnaires distributed on the newer buses is disproportionately high because of the preferential use of these buses for off-peak running.

## SURVEY METHODOLOGY

The sampling technique was governed by the difficult conditions arising from the noise and movement of

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(1) A 'run' is defined in this context as a one-way bus journey over a complete route at a particular time.

the bus and the limited time available for each approach. Usually it was not practical to distribute questionnaires to more than two people at once. The following approach pattern was used (usually in an abbreviated form) and is presented here as part of the procedure outline.

- . The Bureau of Transport Economics in conjunction with the MTT is conducting a Survey on your preferences in relation to the design features of this bus and the Perth Bus Service in general.
- . I would like to give you a questionnaire. Please answer the questions as well as you can. In the section relating to design features of this bus and the Perth Bus Service characteristics, tick one box to indicate your rating. These instructions are repeated on the questionnaire. All information is confidential. If you require a pencil I will supply one.
- . If I am unable to collect your completed questionnaire, please place it and the pencil (if provided) in the receptacle adjacent to the exits.
- . If this is inconvenient, seal the card and place it in any postal box.
- . The results of this Survey will be used to incorporate your preferences in the design of future Bus Services.
- . Your co-operation will be appreciated.

With younger people this approach could be abbreviated considerably. With the elderly and recent non English speaking immigrants more perseverance was required.

An endeavour was made to supply every patron entering the bus with a questionnaire. The passengers were encouraged to fill out the questionnaire on the bus (a pencil was provided) and return the completed form to the collector. The high response rate of this phase of the study is directly attributable to the assistance given by the collectors who collected the completed forms before the passenger alighted.

While assistance was given care was exercised to avoid the introduction of bias.

In order to tie questionnaires back to prevailing conditions, another duty of the collectors was to complete a 'Route Description Form' for each run. Since this form (shown in Annex BA) contained the range of serial numbers for questionnaires distributed on the run, these questionnaires could later be related to the time, data and route. In addition, this form permitted correlation of respondents' opinions with bus types and passenger load conditions. Although it may appear complicated, this system worked very well in practice, and eliminated a great deal of manual transcription.

## SURVEY FORMS

### Questionnaire

A copy of the questionnaire used in this phase of the study is shown in Annex BA. The questionnaire consists of four sections with the following broad functions:

Section 1: contains questions relating to the respondents' sex, marital status, age, and occupation.

Section 2: contains provision for entering details relating to the respondent's trip, i.e., purpose, and whether a transfer was made and/or was to be made; and information pertinent to the respondent's trip making habits, i.e., whether he or she is a driving licence holder and how many trips are made per month.

Section 3: contains characteristics of bus design to which the respondents' are asked to rate the bus they are travelling on by ticking one of the boxes under the headings poor, fair and good.

Section 4: is identical to Section 3 except that it relates to bus service characteristics.

With the exception of the 'number of trips per month' question, the questionnaire form was filled out by

ticking an appropriate box.

Route Description

A copy of the 'Route Description Form' is shown in Annex BA. The form consists of three main sections with the following functions:

Section 1: contains information which identifies the sampled trip, i.e. by route number, start and finish location, time, day and date.

Section 2: contains provision for entering the bus type and the collector's assessment (according to formal definition) of the loading which is used in variation analysis of the results.

Section 3: is for cataloguing the questionnaires distributed on the trip (number of first and last questionnaire distributed) and recording the name of the distributor responsible.

- . Analysis of travel characteristics (section 2 of the questionnaire) including driving licence status, mode choice for various trip tasks, and number of bus trips usually made each week; the results of this analysis appear in Annex CC
- . Analysis of the results of the two ranking questions (section 3 of the questionnaire) which relate to bus design features and service characteristics; results are presented in Annex CD
- . Analysis of the rating scores assigned to the 63 options considered for the 13 design objectives (section 4 of the questionnaire); results presented in Annex CE.

In addition, a brief analysis of preferences for interior and exterior colour schemes is presented in Annex CF.

Variational analyses were performed on the results of the rating questions to observe response differences by respondents:

- . Sex
- . Age group
- . Licence status
- . Bus use frequency
- . Occupation group
- . Income group

Statistical tests were performed on the results of the ranking and rating question results to determine the significance of departures from statistically predicted or assumed results.

#### BUS DESIGN AND TRAVEL CHARACTERISTICS

Respondents were asked to rank two sets of characteristics. The first set contained 12 aspects of bus design, while the second set, containing 10 items, was concerned with bus service characteristics.

Travelling comfort and seat availability were ranked almost equally as the most desirable in the first set.

CHAPTER B 2

RESULTS

PRELIMINARY PROCESSING

The questionnaires returned by hand or post were first checked to ensure satisfactory completion. Those with obvious errors or indistinct makings were corrected; those with insufficient entries or which were mutilated were rejected. The questionnaires were then sorted by day of distribution, (determined by first and last questionnaire numbering on the Route Control Forms). Progressive tallies were kept of the number of direct returns for each day, the number of days postal returns took to arrive, and the distribution rate for each of the MIT fleet bus models. At this stage the Route Description form was also checked. Any discrepancies or obvious errors were corrected quickly after consultation with the person responsible for the trip sample.

The information on the questionnaires and Route Description forms was then key punched directly onto computer cards. The card data was spooled onto a tape file and the tape and cards dispatched separately to the BTE for preliminary computer processing.

The recorded data was edited for consistency and for transcription errors. An error check of the questionnaires against their Route Description form was performed after a numerical sort. The trip data on the route form was then attached to each of the questionnaires associated with it and recorded on magnetic tape.

A complete description of the tape records together with associated notes on coding conventions used in the records is given in Annex BF.

DETAILED RESULTS AND ANALYSES

The results of the onboard survey fall into three categories:

- . Analysis of sample characteristics, including sex,



marital status, age distribution, occupation group, driving licence status; these results are reported in Annex BB

Analysis of travel characteristics including, bus trip-making rate, transport transfer details, and trip purpose, are presented in Annex BC

Analysis of the rating for each of the 17 bus design features and 10 service characteristics; these results are presented in Annex BD and discussed below.

Descriptions and illustrations of the bus design features incorporated in the MTT fleet models which are pertinent to the analysis of the rating questions together with illustrations of patron facilities are presented in Annex BE as an evaluation benchmark. Descriptions of existing service characteristics have not been presented as an analysis reference because of the complex nature of such an undertaking. However, background information is presented where the more significantly rated characteristics are discussed.

It is important to note that some results of the survey are biased towards the off-peak patron and to a lesser extent towards the female sex. Some results i.e. those relating to temperature control, ventilation and level of service are also conditioned by externalities peculiar to Perth, e.g. climate, patron composition and city geography, which are not representative of, and consequently not applicable to, other cities and bus services.

#### BUS DESIGN FEATURES AND SERVICE CHARACTERISTICS

The rating of bus design features have been ordered by the value of the mean numeric response<sup>(1)</sup>. Table B2.1 shows the ordered list for bus design features and service characteristics separately, while Table B2.2 shows the

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(1) The code used for the response was as follows:

Poor = 1; Fair = 2; Good = 3.

TABLE B2.1 - GROUPED RESPONSE TO DESIGN FEATURES AND SERVICE CHARACTERISTICS

Feature/Characteristic	Mean Response			Order
	Male	Female	Overall	
<b>BUS DESIGN FEATURE</b>				
Light Level	2.641	2.671	2.662	1
Ease of Entry	2.545	2.575	2.567	2
Ease of Exit	2.429	2.486	2.470	3
Seating Layout	2.373	2.471	2.443	4
Exterior Colour	2.376	2.444	2.425	5
Seating Comfort	2.295	2.462	2.414	6
Exterior Styling	2.357	2.416	2.399	7
Temperature	2.410	2.379	2.389	8
Seat Colour	2.332	2.402	2.383	9
Bus Cleanliness	2.377	2.375	2.377	10
Control of Exhaust Smoke and Smell	2.422	2.347	2.368	11
Ventilation	2.377	2.363	2.368	12
Interior Colour	2.263	2.316	2.302	13
Interior Styling	2.219	2.300	2.278	14
Ride Smoothness	2.060	2.114	2.099	15
Noise Level	2.026	2.100	2.078	16
Standing Comfort	1.782	1.758	1.767	17
<b>BUS SERVICE CHARACTERISTIC</b>				
Safety	2.685	2.668	2.673	1
Passenger Security	2.576	2.556	2.562	2
Door to Door Travel Speed	2.380	2.394	2.391	3
Reliability (Buses on Time)	2.406	2.351	2.367	4
Spacing of Bus Routes	2.304	2.277	2.285	5
Level of Fares	2.308	2.267	2.280	6
Control of Vandalism	2.265	2.285	2.279	7
Bus Frequency	2.123	2.093	2.102	8
Number of Express Buses	2.041	2.020	2.028	9
Supply of Bus Shelters	1.978	1.825	1.871	10

TABLE B2.2 - OVERALL RESPONSE TO DESIGN FEATURES AND SERVICE CHARACTERISTICS

Feature/Characteristic	Mean Response			Order
	Male	Female	Overall	
Safety	2.685	2.668	2.673	1
Light Level	2.641	2.671	2.662	2
Ease of Entry	2.545	2.575	2.567	3
Passenger Security	2.576	2.556	2.562	4
Ease of Exit	2.429	2.486	2.470	5
Seating Layout	2.373	2.471	2.443	6
Exterior Colour	2.376	2.444	2.425	7
Seating Comfort	2.295	2.462	2.414	8
Exterior Styling	2.357	2.416	2.399	9
Door to Door Travel Speed	2.380	2.394	2.391	10
Temperature	2.410	2.379	2.389	11
Seat Colour	2.332	2.402	2.383	12
Bus Cleanliness	2.377	2.375	2.377	13
Control of Exhaust Smoke and Smell	2.422	2.347	2.368	14
Ventilation	2.377	2.363	2.368	15
Reliability (Buses on Time)	2.406	2.351	2.367	16
Interior Colour	2.263	2.316	2.302	17
Spacing of Bus Routes	2.304	2.277	2.285	18
Level of Fares	2.308	2.267	2.280	19
Control of Vandalism	2.265	2.285	2.279	20
Interior Styling	2.219	2.300	2.278	21
Bus Frequency	2.123	2.093	2.102	22
Ride Smoothness	2.060	2.114	2.099	23
Noise Level	2.026	2.100	2.078	24
Number of Express Buses	2.041	2.020	2.028	25
Supply of Bus Shelters	1.978	1.825	1.871	26
Standing Comfort	1.782	1.758	1.767	27

ordered list for both sections combined. This method has been used as a convenient way of presenting the results. No statistical inferences can be made from such an ordering.

The individual questions should be considered separately and are presented in this way in detail in Annex BD.

The more significant responses will be discussed in the following sub sections.

#### Bus Design Features

Light Level: which relates to natural lighting as the survey was conducted wholly during daylight hours received the most favourable responses, even on older bus models which have small windows by modern standards. It may be concluded that size of windows is not a significant design factor when considering light levels at least.

Ease of Entry and Exit: were rated high in respect to the other features. The newer MTT buses are fitted with very large doors, (sufficiently wide enough to allow two people to enter or exit through each door at once), and low steps. These buses scored significantly better than the older models. The difference in average rating scored by Hino and Panther, models which have similar bodies, is an unexplained anomaly.

Seating Layout and Seating Comfort: were rated next highest, particularly in the newer models where leg room has been increased and the majority of the seats are forward facing.

Temperature and Ventilation: received interesting ratings. Temperature received a higher rating than the control of ventilation, suggesting that patron approval of climate control could be improved overall by providing better ventilation.

Control of Exhaust Smoke and Smell: received a mean rating of 2.37 however it fell in the lower half of the design feature rating list.

Ride Smoothness: was rated overall second last with a rating only just above fair. The newer buses fitted with airbag suspension scored higher ratings than those without.

Standing Comfort: received the lowest rating at 1.77 (the only feature rated below fair). It is clear that attention

should be given to improving the comfort of standing passengers in new buses, but it is important to note that MTT policy is to seat as many patrons as possible and reduce the number of standees.

#### Bus Service Characteristics

Safety: received the highest rating of the service characteristics options. As it is difficult to quantify or define this aspect of the MTT service it is difficult to comment on the result.

Passenger Security: was rated next highest. This result however may have been influenced by Perth social characteristics and by the complete lack of 'after hours' sampling.

Door-to-Door Travel Speed and Reliability: received the highest ratings of the more significant service characteristics. On analysis, peak travellers and in general younger patrons rated the characteristics less favourably. The ratings for these characteristics also predictably decreased with the bus load at the time of sampling.

Spacing of Bus Routes: was rated highly by both infrequent users (a result dominated by the views of off-peak patrons) and peak patrons who may be classified as frequent users. This apparently anomalous result may be explained by the fact that both categories of patrons are non captive.

