

Proposed Child Care Centre
107 (Lot 501) Warwick Road, Duncraig

Traffic Impact Statement

Prepared for:
Sharose Investments Pty Ltd

April 2005

Prepared by:
TRANSCORE PTY LTD
10/3 Centro Avenue, Subiaco WA 6008
PO Box 42, Subiaco WA 6904
Telephone (08) 9382 4199
Facsimile (08) 9382 4177

TABLE OF CONTENTS

<u>1.0</u>	<u>INTRODUCTION</u>	<u>1</u>
<u>2.0</u>	<u>EXISTING SITUATION</u>	<u>2</u>
<u>3.0</u>	<u>PROPOSED SITUATION</u>	<u>5</u>
<u>4.0</u>	<u>TRAFFIC ASSESSMENT</u>	<u>7</u>
<u>5.0</u>	<u>CONCLUSIONS AND RECOMMENDATIONS</u>	<u>10</u>

1.0 INTRODUCTION

Transcore on behalf of Sharose Investments Pty Ltd in support of a Development Application has prepared this Traffic Impact Statement for the Proposed Child Care Centre on Lot 501 (No 107) Warwick Road, Duncraig in the City of Joondalup.

The proposed development is to be located on the north-eastern corner of The intersection of Warwick Road and Currajong Road on a site which has been operating as a medical centre. The Centre is to cater for 47 children to be cared for by a total of 8 staff. Vehicle access and egress is to be provided via an in/out crossover on Currajong Road, approximately 30m from Warwick Road.

The requirement for the Traffic Impact Statement was communicated by the City in a letter dated 15 March 2005 where it was stated, *"A traffic impact report is required to evaluate the effect of any increase in traffic"*. Accordingly, this report aims to address the traffic related issues of the Centre, specifically estimating the additional traffic that would be generated as a result of the proposed Child Care Centre compared to the existing situation and to establish the impact of the net increase in traffic.

2.0 EXISTING SITUATION

The proposed development is to be located on the northeastern corner of the intersection of Warwick Road and Currajong Road in Duncraig. The subject site currently entails a building and car-parking area, which has been used as a medical centre in the past. This medical centre is no longer operating.

Currajong Road is a single lane undivided carriageway (8m pavement width) with a speed limit of 50 km/hr in the vicinity of the subject site. A footpath currently exists on the eastern side of this road. According to the Main Roads WA document "Metropolitan Functional Road Hierarchy", Currajong Road is classified as an Access Road. This document defines this type of road as "provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government." The Liveable Neighbourhoods document "Street Layout, Design and Traffic Management Guidelines" states the traffic volume threshold of Wider Access Roads such as Currajong Road as being 3,000 vehicles per day.

Warwick Road is a dual divided carriageway with a signposted speed limit of 70km/hr in the vicinity of the subject site. Footpaths exist on both sides of Warwick Road. According to the Main Roads WA document, Warwick Road, in the vicinity of the subject site, is classified as a District Distributor (A) road. These roads are defined in this document as "They carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining properties. They are managed by Local Government."

The intersection of Warwick Road and Currajong Road entails a left in/left out layout and is give way controlled (refer photo 1). Warwick Road in this vicinity is relatively straight and level, which provides for good sight distance for vehicles turning out of Currajong Road onto Warwick Road (refer photo 2).

The left in/left out nature of this intersection requires that right turns in and out of Warwick Road to occur at other nearby intersections. There are two intersections in close proximity of Currajong Road that cater for right turn movements. These are intersections of Roche Road and Warwick Road (located approximately 300m west of Currajong Road) and Lilburne Road and Warwick Road (located approximately 300m east of Currajong Road). Both these intersections are of good standards with right and left turn pockets on Warwick Road and can adequately cater for westbound traffic on Warwick Road that wishes to access Currajong Road and traffic that wishes to travel west on Warwick Road from Currajong Road.

According to Main Roads WA traffic data sourced, Warwick Road, east of Marmion Avenue, carried approximately 12,500 vehicles per day (September 2003) and east of Lilburne Road carried approximately 17,700 vehicles per day

(September 2003). Liaison with City of Joondalup has indicated that no traffic counts for Currajong Road is available.



Photo 1 – Looking South Along Currajong Road at the Intersection With Warwick Road

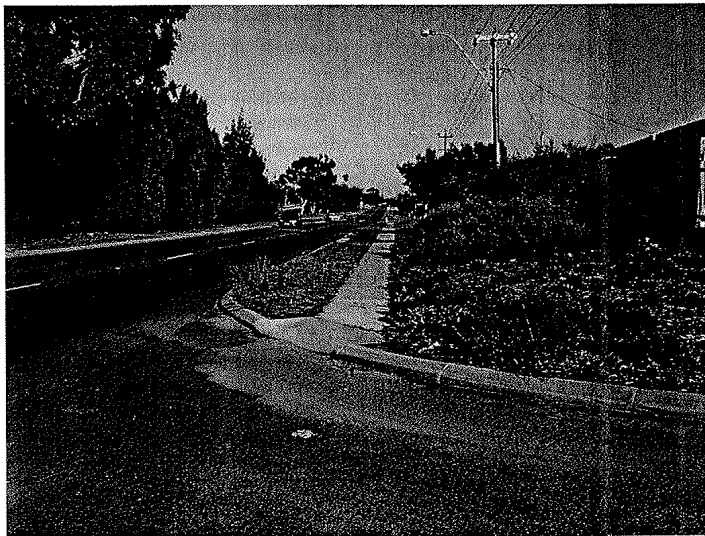


Photo 2 – Looking west along Warwick Road from the Currajong Road intersection

In order to estimate the traffic volumes on Currajong Road and to establish the traffic operations at the intersection of Warwick Road/Currajong Road, Transcore undertook traffic turn counts at this intersection. From the traffic volume information sourced from Main Roads WA, it was established that the AM road network peak period, in the vicinity of the subject site, was between 7:00 – 9:00am and the PM road network peak period was between 4:00 – 6:00pm, with the PM peak hour representing the more significant peak period. However due to the fact that traffic on eastbound carriageway of Warwick Road is significantly higher during the morning peak period, this period is anticipated to be the critical period as far as the operations of the proposed Child Care Centre is concerned.

For the purpose of introducing more accuracy in the estimation of traffic volumes on Currajong Road, Transcore undertook traffic counts at the intersection of Warwick Road and Currajong Road, during both AM and PM peak periods. As a result, traffic turn counts were undertaken on Thursday, 7th April 2005, between 7:00 – 9:00 am and 4:00 – 6:00pm. The Thursday PM peak period was chosen to allow for the traffic associated with the nearby shopping centres. From turn counts undertaken by Transcore, it was established that the combined critical peak hours for the road network and the proposed Child Care Centre would be between 8:00 to 9:00am and 4:00 to 5:00pm. However, as the intersection of Warwick Road and Currajong Road is limited to left in/left out movements only, the single critical hour for the Child Care Centre is am peak hour involving eastbound traffic on Warwick Road.

3.0 PROPOSED SITUATION

The proposed development entails a Child Care Centre on Lot 501 (No 107) Warwick Road, Duncraig. The subject site is currently occupied by a building which used to entail a medical centre, however the medical centre is not operating at present.

The Centre is proposed to cater for up to 47 children aged up to 5 years between the hours of 7:00am to 6:00pm Monday to Friday. The Centre will be serviced by 8 qualified staff to care for the children. Transcore's experience with child care centres suggests that the majority of children drop-offs and pick-ups are typically between 7:00 – 10:00 am and 3:00 – 6:00 pm respectively at Centres similar to this one. Also, the morning drop-offs normally peak around 8:30am and the afternoon/evening pick-ups typically peak around 5:00pm.