Level of Fares: was rated between fair and good indicating patrons may be prepared to pay more for improved service. The average fare for the 1973-74 financial year was 28.7 cents per kilometre.

Bus Frequency and Number of Express Buses: were rated as only fair. This is significant in light of the high level of service, by Australian standards, offered by the MTT.

Supply of Bus Shelters: was the only question to be rated below fair.

Overall, the majority of features and characteristics scored ratings between fair and good, indicating a high

degree of MTT patron satisfaction. As shown in Table B2.1, the MTT bus design features rated higher than important service characteristics, such as, door to door travel speed, reliability, spacing of bus routes, level of fares, etc.

TABLE C2.3 - RESPONSE TO DESIGN OPTIONS (Cont.)

Objective	Method	Order	Mean Response
INCREASING SEAT CAPACITY	More Buses During Peak Hours	1	6.08
	More Seats and Less Standing Room	2	5.62
CONTROL OF LIGHT TEMPERATURE AND VENTILATION	Insulation Against Heat and Cold	1	5.87
	Opening Windows	2	5.79
	Roof Ventilators	3	5.65
	Good Artificial Lighting	4	5.58
	Tinted Window Glass	5	5.43
	Large Windows	6	5.25
	Air Conditioning	7	5.01
	Fans	8	4.99
	Heating in Winter	9	4.74
	Pull Down Blinds	10	4.38
	Transparent Roof Panels	11	3.65
EXTERIOR DESIGN	Bus Design 1	1	5.44
	Bus Design 3	2	5.01
	Bus Design 2	3	4.73
SEATING ARRANGEMENT	Interior Layout 1	1	6.14
	Interior Layout 2	2	5.22
	Interior Layout 3	3	2.95
SEAT DESIGN	Seat Design 1	1	6.12
	Seat Design 2	2	4.35
	Seat Design 3	3	3.33
SUPPORTS FOR STANDING PASSENGERS	Handgrip Design 1	1	5.35
	Handgrip Design 3	2	5.13
	Handgrip Design 2	3	4.02
SHELTER DESIGN	Shelter Design 2	1	5.63
	Shelter Design 1	2	4.34

ANNEX BA

ONBOARD SURVEY FORMS

QUESTIONNAIRE FORM

The form was produced as a folding card. The sides facing outward after folding are shown in Figures BA.1 and BA.2; the sides which face inwards are shown in Figures BA.3 and BA.4.

A letter to the survey respondent from both the Chairman of the MTT and the Director of the BTE which outlined the questionnaire procedure, was printed on the half side represented in Figure BA.4. The word "CONFIDENTIAL" was included to reinforce the assurance of confidentiality given by the person who handed out the questionnaire. The card identification number was also printed on this side.

On the other side of the outer face shown in Figure BA.2 was a business reply paid postal envelope facing to give the respondent, as explained in the instructions, the instructions, the option of returning the completed questionnaire by post.

The questionnaire proper was printed on the halves which folded inward. On the side shown in Figure BA.3, the respondent was asked to supply personal and trip related information. The edges of this half side were gummed to facilitate sealing. On the other side (Figure BA.4), the design features rating questions and the Perth bus service rating questions were listed.





## PERTH BUS DESIGN SURVEY

Dear User,

This Survey is being undertaken jointly by the Bureau of Transport Economics and the Metropolitan Transport Trust.

Please answer the questions on the opposite side of this card as well as you can. In the section relating to design features of the bus you are on, tick one box to indicate your rating of the bus in regard to each design feature. Do likewise for the characteristics of Perth's bus service.

When you have finished, please hand the card back to our representative on the bus. If this is inconvenient, seal the card and place it in any postal box.

Thank you for your co-operation.

G. A. Shea  
Chairman, MTT

J. H. E. Taplin  
Director, BTE

**CONFIDENTIAL**

4745

Full Size Reproduction

**FIGURE BA.1  
INFORMATION AND INSTRUCTIONS  
ONBOARD QUESTIONNAIRE**

( Fold Line )

( Fold Line )

No postage  
stamp  
required  
if posted  
in Australia

**BUSINESS REPLY POST**  
Permit No. 50 Issued at Canberra

Postage and fee will be paid on delivery to

Perth Bus Design Survey,  
P.O. Box 7162,  
Perth Cloisters Square, W.A. 6000



- 21 -

Full Size Reproduction

**FIGURE BA.2**  
**POSTAL REPLY ENVELOPE FACE**  
**ONBOARD QUESTIONNAIRE**

( Gunned Edge ) ( Fold Line )

**SEX**

Male

Female

**MARITAL STATUS**

Now married

Never married

Other

**AGE GROUP**

Under 15

15 - 19

20 - 29

30 - 39

40 - 49

50 - 59

60 - 69

Over 69

**OCCUPATIONAL STATUS**

Full-time employment

Part-time employment

Looking for work

Student

Pensioner or retired

Housewife

Other

Please tick if you hold a current driver's licence

How many trips (total one-way journeys) do you make by bus each month?

Please tick if you transferred to this bus from another bus or a train

Please tick if you will transfer from this bus to another bus or a train

**PURPOSE OF THIS TRIP** To or from:

Work

School, College or University

Social or recreation

Shopping

Other

Full Size Reproduction

**FIGURE BA.3**  
**PERSONAL AND TRIP QUESTIONS**  
**ONBOARD QUESTIONNAIRE**

( Fold Line )

**DESIGN FEATURES RATING FOR THIS BUS**

Poor	Fair	Good	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bus cleanliness
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noise level
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ride smoothness
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ease of entry
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ease of exit
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Light level
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ventilation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exterior styling
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Interior styling
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Seating comfort
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seating layout
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing comfort
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Control of exhaust smoke and smell
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exterior colour
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Interior colour
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Seat colour

**RATING OF PERTH BUS SERVICE CHARACTERISTICS**

Poor	Fair	Good	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bus frequency
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spacing of bus routes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reliability (buses on time)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Level of fares
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Supply of bus shelters
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Number of express buses
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Control of vandalism
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Passenger security
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Door-to-door travel speed

Full Size Reproduction

**FIGURE BA.4**  
**RATING QUESTIONS**  
**ONBOARD QUESTIONNAIRE**

ROUTE DESCRIPTION FORM

The Route Description Form completed for each sampled trip by the questionnaire distributor/collector was used to register the following information.

- . Route number, start and finish location
- . Time, day and date
- . Bus type
- . Bus loading
- . The number of the first and last questionnaire distributed
- . The collector's number

A copy of the form is presented in Figure BA.5.



**PERTH BUS DESIGN SURVEY**

**ROUTE DESCRIPTION FORM**

**GENERAL DETAILS**

ROUTE

- SUNDAY 1
- MONDAY 2
- TUESDAY 3
- WEDNESDAY 4
- THURSDAY 5
- FRIDAY 6
- SATURDAY 7

DATE

TIME

START POINT

FINISH POINT

**BUS TYPE**

- AEC Mk VI 1
- HINO 2
- LEOPARD 3
- PANTHER 4
- TIGER CUB 5
- WORLDMASTER 6
- OTHER 7

**LOAD ASSESSMENT**

- VERY HEAVY 1
- HEAVY 2
- MODERATE 3
- LIGHT 4
- VERY LIGHT 5

**DISTRIBUTION**

FIRST

LAST

COLLECTOR

OFFICE ONLY	
01	R
03	
06	
10	
14	
17	
20	
21	
22	
26	
30	

**FIGURE BA.5  
ROUTE DESCRIPTION FORM**

SAMPLE CHARACTERISTICS AND COMPARISONS

Respondents were asked to supply personal information in the first section of the questionnaire which included sex, marital status, age group and occupational status. As the sampling was biased in favour of off-peak travellers, the demographic distributions are not representative of the Perth Statistical Division nor of MTT patrons. This non-representativeness of the sample was offset in the assessment by the size of the sample which made possible extensive and meaningful use of variational analyses.

Because the respondents were asked to note the bus they were travelling on and MTT service as it affected them, the various types of bus within the MTT fleet and the routes were also indirectly sampled. Questionnaires were distributed on the six main bus types approximately in proportion to their fleet numbers. Each route was sampled at least once during peak periods, and in most cases, each main route was sampled three times during the off-peak period.

The major sample characteristics tabulated in the analysis of survey results were as follows:

- . Age distribution
- . Occupation distribution
- . Marital status distribution.

Details of these distributions are presented in the following sub-section.

Age Distribution

Minors 15 years old and younger were permitted to participate in the survey; however, children younger than 10 were not encouraged to respond because of comprehension problems.

Age distributions for respondents (males, females and total) are given in Table BB.1.

TABLE BB.1 - AGE DISTRIBUTION

Age Group	Male	Female	Unstated	Total
15 and Under	182	360	0	542
15-19	483	1093	2	1578
20-29	319	814	3	1136
30-39	168	409	3	580
40-49	163	577	4	744
50-59	161	405	7	573
60-69	151	349	11	511
70 and over	132	233	6	371
Unstated	10	23	22	55
<b>Total</b>	<b>1769</b>	<b>4263</b>	<b>58</b>	<b>6090</b>

Figure BB.1 shows the respondents age distribution compared to the Perth Statistical Division as a whole. While sampling was not representative, only age groups 15 and under and 15-19 depart significantly from the Perth distribution. The deficiency in the 15 and under group is caused by the limited sampling in this group as explained above. The excess in the 15-19 age group was undoubtedly due to the concurrent school holidays.

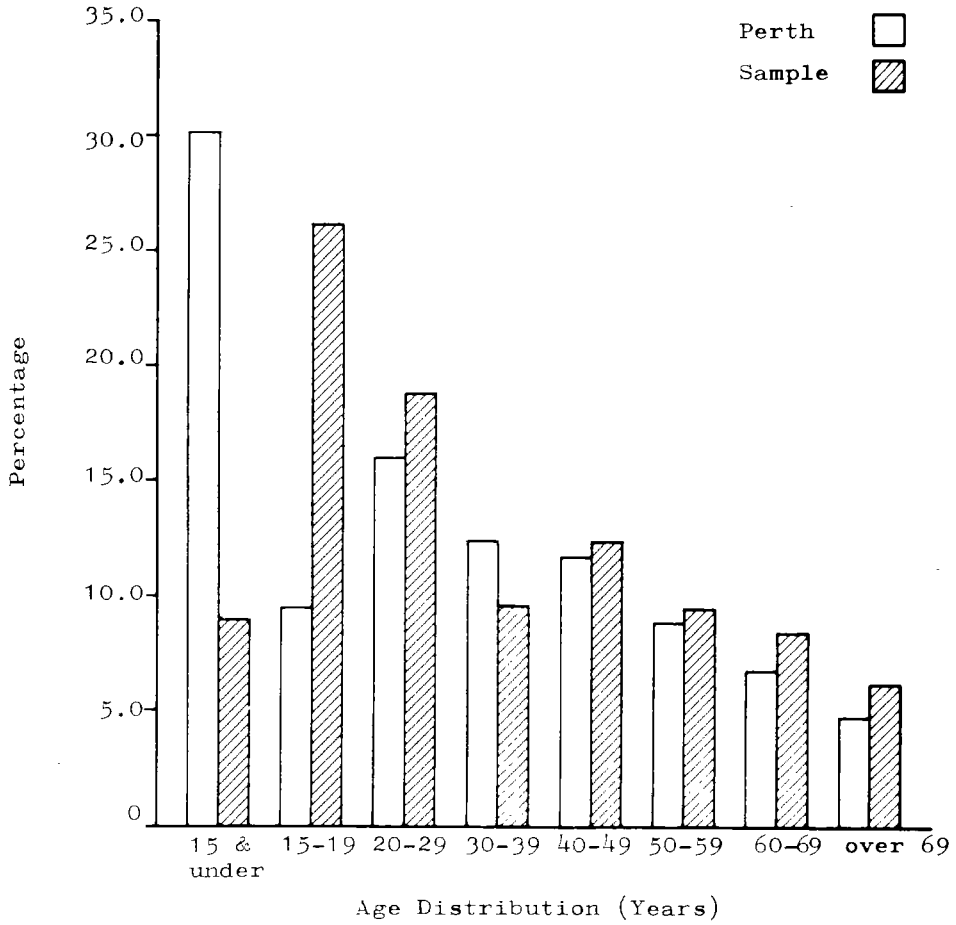
Occupation Distribution

An abbreviated categorisation of occupation groups was used in this survey. The distribution (male, female, unstated, and total) for each of the categories used is presented below in Table BB.2.

TABLE BB.2 - OCCUPATION DISTRIBUTION

Occupation	Male	Female	Unstated	Total
Full-time	883	1295	5	2283
Part-time	66	479	7	552
Unemployed	77	113	0	190
Student	461	916	5	1382
Pensioner	223	551	15	789
Housewife	10	749	4	763
Other	35	34	0	69
Unstated	14	26	22	62
<b>Total</b>	<b>1769</b>	<b>4263</b>	<b>58</b>	<b>6090</b>





**FIGURE BB.1**  
**COMPARISON IN AGE GROUP DISTRIBUTION**

Marital Status Distribution

Marital status of respondents was collected using a categorisation of 'Now married', 'Never married' and 'Other'. This question generated the largest proportion of queries from passengers to collectors/distributors. The distribution of Marital Status is shown in Table BB.3.

TABLE BB.3 - MARITAL STATUS

Marital Status	Male	Female	Unstated	Total
Now married	723	1798	12	2533
Never married	732	1532	9	2273
Other	197	747	9	953
Unstated	117	186	28	331
Total	1769	4263	58	6090

In the above tables the large difference in the number of questionnaires completed by each sex (a predominance of females) is apparent. This is by far the greatest departure from demographic normality resulting from the bias toward off-peak sampling when passengers are predominantly female.

ANNEX BC

RESPONDENTS' TRAVEL CHARACTERISTICS

Respondents were requested to supply information about the following aspect:

- . Driving licence status
- . Bus trip making rate (one way journeys per month)
- . Transfer status; i.e., whether respondent had transferred from or would transfer to another bus
- . Trip purpose

This information was collected, particularly the transfer details, at the MTT's request. The distribution by sex for each item of travel information is presented here because of the relevance in evaluating the results.

Details of these distributions are presented in the following sub-sections.

Licence Holders

Respondents were asked if they held a current motor vehicle or motor cycle driving licence, to which they replied 'yes' or 'no'. The distribution is set out in Table BC.1 below.

TABLE BC.1 - LICENCE HOLDER DISTRIBUTION

Licence Status	Male	Female	Unstated	Total
Licenced	905	1409	8	2322
Not Licenced	864	2854	50	3768
Total	1769	4263	58	6090

Trip-making Rate

Respondents were asked to enter the number of trips made by bus each month. A trip was defined as a one-way journey; i.e., each journey could include transfers. The number was recorded in a two digit field, hence numbers 00 (or unstated) to 99 were the lower and upper limit of the range. For the analysis, the numbers were allocated among

six groups commencing from 1-10 and incrementing by tens to 50 and over, and 'unstated'. The distribution for each of the groups is shown in Table BC.2.

TABLE BC.2 - TRIPS PER MONTH

Number of trips	Male	Female	Unstated	Total
1-10	344	981	9	1134
11-20	273	787	4	1064
21-30	212	568	3	783
31-40	358	669	2	1029
41-50	147	308	1	456
Over 50	204	401	4	609
Unstated	231	549	35	815
Total	1769	4263	58	6090

The data presented above may be unreliable for three reasons:

- . There is no distinction between a null reply and zero trips per month
- . Confusion arose over the definition of a trip
- . It would be difficult for a respondent to accurately estimate the total number of trips taken over a monthly period

Transfer Details

Respondents were asked in two questions answering 'yes' and 'no' whether they:

- . Had transferred to the bus they were travelling on from another bus or train
- . Were going to transfer from the bus they were travelling on to another bus or train.

Table BC.3 on the following page categorises the transfer details into

- . Have transferred
- . Have not transferred
- . Will transfer
- . Will not transfer

TABLE BC.3 - TRANSFER DETAILS

Transfer	Male	Female	Unstated	Total
Have transferred	462	1005	11	1478
Have not transferred	1307	3258	47	4612
<b>Total</b>	<b>1769</b>	<b>4263</b>	<b>58</b>	<b>6090</b>
Will transfer	399	853	7	1259
Will not transfer	1370	3410	51	4831
<b>Total</b>	<b>1769</b>	<b>4263</b>	<b>58</b>	<b>6090</b>

It should be remembered that 'no transfer' was not registered as such, hence these categories may include unstated transferees. However, it has been assumed that where no transfer was indicated by the passenger, the passenger did not in fact transfer.

Trip Purpose

Five categories were used to allow respondents to classify the purpose of their trip (to or from) at the time of sampling. The categories and distributions are presented in Table BC.4 below.

TABLE BC.4 - TRIP PURPOSE

Trip purpose	Male	Female	Unstated	Total
Work	745	1530	8	2283
School, college or university	302	656	1	959
Social or recreation	241	537	5	783
Shopping	242	1139	18	1390
Other	215	353	2	570
Unstated	24	48	24	96
<b>Total</b>	<b>1769</b>	<b>4263</b>	<b>58</b>	<b>6090</b>

variation of bus design features is given for each bus type. In Table BD.2 the variation of bus service characteristics is given for each category of trip making frequency considered in the analysis.

#### STATISTICAL ANALYSIS

Chi-square tests were performed during the variational analysis to determine whether significant differences could be assumed between the variation options. The results are not reported here in detail, but due account of the test results have been made in the remarks attached to the results for each question.

ANNEX BD

BUS DESIGN FEATURES AND SERVICE CHARACTERISTICS  
RATING ANALYSIS

In Section 3 of the survey questionnaire (see Annex BA), respondents were asked to rate various aspects of bus design and service characteristics. Because a wide range of buses and bus services were sampled and the respondents were sampled and the respondents were asked to rate the particular bus they were travelling on and the service as it affected them, the ratings represent a complex array of options. The analysis and an abbreviated presentation of these results appear below.

PRESENTATION OF RESULTS

For each design feature or service characteristic respondents were asked to tick the appropriate box with their rating. The ratings were poor, fair and good which were numerically rated 1, 2 and 3 during processing.

The distribution of results for each question are presented in detail by sex separately on one page. In addition to the tabulated distribution the mean response (based on the numeric rating scale) is also given.

The tabulated distribution is also presented in the form of two histograms; one for males and the other for females. The histogram representation is more meaningful because it is a fractional distribution overcoming the discrepancy in numbers between respondents of each sex.

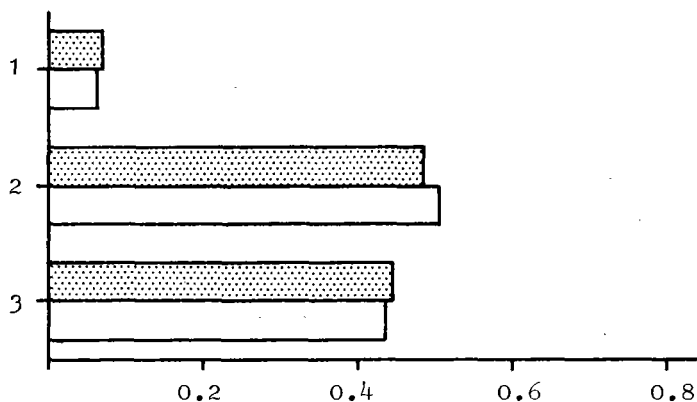
The sample size also permitted variational analyses on the many design options and service characteristics encompassed in the sampling. These analyses are not reported

DESIGN FEATURE ..... BUS CLEANLINESS

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	120	255	1	376
Fair (2)	845	2114	25	2984
Good (3)	777	1830	29	2636
Unstated	<u>27</u>	<u>64</u>	<u>3</u>	<u>94</u>
Total	1769	4263	58	6090
Mean	2.38	2.38	2.51	2.38

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

Buses on the MTT were considered by respondents to be clean, receiving a mean response of 2.38. The mean response increased with the respondents age. The more recent bus models which incorporate features to facilitate cleaning rated ahead of other models. This however may have been caused to some extent by respondents relating newness to cleanliness.

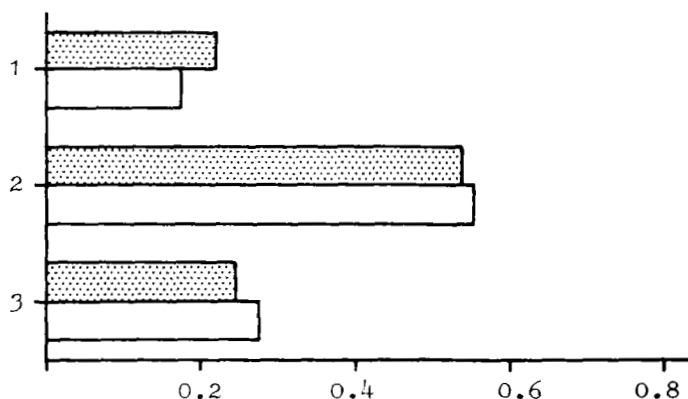


DESIGN FEATURE ..... NOISE LEVEL

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	373	704	9	1086
Fair (2)	922	2233	25	3180
Good (3)	418	1109	16	1543
Unstated	<u>56</u>	<u>217</u>	<u>8</u>	<u>281</u>
Total	1769	4263	58	6090
Mean	2.03	2.10	2.14	2.08

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

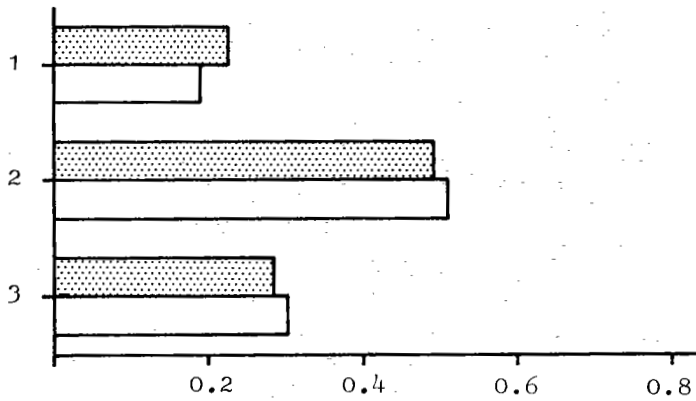
Respondents considered the noise level in the MTT buses to be only fair as evidenced by the mean rating of 2.08 and the near nominal distribution. Males rated the noise level more adversely than females. The HINO models received the highest mean rating at 2.31 which was well above the next best rating received by a PANTHER, which like the HINO and unlike the remaining models has a rear mounted engine.

DESIGN FEATURE ..... RIDE SMOOTHNESS

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	385	770	8	1163
Fair (2)	843	2084	24	2951
Good (3)	488	1236	20	1744
Unstated	<u>54</u>	<u>173</u>	<u>6</u>	<u>232</u>
Total	1769	4263	58	6090
Mean	2.06	2.11	2.23	2.10

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

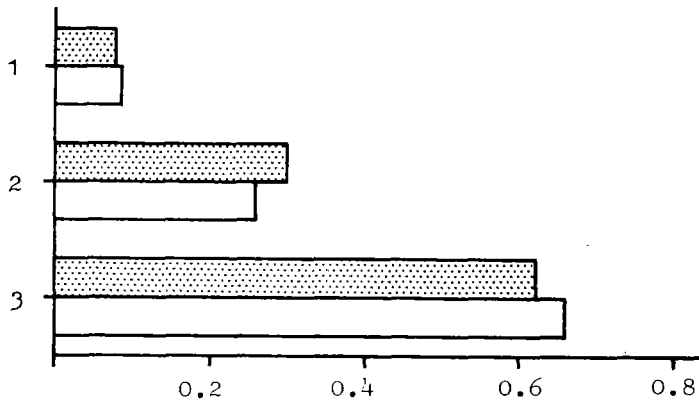
Ride smoothness was rated just above fair with a mean value of 2.10. Females were less critical of this feature. Likewise elderly people rated it higher than the younger respondents. HINO and PANTHER bus models were rated well above other models on this feature with the HINO considered best with a mean response of 2.39.

DESIGN FEATURE ..... EASE OF ENTRY

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	134	347	4	485
Fair (2)	521	1061	12	1594
Good (3)	1080	2721	35	3836
Unstated	<u>34</u>	<u>134</u>	<u>7</u>	<u>175</u>
Total	1769	4263	58	6090
Mean	2.55	2.58	2.61	2.57

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

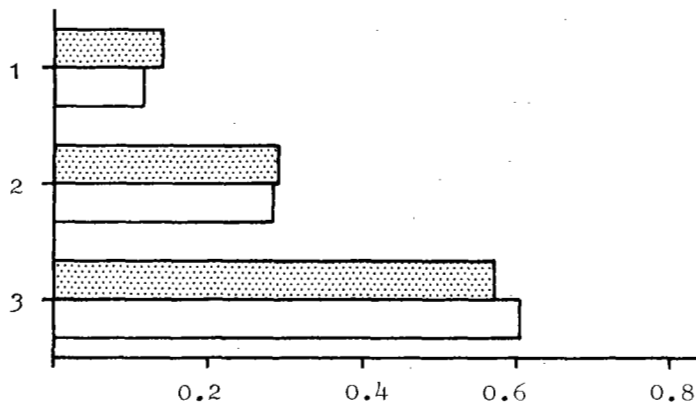
The majority of respondents, 64.8 percent, considered this feature to be good in MTT buses. The mean response was 2.57 with females rating the facility higher than males. HINO (2.72), PANTHER (2.65) and LEOPARD (2.52) bus models received the highest average ratings.