The existing building on the subject site currently entails one crossover, which is located at the northern end of the lot fronting Currajong Road. This crossover is located approximately 30m from Warwick Road. As part of the proposed development, the same crossover would be utilised which leads to the parking area that caters for both staff and visitors.

The site plan prepared by Lane Structural Design & Drafting dated 24 October 2004 indicates the Centre is to entail 15 on-site parking bays for staff and visitors, including 7 staff parking bays and 8 visitors bays, including 1 disabled parking bay. However, reference to the City of Joondalup's Policy 3.1.1 – Child Care Centres indicates that for a Type 2 Centre (centres with one access/egress point) the Centre should entail one bay for each staff member and 7 bays for 31 to 56 children. Therefore the parking layout should be remarked to show 8 staff bays and 7 visitor's bays (including the disabled bay).

The site plan indicates that there is no turn around facility provided at the end of the parking circulation isle. This situation could lead to vehicles having to reverse out of the parking area onto Currajong Road and therefore it is suggested that the site layout be modified so that an appropriate turn around facility is provided at the end of the parking circulation isle.

The City of Joondalup Child Care Centre policy requires that all parking areas should be located in front of the building or be easily visible from the entry to the site. This requirement of the policy is satisfied with the proposed site layout as the parking bays are visible from the entry and are immediately accessible once the vehicles enter the site.

In terms of location of the child care centres in relation to road hierarchy, the policy suggest that the centres should be located on Local Distributor roads, which this proposed centre is and therefore satisfies this requirement of the policy. The policy also suggests that centres should not be located on Local Distributor roads in close proximity of District Distributors, where the primary

function is to cater for through traffic. The location of the centre does not strictly satisfies this requirement of the policy, however as the intersection of Warwick Road and Currajong Road is a left in/left out only layout, and the traffic through this intersection is relatively low (refer sections 2 and 4), then the intent of the policy is satisfied as the traffic from the Centre does not undermine traffic operations at this intersection and on Warwick Road.

4.0 TRAFFIC ASSESSMENT

In order to assess the traffic impact of the proposed Duncraig Child Care Centre, a traffic generation and distribution exercise was undertaken. The aim of this exercise was to establish the traffic that would be generated from the proposed Centre and to provide a quantitative comparison between the existing and proposed traffic situations.

A review of the available traffic generation sources has revealed that no traffic generation rates are available for a Child Care Centre. Therefore, to establish the traffic that would be generated by the proposed Centre, traffic counts have been undertaken by Transcore at similar Centres in Midvale and Canning Vale.

Discussions with the respective Centre Managers revealed that the peak drop-offs and pick-ups for each of these Centres occur between the hours of 7:00 – 10:00am and 3:00 – 6:00pm.

Accordingly, traffic counts were undertaken on Thursday, 12th September 2002 for the Midvale Centre and on Friday, 5th September 2003 for the Canning Vale Centre during the peak patronage periods. During the survey periods, all traffic entering and exiting the Centres was counted in half hour intervals.

From the total number of children at each of the Centres on the surveyed days, the following average generation rates were established for the morning and afternoon surveyed periods:

- 7:00 – 10:00am: 1.60 trips per child (53% in/47% out)
- 3:00 – 6:00pm: 1.69 trips per child (46% in/54% out)

Furthermore, the following average peak hour generation rates were established from the surveys for the Child Care Centres:

- 8:00 – 9:00am: 0.67 trips per child (55% in/45% out)
- 4:00 – 5:00pm: 0.74 trips per child (47% in/53% out)

Comparison of the six-hour generation rates and the peak hour generation rates confirms that the distribution of traffic from these Centres is spread over the peak periods and that full concentration of traffic does not occur in the peak hour. The AM peak hour represents 42% of the 3-hour AM peak period traffic generation and the PM period represents 44% of the 3-hour PM peak period traffic generation. As such, Child Care Centres operate quite differently to schools as their peak period is spread out.