DESIGN FEATURE ..... EASE OF EXIT

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	238	466	4	708
Fair (2)	494	1147	11	1652
Good (3)	967	2434	33	3434
Unstated	<u>70</u>	<u>216</u>	<u>10</u>	<u>296</u>
Total	1769	4263	58	6090
Mean	2.43	2.49	2.60	2.47

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

All of the MTT's buses are one-man operated single deck. The exist facilities, through both front and centre doors, are therefore better than the entry facilities where access is by way of the front door only. Nevertheless, this feature received a lower mean rating than the entry feature.

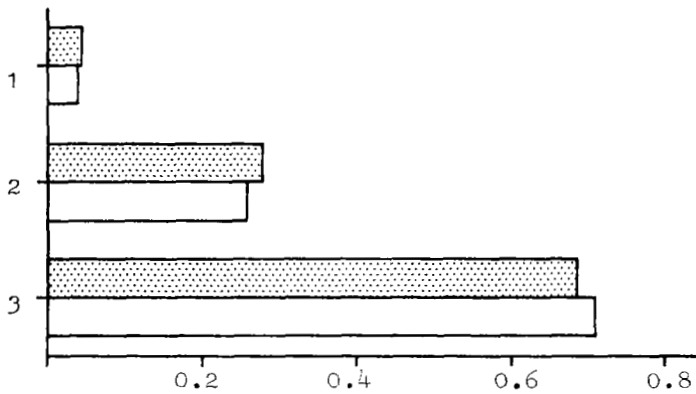
The newer buses featuring low steps i.e. HINO and PANTHER models received higher ratings than the other models.

DESIGN FEATURE ..... LIGHT LEVEL

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	67	137	1	205
Fair (2)	454	971	10	1435
Good (3)	1124	2680	34	3838
Unstated	<u>124</u>	<u>475</u>	<u>13</u>	<u>612</u>
Total	1769	4263	58	6090
Mean	2.64	2.67	2.73	2.66

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

The light level in the sampled bus was considered by the majority of respondents to be good. The overall mean rating was 2.66. The younger the respondent the more critical they were of the light.

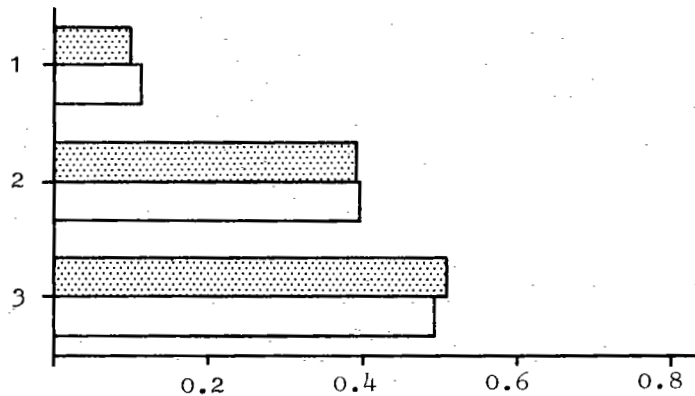
The bus models fitted with the latest window design received significantly higher ratings.

DESIGN FEATURE ..... TEMPERATURE

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	170	459	4	633
Fair (2)	675	1606	14	2295
Good (3)	876	2000	30	2906
Unstated	<u>48</u>	<u>198</u>	<u>10</u>	<u>256</u>
Total	1769	4263	58	6090
Mean	2.41	2.38	2.54	2.39

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

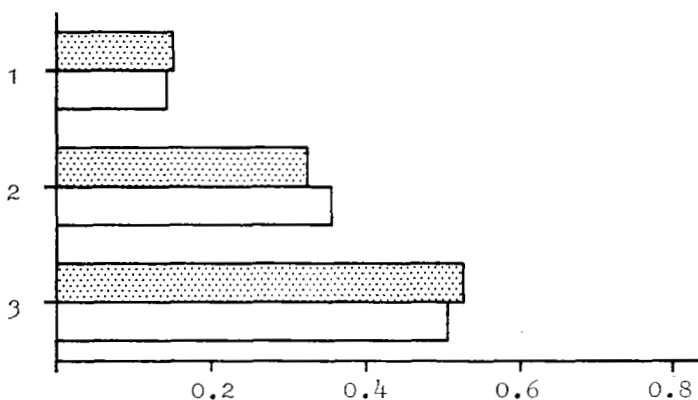
The survey was conducted during early spring. Respondents considered the bus temperature level at that time to be between fair and good with a mean rating of 2.39. The rating improved as the bus load decreased and once again the younger respondents were more critical of the feature. The rating for this feature also decreased as the number of bus trips made by the respondent increased.

DESIGN FEATURE ..... VENTILATION

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	257	577	4	838
Fair (2)	552	1452	15	2019
Good (3)	902	2062	29	2993
Unstated	<u>58</u>	<u>172</u>	<u>10</u>	<u>240</u>
Total	1769	4263	58	6090
Mean	2.38	2.36	2.52	2.37

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

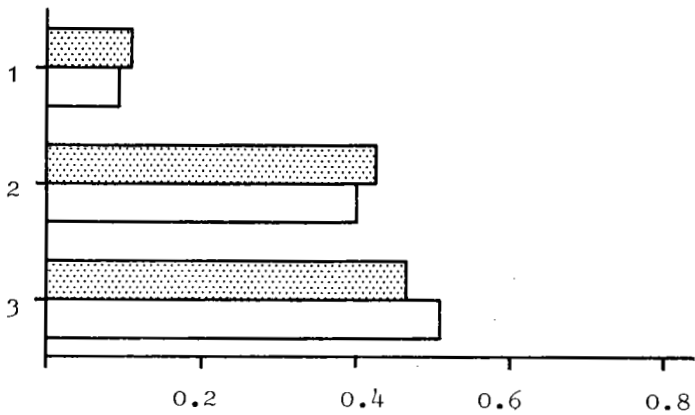
The ventilation on MTT buses, which are fitted with large opening windows and full roof ventilating systems was rated by respondents to have a mean of 2.37 i.e. only just above the fair rating. The more recent models had an improved rating over older models. Respondents who used buses frequently rated the feature lower than infrequent users.

DESIGN FEATURE ..... EXTERIOR STYLING

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	182	361	5	548
Fair (2)	712	1572	11	2295
Good (3)	780	1996	26	2802
Unstated	95	334	16	445
Total	1769	4263	58	6090
Mean	2.36	2.42	2.50	2.40

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

Respondents considered external styling of the MTT bus fleet to be between fair and good with an overall rating of 2.40. Females rated the exterior style slightly above males (2.42 and 2.36 rating respectively). Buses with similar body styles were rated consistently; the newer body styles received the highest ratings.

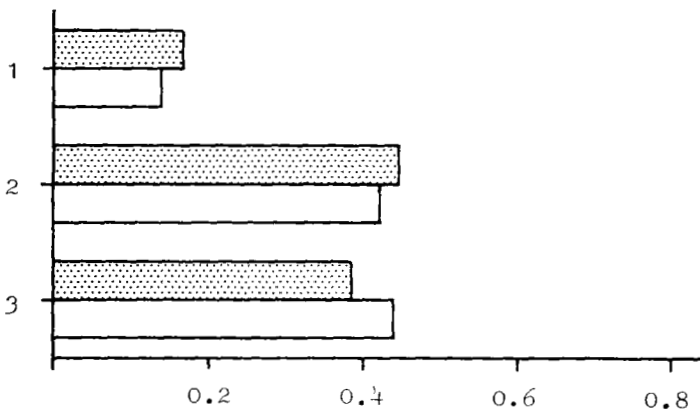


DESIGN FEATURE ..... INTERIOR STYLING

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	282	549	4	835
Fair (2)	756	1665	12	2433
Good (3)	653	1733	26	2412
Unstated	<u>78</u>	<u>316</u>	<u>16</u>	<u>410</u>
Total	1769	4263	58	6090
Mean	2.22	2.30	2.52	2.28

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

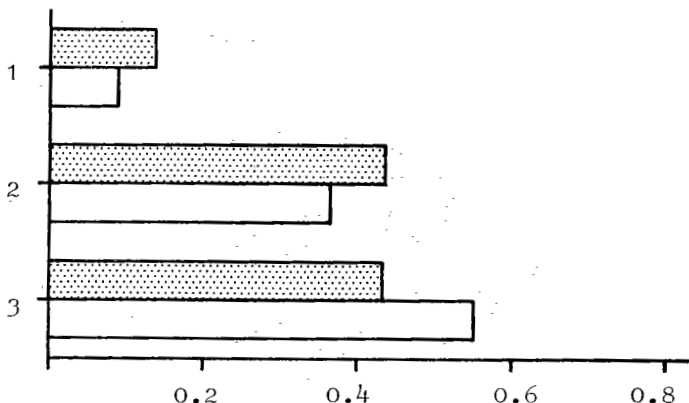
Interior style received a lower overall rating (2.28) than the exterior of MTT buses. Once again females rated the interiors significantly higher than males (2.30 to 2.22 respectively). The newer buses rated higher than the older models. The mean overall rating also improved as the bus load at the time of sampling decreased.

DESIGN FEATURE ..... SEATING COMFORT

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	234	366	3	603
Fair (2)	750	1505	18	2273
Good (3)	743	2287	30	3060
Unstated	42	105	7	154
Total	1769	4263	58	6090
Mean	2.30	2.46	2.53	2.41

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

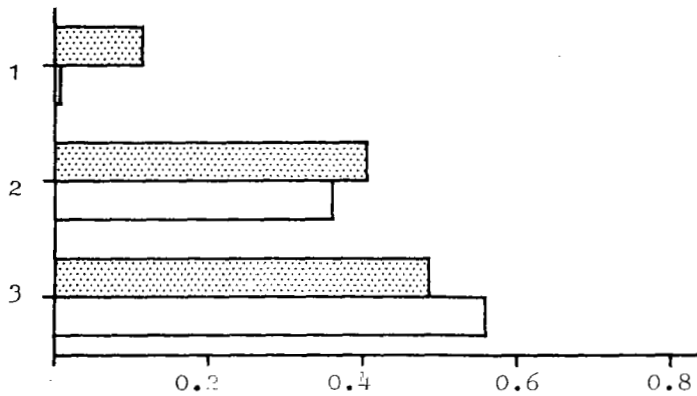
The overall rating for this feature was 2.41. Females rated the comfort higher (2.46) than males (2.30). The HINO bus model received the highest rating 2.65 with the rating decreasing as the mean age of the models increased. The rating decreased through the day and as the bus loading increased. The decrease in approval with load may be attributed to the lack of elbow room becoming more noticeable on the crowded bus.

DESIGN FEATURE ..... SEATING LAYOUT

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	191	346	4	541
Fair (2)	689	1436	12	2137
Good (3)	829	2240	29	3098
Unstated	<u>60</u>	<u>241</u>	<u>13</u>	<u>314</u>
Total	1769	4263	58	6090
Mean	2.37	2.47	2.56	2.44

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

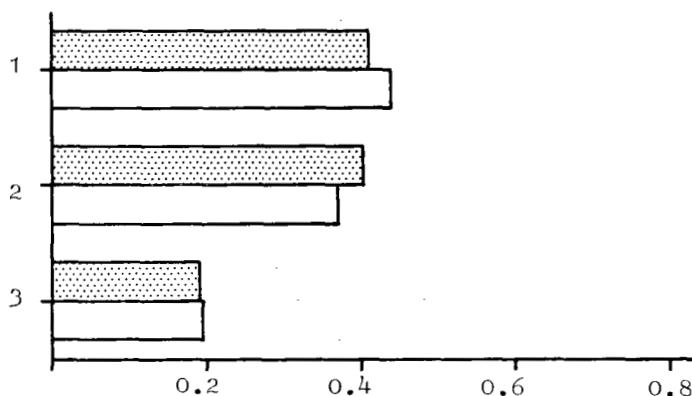
The response to this question was similar to the response to seating comfort. The overall response was 2.44. The more recent models which embody the MTT's policy of providing as many seats as possible (all forward facing) were rated ahead of the models which have combinations of side and centre facing seats.