As stated in Section 2 of this report, the combined peak hours for both the road network and the Child Care Centre is expected to be between 8:00 to 9:00am and 4:00 to 5:00pm. The surveys undertaken at the Midvale and Canning Vale centres revealed that the average generation rate for these periods are 0.67 trips

per child with 55% of the trips inbound and 45% outbound and 0.74 trips per child with 47% of the trips inbound and 53% outbound.

Accordingly, the following number of trips was estimated for the proposed Duncraig Child Care Centre, assuming a maximum scenario of 47 children being present (ie. Centre at capacity):

- Child Care AM critical peak hour: 32 trips generated (17 in/15 out)
- Child Care PM critical peak hour: 35 trips generated (16 in/19 out)

In order to establish the actual traffic impact of the proposed Centre, the net traffic increase must be established on the surrounding road network. Accordingly, assuming that the medical centre was generating 9 trips each during the morning and afternoon peak hours (trip generation rate for medical centre from Land Use Traffic Generation Guidelines, Director – General of Transport, South Australia), the following net traffic increases were established between the existing and proposed situations:

- Net traffic increase AM critical peak hour: 23 trips generated (13 in/10 out)
- Net traffic increase PM critical peak hour: 26 trips generated (12 in/14 out)

The development volumes were superimposed upon the existing traffic turn counts at the intersection of Warwick Road/Currajong Road using the following assumptions:

- 60% of the development traffic was assumed to be generated from north of Warwick Road;
- 30% of the traffic from north of Warwick Road was assumed to be from east and north east and 30% from west and north west;
- 40% of the development traffic was assumed to be generated from south of Warwick Road
- 20% of the traffic from south of Warwick Road was assumed to be from west and south west and 20% from east and south east;

The result of traffic generation and distribution, as well as the existing traffic counts, is shown in figures 1 and 2 for the AM and PM peak hours respectively. The traffic turn counts for the peak hours indicate that the existing traffic volumes on Currajong Road is approximately 300 to 500 vehicles per day. Because of function and standard of Currajong Road, as a Wider Access Road, and its traffic volume threshold of 3,000 vehicles per day, it has significant spare capacity.

Due to low existing turning volumes and low additional net traffic as a result of the proposed Child Care Centre no congestion and excessive queuing is anticipated at the intersection of Warwick Road and Currajong Road. The existing adjacent road network has significant spare capacity and is of adequate standard to accommodate the additional traffic without undermining traffic operations and safety.

In order to achieve maximum safety, it is recommended to prohibit on-street parking on the eastern side of Currajong Road, along one car length north of the proposed Child Care Centre crossover and south of the crossover to Warwick Road intersection.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This Traffic Impact Statement set out to assess the traffic related issues of the Centre, specifically estimating the additional traffic that would be generated as a result of the proposed Child Care Centre compared to the existing situation and to establish the impact of the net increase in traffic.

The analysis undertaken in this report estimated that Currajong Road currently carries about 300 to 500 vehicles per day. The analysis also demonstrated that because of function and standard of Currajong Road, as a Wider Access Road, and its traffic volume threshold of 3,000 vehicles per day, it has significant spare capacity.