DESIGN FEATURE ..... STANDING COMFORT

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	671	1679	12	2362
Fair (2)	661	1415	18	2094
Good	313	750	12	1075
Unstated	<u>124</u>	<u>419</u>	<u>16</u>	<u>559</u>
Total	1769	4263	58	6090
Mean	1.78	1.76	2.00	1.77

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

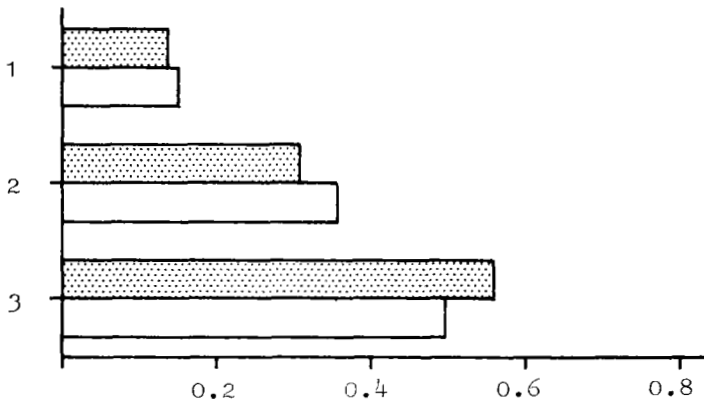
Standing comfort was considered overall as between poor and fair receiving a rating of 1.77. The newer models e.g. HINO's and PANTHER's have very little standing room; however the comfort in these models was considered better than in the older models. This result is probably due to the superior ride smoothness in these models.

DESIGN FEATURE ..... CONTROL OF EXHAUST SMOKE AND SMELL

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	230	588	9	827
Fair (2)	518	1402	18	1938
Good (3)	945	1958	20	2923
Unstated	<u>76</u>	<u>315</u>	<u>11</u>	<u>402</u>
Total	1769	4263	58	6090
Mean	2.42	2.35	2.23	2.37

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

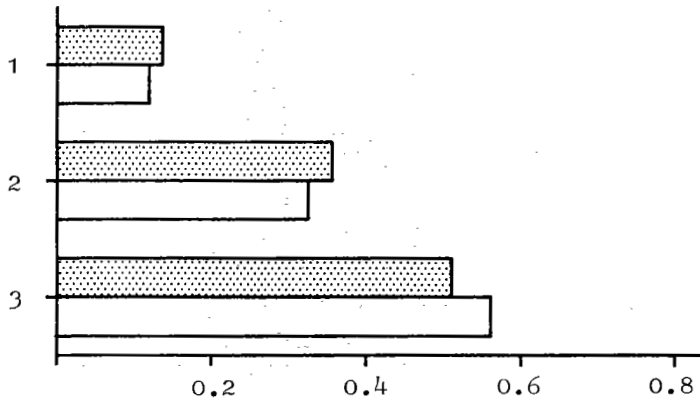
Respondents rated this feature favourably (2.37 mean overall rating). Male respondents were not as critical as females (2.42 to 2.35 rating respectively). The rating improved with the respondents' age. The newer bus models received only marginally better ratings than the older models.

DESIGN FEATURE ..... EXTERIOR COLOUR

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	229	466	3	698
Fair (2)	603	1292	15	1910
Good (3)	867	2245	30	3142
Unstated	<u>70</u>	<u>260</u>	<u>10</u>	<u>340</u>
Total	1769	4263	58	6090
Mean	2.38	2.44	2.56	2.43

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

The exterior colour of the MTT fleet was favoured by respondents overall, receiving a mean rating of 2.43. It was noted that a more favourable response was obtained from passengers in the newer types of buses which of course have the same colour scheme as all the other buses.

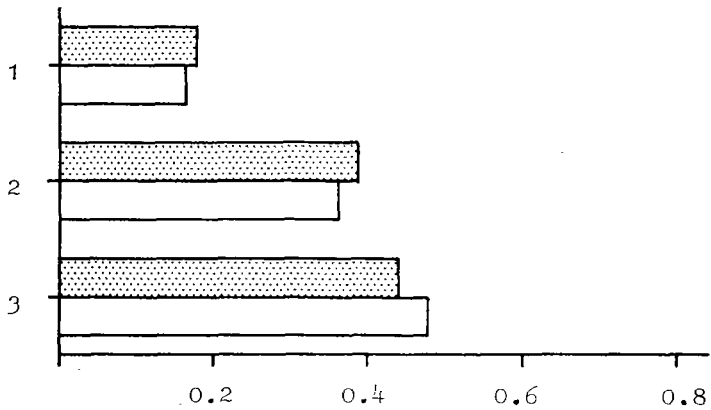
The newer paint work and style may have influenced this result.

DESIGN FEATURE ..... INTERIOR COLOUR

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	300	636	4	960
Fair (2)	659	1458	13	2130
Good (3)	747	1935	28	2710
Unstated	<u>63</u>	<u>214</u>	<u>13</u>	<u>290</u>
Total	1769	4263	58	6090
Mean	2.26	2.32	2.53	2.30

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

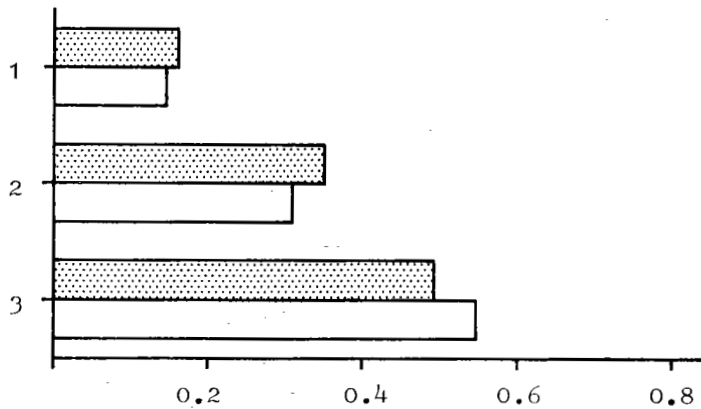
The interior colours of the MTT fleet were not considered as good as the exterior colours and received a mean rating of 2.30. The rating improved with the respondents age, with a lessening of bus load and as the respondents' bus usage decreased.

DESIGN FEATURE ..... SEAT COLOUR

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	274	593	3	870
Fair (2)	597	1253	15	865
Good (3)	844	2233	31	3108
Unstated	<u>54</u>	<u>184</u>	<u>9</u>	<u>247</u>
Total	1769	4263	58	6090
Mean	2.33	2.40	2.57	2.38

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

The mean rating received for the seat colour feature was 2.38. The variations in dating for this feature were similar to those for the previous question i.e. interior colour.



TABLE BD.1 - DESIGN FEATURE RATING BY BUS TYPE

DESIGN FEATURE	BUS TYPE RATING <sup>(1)</sup>							MEAN RATING
	AEC MK VI	HINO	LEOPARD	PANTHER	TIGER CUB	WORLD-MASTER	OTHER	
Bus Cleanliness	2.212	2.454	2.351	2.498	2.456	2.312	2.206	2.377
Noise Level	2.063	2.311	1.900	2.107	2.023	2.004	1.971	2.078
Ride Smoothness	1.947	2.385	2.016	2.232	2.080	1.924	1.878	2.099
Ease of Entry	2.512	2.721	2.521	2.647	2.631	2.472	2.343	2.567
Ease of Exit	2.369	2.660	2.478	2.598	2.574	2.318	2.156	2.470
Light Level	2.649	2.735	2.674	2.714	2.700	2.640	2.477	2.662
Temperature	2.312	2.460	2.416	2.448	2.323	2.406	2.261	2.389
Ventilation	2.261	2.506	2.447	2.493	2.271	2.326	2.130	2.368
Exterior Styling	2.367	2.586	2.476	2.540	2.498	2.157	2.114	2.399
Interior Styling	2.117	2.555	2.365	2.511	2.323	1.957	1.940	2.278
Seating Comfort	2.259	2.647	2.395	2.582	2.409	2.222	2.182	2.414
Seating Layout	2.327	2.625	2.476	2.553	2.436	2.324	2.220	2.443
Standing Comfort	1.707	1.930	1.727	1.874	1.762	1.643	1.606	1.767
Control of Exhaust Smoke and Smell	2.360	2.462	2.397	2.383	2.331	2.369	2.229	2.368
Exterior Colour	2.428	2.511	2.459	2.444	2.459	2.346	2.316	2.425
Interior Colour	2.215	2.491	2.424	2.459	2.338	2.048	2.065	2.302
Seat Colour	2.261	2.611	2.496	2.541	2.427	2.108	2.134	2.383
Total	38.366	42.65	40.01	41.624	40.041	37.576	36.228	39.789
Mean Rating	2.257	2.509	2.354	2.448	2.355	2.210	2.130	2.340
Average Age of Bus Model (Yrs)	11	3	5	3	8	10	18	

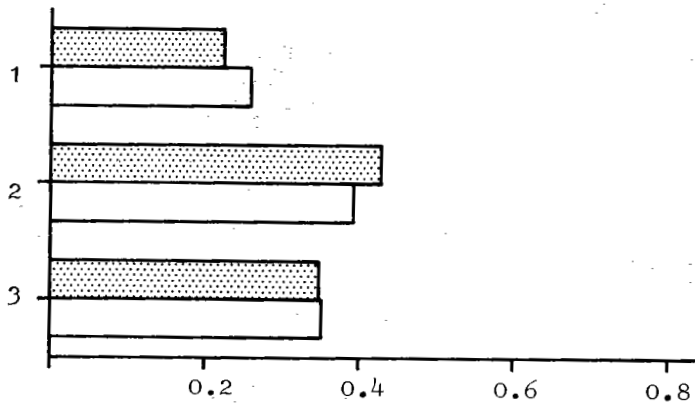
(1) Mean Numerical Rating Poor = 1, Fair = 2, Good = 3

SERVICE FEATURE ..... BUS FREQUENCY

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	380	1048	11	1439
Fair (2)	727	1592	18	2337
Good (3)	588	1424	20	2032
Unstated	<u>74</u>	<u>199</u>	<u>9</u>	<u>282</u>
Total	1769	4263	58	6090
Mean	2.12	2.09	2.18	2.10

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

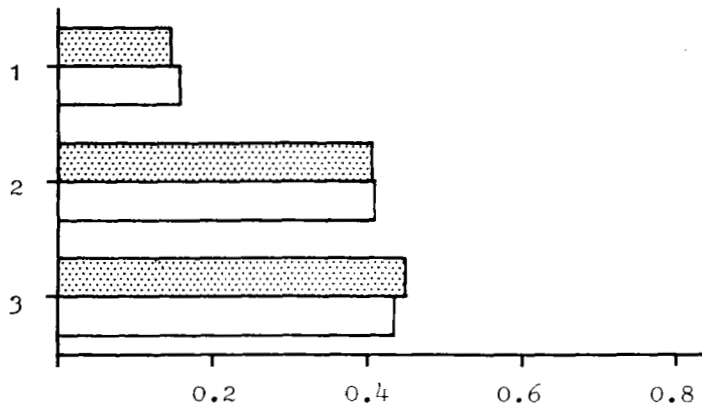
The frequency of the MTT service was considered only fair by their patrons. The mean rating received was 2.10. The rating improved with the number of bus trips per month made by the respondent. Peak hour travellers (and consistently those with full time employment) rated frequency above off-peak travellers. Transferees were more critical of the service frequency than respondents making a single journey.

SERVICE FEATURE ..... SPACING OF BUS ROUTES

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	237	595	6	838
Fair (2)	657	1550	20	2227
Good (3)	730	1645	15	2390
Unstated	<u>145</u>	<u>473</u>	<u>17</u>	<u>635</u>
Total	1769	4263	58	6090
Mean	2.30	2.28	2.22	2.29

HISTOGRAM OF RESULTS



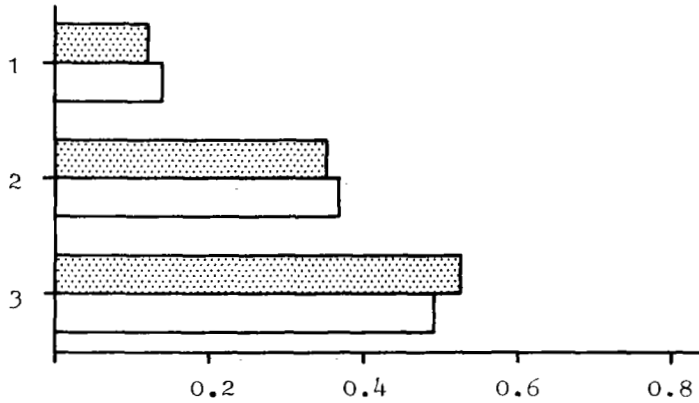
COMMENTS ON RESULTS

The spacing of bus routes was rated by respondents as between fair and good at a mean value of 2.29. In general the rating improved with the fewer bus trips made per month by the respondent. Peak period users rated this service feature higher than off peak travellers. Those respondents having to transfer were more critical of this feature than the non transferees.

SERVICE FEATURE ..... RELIABILITY (BUSES ON TIME)  
DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	202	566	7	775
Fair (2)	589	1487	17	2093
Good (3)	882	1985	20	2887
Unstated	<u>96</u>	<u>225</u>	<u>14</u>	<u>335</u>
Total	1769	4263	58	6090
Mean	2.41	2.35	2.30	2.37

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

The overall rating of 2.37 indicates a favourable response to the reliability of the MTT service. Males considered the reliability to be better than females (2.41 and 2.35 ratings respectively).

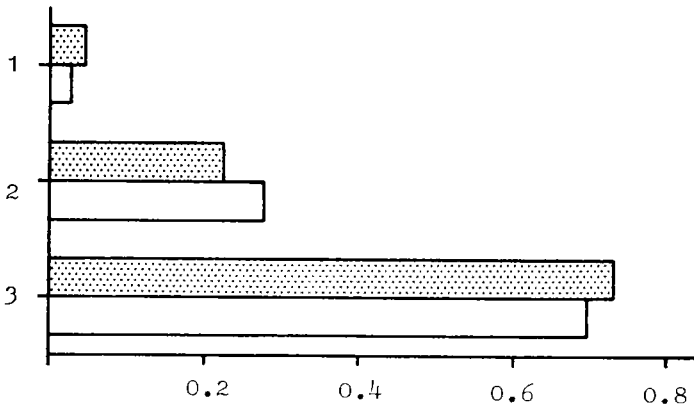
Respondents who were heavy users of the MTT service rated the option below infrequent users. Predictably, the rating also improved as the bus loading decreased.

SERVICE FEATURE ..... SAFETY

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	76	107	1	184
Fair (2)	381	1101	13	1495
Good (3)	1235	2766	31	4032
Unstated	<u>77</u>	<u>289</u>	<u>13</u>	<u>379</u>
Total	1769	4263	58	6090
Mean	2.69	2.67	2.67	2.67

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

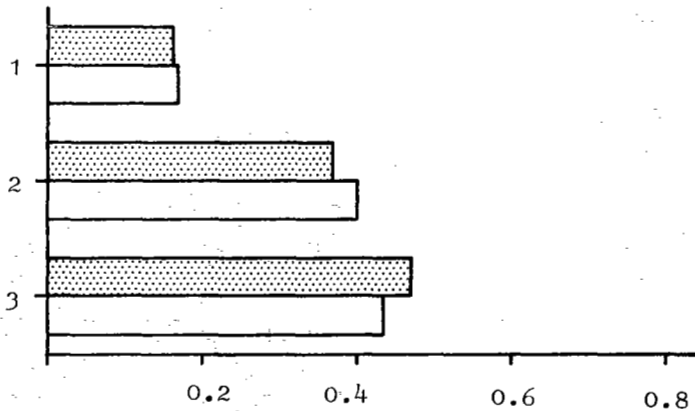
Safety was rated the highest of all service features with a mean rating of 2.67. In general, the rating decreased as the respondents' bus usage increased.

SERVICE FEATURE ..... LEVEL OF FARES

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	268	639	3	910
Fair (2)	609	1532	21	2162
Good (3)	775	1657	18	2450
Unstated	<u>117</u>	<u>435</u>	<u>16</u>	<u>568</u>
Total	1769	4263	58	6090
Mean	2.31	2.27	2.36	2.28

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

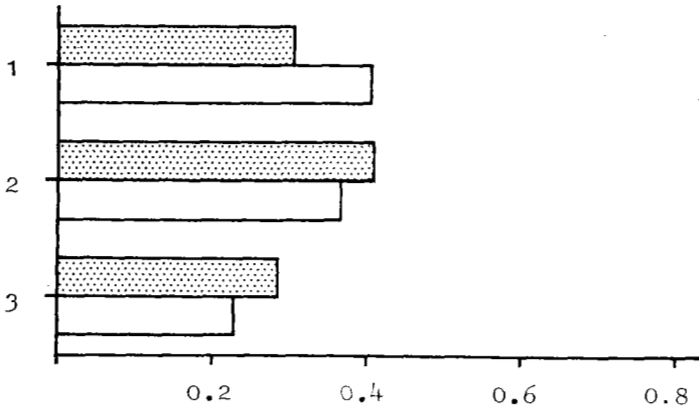
While it could be expected that the mean response to the level of fares would be somewhat less than 2.00, indicating a degree of dissatisfaction with fares, it was found on the contrary that there was a positive response to the question, with a rating of 2.28. This may indicate that patrons may be prepared to pay more for improved travel. The two groupings displaying the most variation were age group (rating increasing with age) and number of bus trips per month made by the respondent (rating decreasing with the number of trips).

SERVICE FEATURE ..... SUPPLY OF BUS SHELTERS

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	515	1618	18	2151
Fair (2)	691	1471	12	2174
Good (3)	478	917	14	1409
Unstated	<u>85</u>	<u>257</u>	<u>14</u>	<u>356</u>
Total	1769	4263	58	6090
Mean	1.98	1.83	1.91	1.87

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

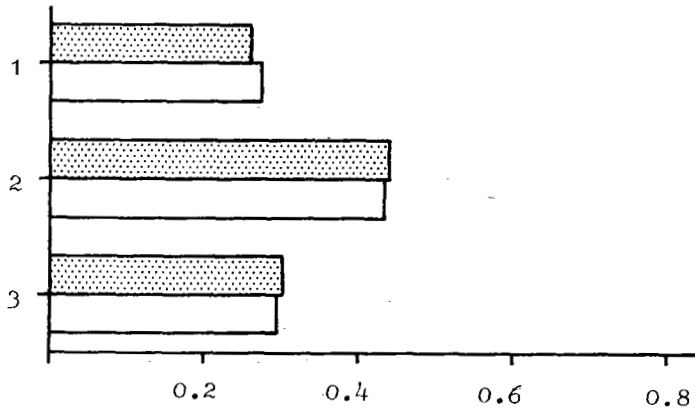
Respondents considered the supply of bus shelters unfavourably, rating the question at 1.87. In general the rating decreased as the number of bus trips made by the respondent each month increased. Peak travellers rated the supply less favourably than off peak travellers, as did younger respondents over older respondents.

SERVICE FEATURE ..... NUMBER OF EXPRESS BUSES

DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	389	919	5	1313
Fair (2)	656	1453	17	2126
Good (3)	450	986	11	1447
Unstated	<u>274</u>	<u>905</u>	<u>25</u>	<u>1204</u>
Total	1769	4263	58	6090
Mean	2.04	2.02	2.18	2.03

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

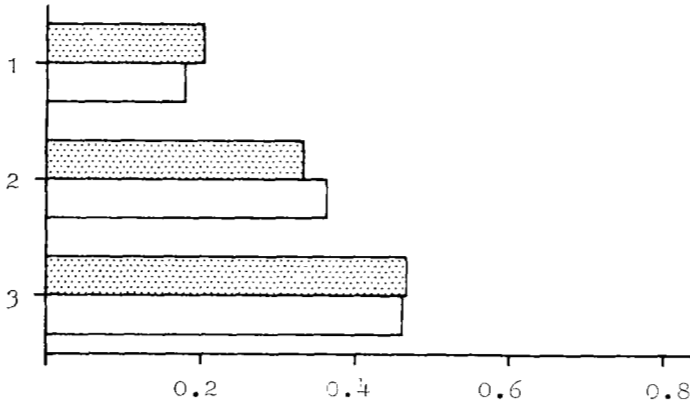
The number of express buses was rated as only fair with a mean rating of 2.03. Peak travellers for whom express services are provided rated the number less favourably than off peak travellers. The rating decreased with the increase in the number of bus trips made per month by respondents.



SERVICE FEATURE ..... CONTROL OF VANDALISM  
DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	323	666	7	996
Fair (2)	535	1362	11	1908
Good (3)	750	1734	22	2506
Unstated	<u>161</u>	<u>501</u>	<u>18</u>	<u>680</u>
Total	1769	4263	58	6090
Mean	2.27	2.29	2.38	2.28

HISTOGRAM OF RESULTS



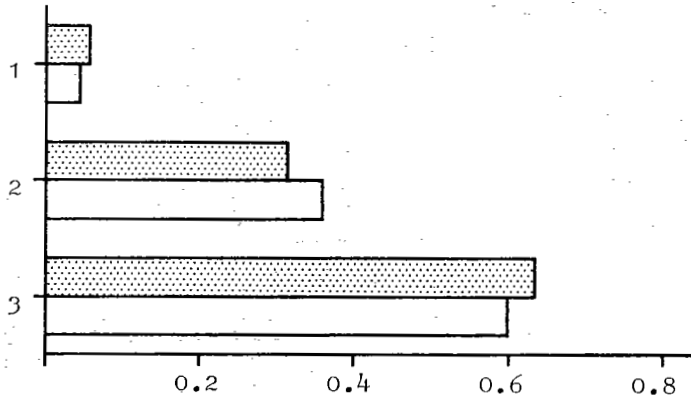
COMMENTS ON RESULTS

Control of vandalism was rated between fair and good by respondents with a mean rating of 2.28. Surprisingly, the rating improved with the respondents' age, with the under 15 group rating the control below fair. The rating also decreased with the number of bus trips made each month by the respondent.

SERVICE FEATURE . . . . . PASSENGER SECURITY  
DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	93	166	2	261
Fair (2)	509	1373	12	1894
Good (3)	1033	2305	29	3367
Unstated	<u>134</u>	<u>419</u>	<u>15</u>	<u>568</u>
Total	1769	4263	58	6090
Mean	2.58	2.56	2.63	2.56

HISTOGRAM OF RESULTS



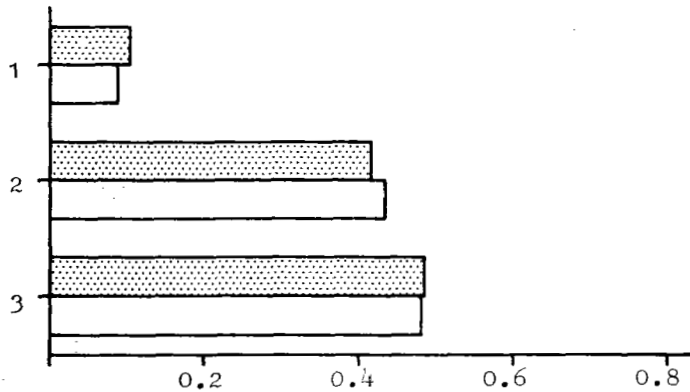
COMMENTS ON RESULTS

Passenger security received the second highest rating at 2.56. Consistant with the pattern through most of the service feature questions, the rating increased with the respondents' age and decreased with the number of trips made per month by him.

SERVICE FEATURE ..... DOOR TO DOOR TRAVEL SPEED  
DISTRIBUTION OF RESULTS

<u>Response</u>	<u>Male</u>	<u>Female</u>	<u>Unstated</u>	<u>Total</u>
Poor (1)	169	329	2	500
Fair (2)	679	1635	15	2329
Good (3)	790	1813	24	2627
Unstated	<u>131</u>	<u>486</u>	<u>17</u>	<u>634</u>
Total	1769	4263	58	6090
Mean	2.38	2.39	2.54	2.39

HISTOGRAM OF RESULTS



COMMENTS ON RESULTS

Respondents rated door to door travel speed well above fair with a mean rating of 2.39. The captive users i.e. those making large number of bus trips per month rated the feature less favourably than infrequent users.

Peak users, probably heavy users, also rated the feature less favourably than the off peak patrons. As the passenger's age decreased, the rating for this option also decreased.

TABLE BD.2 - SERVICE FEATURE RATING BY TRIPS PER MONTH

SERVICE FEATURE	TRIPS PER MONTH RATING <sup>(1)</sup>						Unstated	Mean Rating
	01-10	11-20	21-30	31-40	41-50	Over 50		
Bus Frequency	2.149	2.130	2.107	2.046	2.018	1.926	2.260	2.102
Spacing of Bus Routes	2.319	2.342	2.262	2.236	2.257	2.194	2.340	2.285
Reliability (Buses on Time)	2.491	2.408	2.394	2.250	2.235	2.234	2.425	2.367
Safety	2.744	2.701	2.686	2.604	2.602	2.618	2.688	2.673
Level of Fares	2.352	2.340	2.236	2.254	2.154	2.201	2.310	2.280
Supply of Bus Shelters	1.947	1.859	1.877	1.794	1.736	1.796	2.015	1.871
Number of Express Buses	2.049	2.070	2.020	1.946	1.930	2.204	2.164	2.028
Control of Vandalism	2.372	2.325	2.258	2.197	2.204	2.185	2.343	2.279
Passenger Security	2.639	2.628	2.535	2.491	2.483	2.497	2.580	2.562
Door to Door Travel Speed	2.480	2.451	2.414	2.268	2.305	2.278	2.469	2.391
Overall Mean	2.464	2.325	2.279	2.209	2.211	2.213	2.359	2.284

(1) Mean Numerical Rating Poor = 1, Fair = 2, Good = 3

ANNEX BE

TYPES OF BUSES SAMPLED AND TYPICAL  
PATRON FACILITIES

For the purpose of the survey the Metropolitan (Perth) Transport Trust fleet was categorised into six main bus model types. The bus models and their approximate numbers are:

<u>Model</u>	<u>Number</u>
AEC MK V1	75
HINO	110
Leyland Leopard	50
Leyland Panther	112
Leyland Tigercub	120
Leyland Worldmaster	80

There is a further category of 'Other' buses, which contains those Worldmaster models, which joined the fleet prior to 1963 (which are substantially different in body style from those joining the fleet after this date).