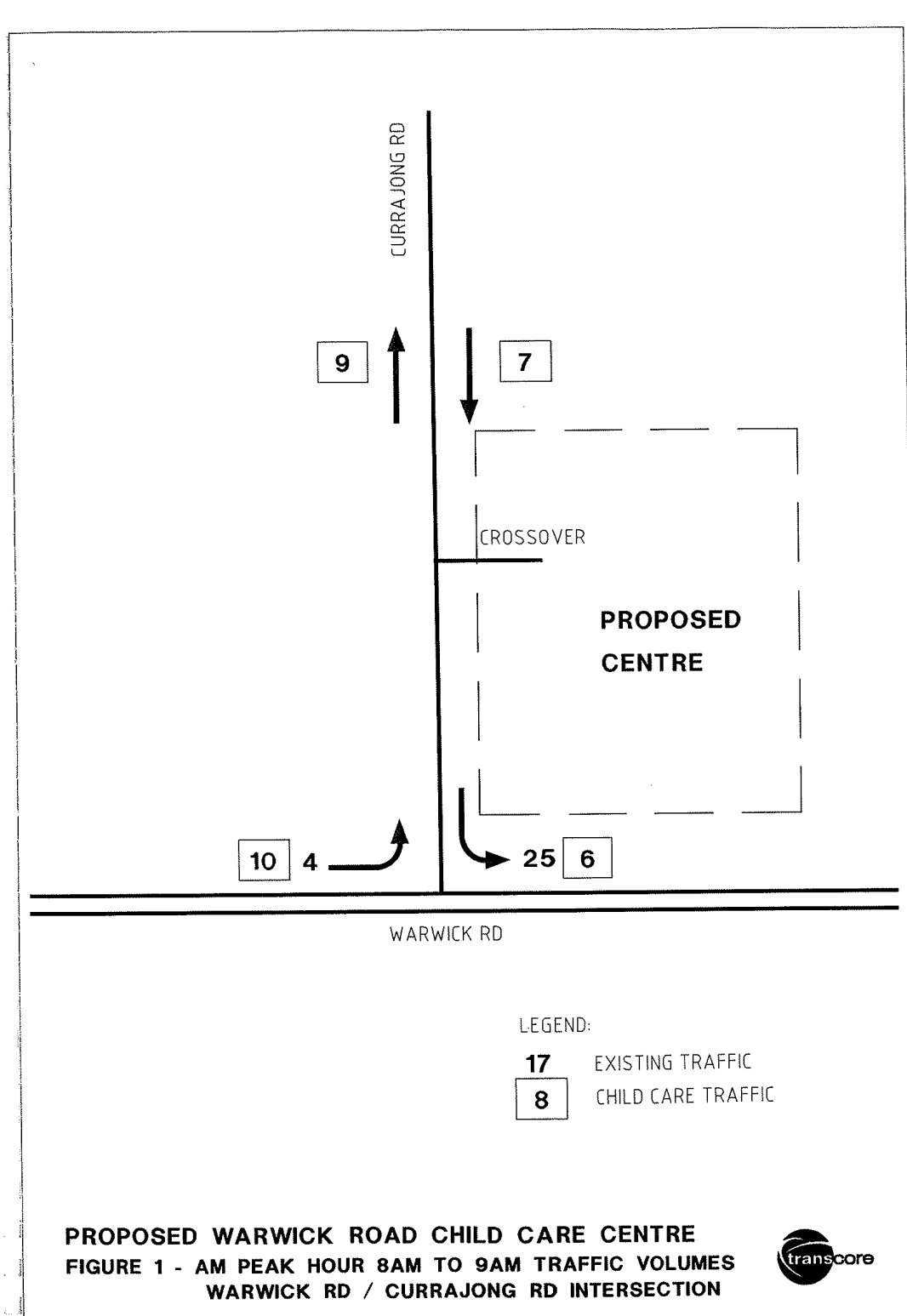
Due to low existing turning volumes and low additional net traffic as a result of the proposed Child Care Centre no congestion and excessive queuing is anticipated at the intersection of Warwick Road and Currajong Road. The existing adjacent road network has significant spare capacity and is of adequate standard to accommodate the additional traffic without undermining traffic operations and safety. However, in order to achieve maximum safety, it is recommended to prohibit on-street parking on the eastern side of Currajong Road, along one car length north of the proposed Child Care Centre crossover and south of the crossover to Warwick Road intersection.