Buses grouped in the "other" category and their approximate numbers are:

<u>Model</u>	<u>Number</u>
Leyland Worldmaster	91
Albion	9
Daimler	30
Leyland Royal Tiger	26
Leyland O.P.S.	27
Guy	51
AEC Reliance	2
AEC MK4	10
AEC MK3	14
Total	<u>260</u>

While the total number of buses in this group is large, the number of questionnaires distributed on these buses was similar to the numbers distributed on buses in

first six categories for the following reasons:

1. most of the buses are programmed for replacement and are mainly utilised during peak periods only; and
2. buses on off-peak running were sampled more frequently than those during peak hours.

In the following pages each of the main model types is illustrated (figures BE.1 to BE.6) showing from top to bottom:

- . Front and rear quarter views
- . Internal view rear and forward facing
- . Front and rear entry/exit doors

Technical information pertinent to patron rating is listed on the facing page. The technical information includes:

- . Dimension and capacity specifications
- . Descriptions of:
  - body
  - brakes
  - suspension
  - engine; and
  - transmission.

Where a significant variation exists within a model, information is given for each of the variants.

Then follows two pages of general views of the Perth Central Bus Station (PCBS) together with the two main types of bus shelters used along MTT routes. The views of the PCBS show from top to bottom:

- . pedestrian access ramps (grade separated from buses);
- . bus ramps and roadway; and
- . passenger waiting and alighting area, and the information ticket sales office.

The two bus shelters illustrated (left to right) are constructed respectively of:

- . Precast reinforced concrete
- . Tubular steel frame, roofed in shaped steel, and clad in glass and composite modular panels

The siting of the later type of shed is restricted to areas where vandalism is not a problem.

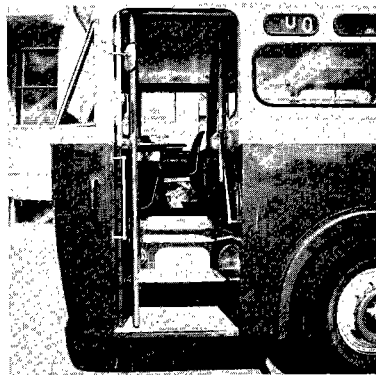
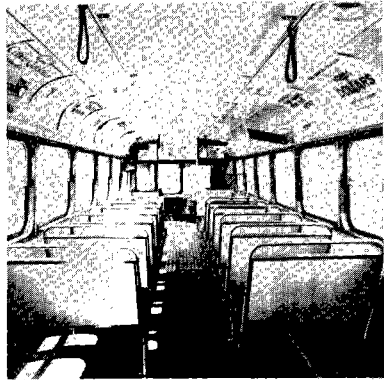
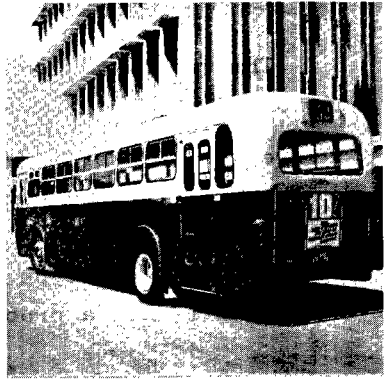


FIGURE BE.1  
MTT AEC REGAL Mk VI



AEC REGAL MK V1

There are two main variants to this model, which are noted hereafter as A and B. (One and two door models respectively).

Approximate Number of Units:

A	20
B	55

General Specifications (dimensions in metres)

Length	10.668
Width	2.438

	<u>A</u>	<u>B</u>
height	3.048	3.125
ceiling height	1.982	2.033
door opening: front	762	762
rear	-	762
step heights: front 1	432	381
2	254	229
3	203	229
4	153	140
rear 1	-	381
2	-	229
3	-	203
4	-	203
seated passengers	49	46
licensed capacity	72	69

Body

Tubular steel frame, zinc anneal panels, fibreglass corners.

Brakes

Air operated.

Suspension

Semi-elliptic leaf spring.

Engine

Mid-underfloor mounted, AEC AH590 horizontal.

Transmission

Four speed epicyclic, fluid clutch and electro-pneumatic shift.

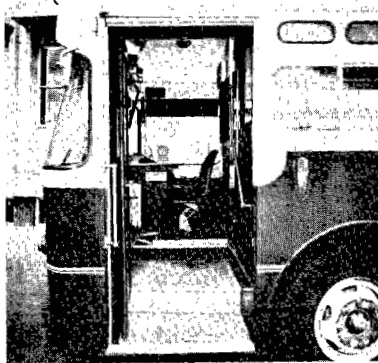
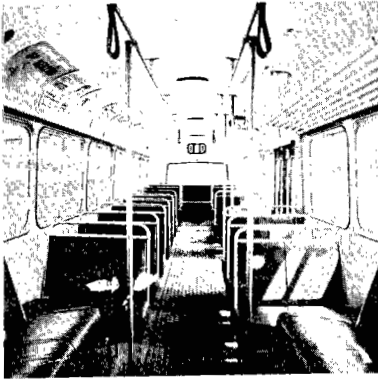
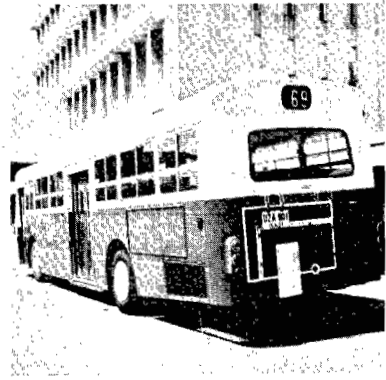


FIGURE BE.2  
MTT HINO

HINO

There are two main variants to this model, which are noted hereafter as A and B (coach and semi-coach interiors respectively).

Approximate Number of Units:

A	61
B	49

General Specifications (dimension in metres)

length	10.973
width	2.489
height	3.201
ceiling height: front	2.211
rear	1.855
door opening: front	712
rear	1.143
step heights: front 1	356
2	203
3	191
rear 1	356
2	267
3	267
seated passengers: A	45
B	41
licensed capacity: A	69
B	62

Body

Tubular steel frame, aluminium panels fibreglass corners.

Brakes

Air operated.

Suspension

Air.

Engine

Rear underfloor mounted, Hino DK20.

Transmission

Four speed epicyclic type, fluid clutch with lockup, electro pneumatic shift.

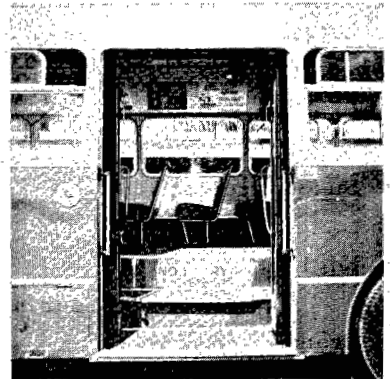
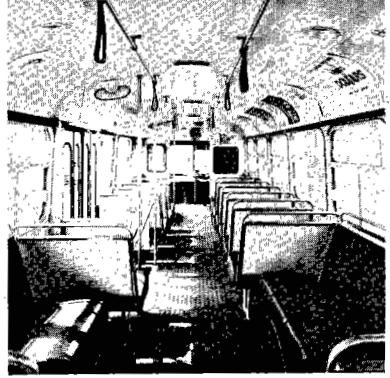
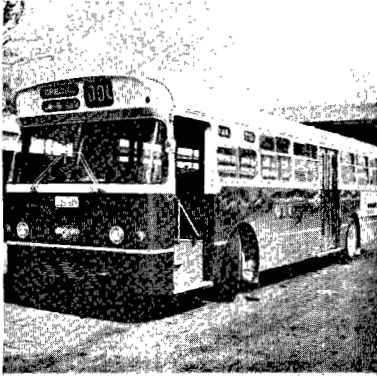


FIGURE BE.3  
MTT LEYLAND LEOPARD

LEYLAND LEOPARD

There are two main variants to this model, which are noted hereafter as A and B. (Mechanical differences only)

Approximate Number of Units:

A	40
B	10

General Specifications (dimensions in metres)

length	10.973
width	2.489
height	3.048
ceiling height: front	2.336
rear	2.032
door opening: front	864
rear	1.168
step heights: front 1	356
2	216
3	153
4	153
rear 1	356
2	292
3	292
seated passengers	46
licensed capacity	69

Body

Tubular steel frame, Aluminium panels, fibreglass corners.

Brakes

Air operated.

Suspension

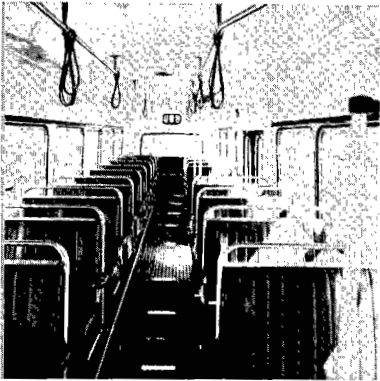
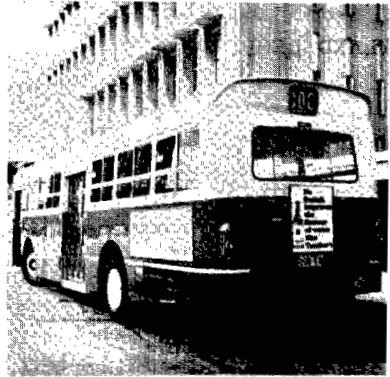
- A. semi-elliptic leaf spring
- B. air

Engine

Mid-underfloor mounted, Leyland O680 horizontal.

Transmission

- A. Four speed epicyclic, fluid clutch with lockup electro-pneumatically operated.
- B. 'Voith Diwa 501' two speed auto, clutch torque converter, and automatic hydraulic shift.



**FIGURE BE.4**  
**MTT LEYLAND PANTHER**

LEYLAND PANTHER

There are two main variants to this model, which are noted hereafter as A and B (coach and semi coach interiors respectively).

Approximate Number of Units:

A	77
B	35

General Specifications (dimensions in metres)

length	10.973
width	2.489
height	3.048
ceiling height: front	2.211
rear	1.906
door opening: front	864
rear	1.168
step heights: front 1	381
2	216
3	216
rear 1	407
2	254
3	254
seated passengers: A	45
B	41
licensed capacity: A	69
B	61

Body

Tubular steel frame, roof and corners of fibreglass, aluminium panels.

Brakes

Air operated.

Suspension

Air.

Engine

Rear underfloor mounted Leyland 0680 horizontal.

Transmission

Four speed epicyclic type with fluid clutch, electro-pneumatically operated.

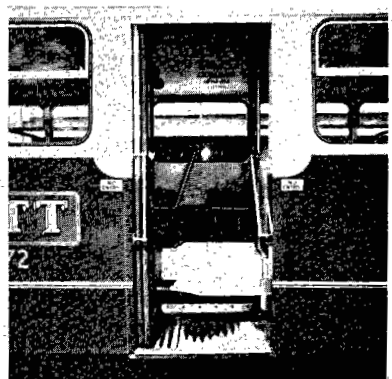
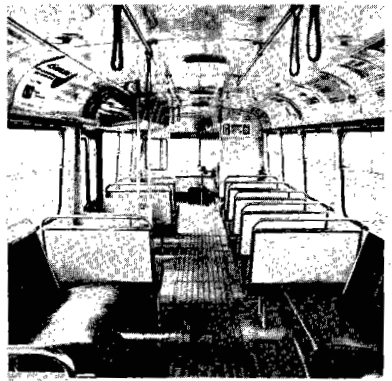
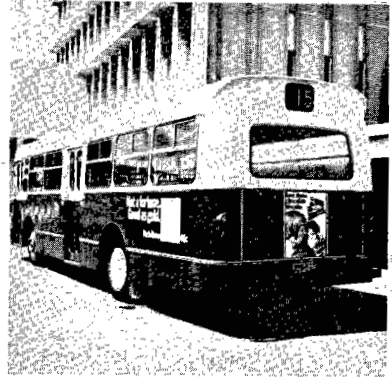
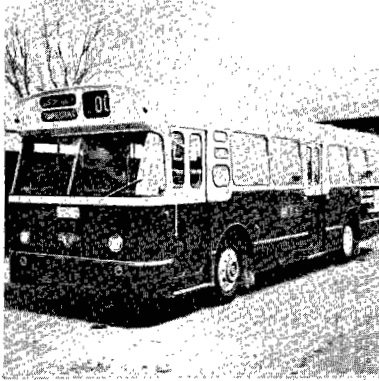


FIGURE BE.5  
MTT LEYLAND TIGERCUB



LEYLAND TIGERCUB

<u>Approximate number of units:</u>	120
<u>General Specifications</u> (dimensions in metres)	
length	9,830
width	2,489
height	2,972
ceiling height	1,968
door opening: front	737
rear	737
step heights: front 1	381
2	242
3	242
rear 1	381
2	242
3	242
seated passengers	38
licensed capacity	57

Body

Tubular steel frame, aluminium panels, fibreglass corners.

Brakes

Air operated.

Suspension

Semi-elliptic leaf spring.

Engine

Mid-underfloor mounted, Leyland 0400 horizontal.

Transmission

Four speed epicyclic, fluid clutch with lockup, and electro-pneumatic shift.

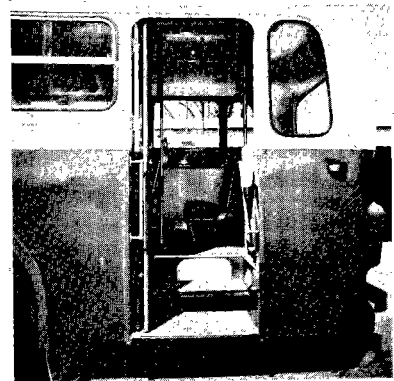
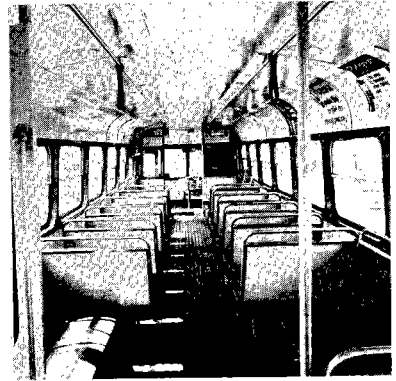
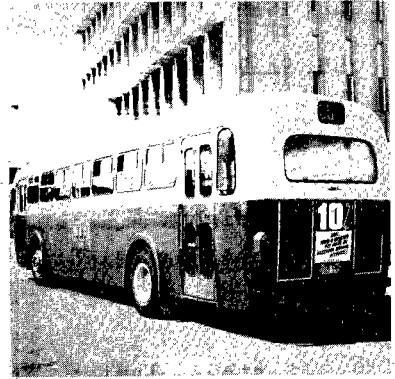


FIGURE BE.6  
'MTT LEYLAND WORLDMASTER

LEYLAND WORLDMASTER

There are two main variants<sup>(1)</sup> to this model, which are noted hereafter as A and B.

Approximate number of units:

A	30
B	50

General specifications (dimensions in metres)

length	10.668	
width	2.438	
	<u>A</u>	<u>B</u>
height	3.048	3.125
ceiling height	2.033	2.033
door opening: front	762	762
rear	-	762
step heights: front 1	432	381
2	254	229
3	203	229
4	153	140
rear 1	-	381
2	-	229
3	-	203
4	-	203
seated passengers	49	46
licensed capacity	72	69

Body

Tubular steel frame, zinc annealed panels, and corners.

Brakes

Air operated.

Suspension

Semi-elliptic leaf spring.

Engines

- A. Mid-underfloor mounted Leyland O600 horizontal
- B. Mid-underfloor mounted Leyland O600pp horizontal

---

(1) Models built before 1963 were categorised as 'Other' because of substantial differences in body style to those joining the fleet after this date.

Transmission

Four speed epicyclic, fluid clutch with lockup,  
electro-pneumatic shift.

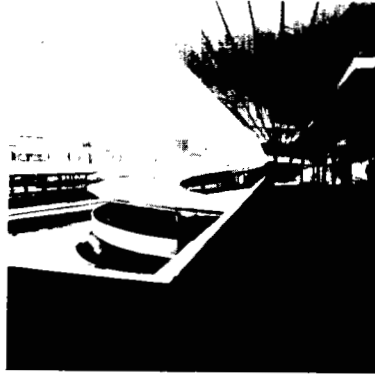
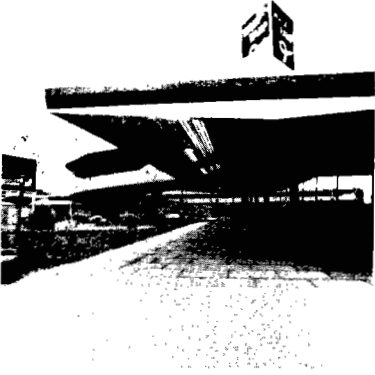
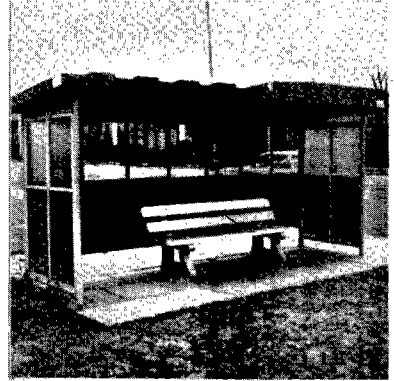
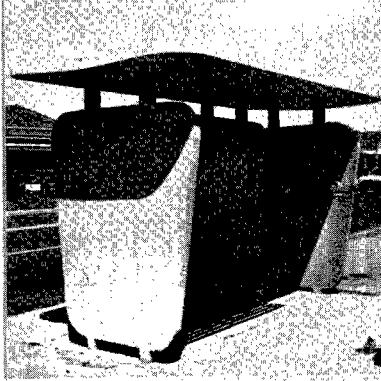


FIGURE BE.7  
PERTH CENTRAL BUS STATION



**FIGURE BE.8**  
**MTT BUS SHELTERS**



<u>Field</u>	<u>Bytes</u>	<u>Contents of Field</u>	<u>Notes</u> (see below)
9	21-24	Number of the first questionnaire distributed on the trip	9
10	25-28	Number of the last questionnaire distributed on the trip	9
11	29-31	Number of returned complete questionnaires	10
12	32	Collector	11

Notes

1. The route number is the MTT service number current during the survey period and is right justified.
2. The day on which the route trip was sampled is recorded using the following code

<u>Code</u>	<u>Day</u>
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday

3. The date is recorded abbreviated to the day and month e.g. the 19 of September is recorded 1909.
4. The commencement time is the scheduled departure time of the bus from the terminus on the sampled route trip: time is expressed in military terms (i.e. 1345 is 1.45 p.m.)
5. The BTE suburb code is a sequential numbering code based on an alphabetical listing of Perth suburbs, (See Annex BG), and the recorded value represents the code for the suburb in which the sampled route trip commenced: routes were sampled terminus to terminus.
- 6.. The value represents the BTE code for the suburb in which the sampled route trip terminated.



7. The bus type performing the sampled route trip and rated by the respondents is recorded using the following code:

<u>Code</u>	<u>Bus Type</u>
1	AEC MK V1
2	Hino
3	Leopard
4	Panther
5	Tiger Cub
6	Worldmaster
7	Other

8. An assessment of each overall trip was made by the collectors/distributors which is coded as follows:

<u>Code</u>	<u>Load Assessment</u>	<u>Definition</u>
1	Very heavy	- Almost completely full
2	Heavy	- A few standees
3	Moderate	- Most seats occupied
4	Light	- About half seats occupied
5	Very light	- Few seats occupied.

9. The number entered is the questionnaire number preprinted on the forms.
10. This number represents the number of completed returned (either by hand to the distributor/collector or by mail) questionnaires distributed on the route trip.
11. This is a code for the MTT employee distributor/collector for the trip.

QUESTIONNAIRE RESULTS DATA FILE

The general characteristics of this data file are:

BTE tape reference . . . . . DEVS16 (Mini-tape)

Data set name (DSN) . . . . . Perth. Survey.  
 Onboard. Qaires.  
 Master  
 File number (label) . . . . . 1  
 Recording density . . . . . 1600 bpi  
 Logical record length . . . . . 160 bytes  
 Physical block size . . . . . 1600 bytes  
 Number of records . . . . . 6090  
 Approximate length . . . . . 7.6 metres  
 General format. . . . . numeric

Format

The record format for the route description data file is scheduled below:

<u>Field</u>	<u>Bytes</u>	<u>Contents of Field</u>	<u>Notes</u>
<u>Personal and trip information</u>			
1	01-04	Questionnaire number	1
2	05-07	Route number	2
3	08	Day of week on which route trip was sampled	2
4	09-12	Date	2
5	13-16	Commencement time	2
6	17-19	BTE code for the starting point	2
7	20-22	BTE code for the finishing point	2
8	23	Type of bus on which the route trip was sampled	2
9	24	Passenger load assessment	2
10	25-28	Number of the first questionnaire distributed on the trip	2
11	29-32	Number of the last questionnaire distributed on the trip	2
12	33-35	Number of returned complete questionnaires	2
18	36	Collector	2
19	37	Sex	3
20	38	Marital status	4
21	39	Age group	5
22	40	Occupational status	6
23	41	Licence holder	7
24	42-43	Number of trips made by bus each month	8

25	44	Code to indicate whether respondent transferred from another bus	9
26	45	Code to indicate whether respondent was transferred to another bus	10
27	46	Purpose of trip	11

Design features rating for the bus

28	47	Bus cleanliness	12
29	48	Noise level	12
30	49	Ride smoothness	12
31	50	Ease of entry	12
32	51	Ease of exit	12
33	52	Light level	12
34	53	Temperature	12
35	54	Ventilation	12
36	55	Exterior styling	12
37	56	Interior styling	12
38	57	Seating Comfort	12
39	58	Seating layout	12
40	59	Standing comfort	12
41	60	Control of exhaust smoke and smell	12
42	61	Exterior colour	12
43	62	Interior colour	12
44	63	Seat colour	12

Rating of Perth Bus Service Characteristics

45	64	Bus frequency	13
46	65	Spacing of bus routes	13
47	66	Reliability (buses on time)	13
48	67	Safety	13
49	68	Level of fares	13
50	69	Supply of bus shelters	13
51	70	Number of express buses	13
52	71	Control of vandalism	13
53	72	Passenger security	13
54	73	Door-to-door travel speed	13

Notes

1. The questionnaire number is the sequential number

- preprinted on the questionnaire forms.
2. For details see ROUTE DESCRIPTION DATA FILE format notes.
  3. Respondents sex, coded as follows:
    - 1 Male
    - 2 Female
  4. Respondents marital status, coded as follows:
    - 1 Now married
    - 2 Never married
    - 3 Other
  5. Respondents age group, coded as follows:
    - 1 Under 15
    - 2 15-19
    - 3 20-29
    - 4 30-39
    - 5 40-49
    - 6 50-59
    - 7 60-69
    - 8 Over 69
  6. Respondents occupational status, coded as follows:
    - 1 Full-time employment
    - 2 Part-time employment
    - 3 Looking for work
    - 4 Student
    - 5 Pensioner or retired
    - 6 Housewife
    - 7 Other
  7. Whether respondent holds a driving licence, coded as follows:
    - 0 No<sup>(1)</sup>
    - 1 Yes

---

(1) Since respondents were asked only to tick these boxes on the questionnaire, some uncertainty exists, in the case of unticked boxes, as to whether the result is an omission or a definite 'no'. However, in view of the generally extremely high level of respondent co-operation, it has been assumed that all unticked boxes imply a negative answer in these cases.

8. Number of bus trips made by respondent each month.
9. Whether respondent transferred to this bus from another bus or a train, coded as follows:
  - 0 No<sup>(1)</sup>
  - 1 Yes
10. Whether respondent intended to transfer from this bus to another bus or a train, coded as follows:
  - 0 No<sup>(1)</sup>
  - 1 Yes
11. Purpose of trip, coded as follows:
  - 1 Work
  - 2 Education
  - 3 Social or recreation
  - 4 Shopping
  - 5 Other
12. The seventeen numbers given under this heading present, in sequence, the respondent's assessments of the design features presented in the questionnaire; they are coded as follows:
  - 1 Poor
  - 2 Fair
  - 3 Good
13. The ten numbers given under this heading present, in sequence, the respondents assessments of the service features presented in the questionnaire; they are coded as follows:
  - 1 Poor
  - 2 Fair
  - 3 Good

---

(1) Since respondents were asked only to tick these boxes on the questionnaire, some uncertainty exists, in the case of unticked boxes, as to whether the result is an omission or a definite 'no'. However, in view of the generally extremely high level of respondent co-operation, it has been assumed that all unticked boxes imply a negative answer in these cases.