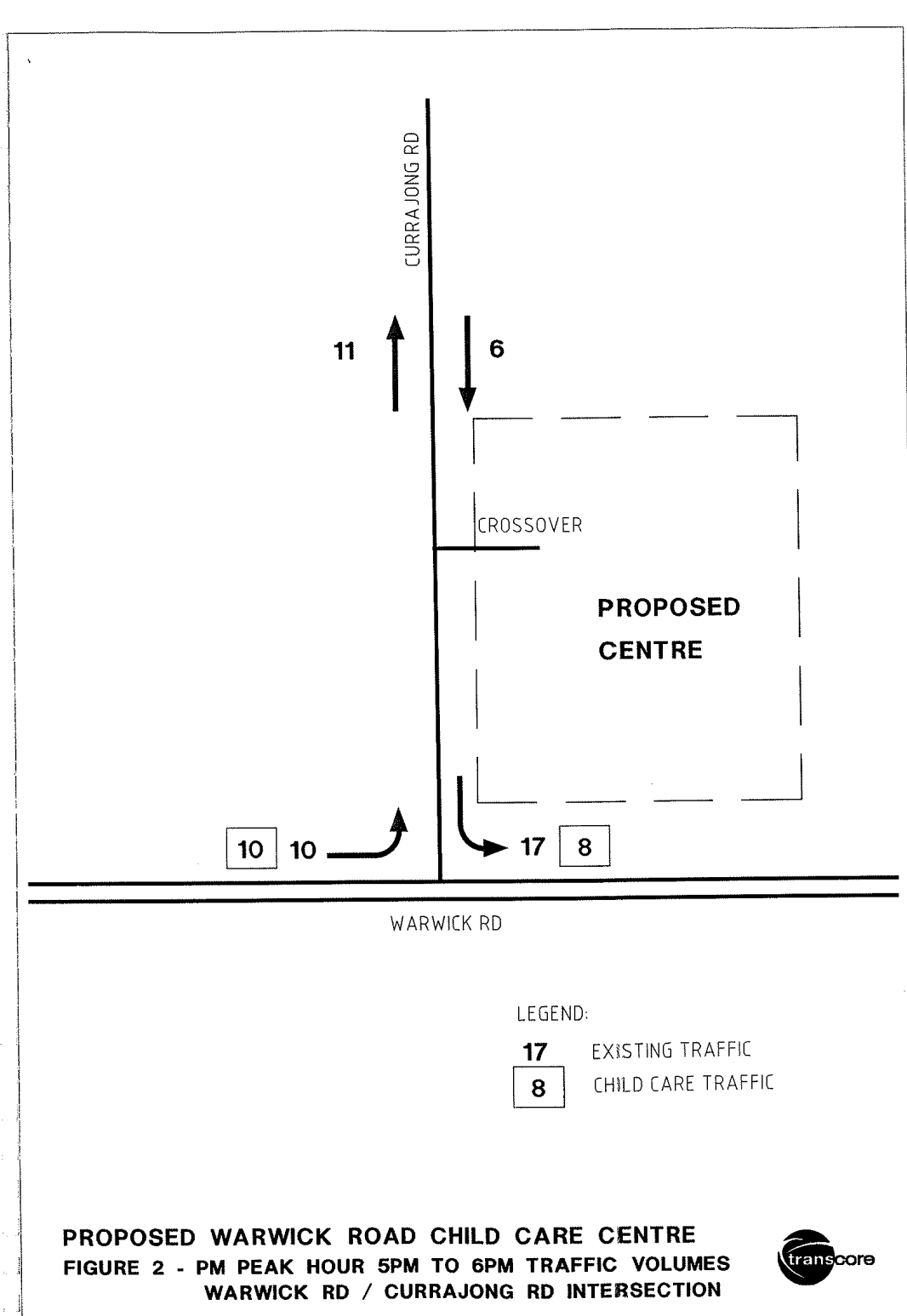
The existing building on the subject site currently entails one crossover, which is located at the northern end of the lot fronting Currajong Road. This crossover is located approximately 30m from Warwick Road. As part of the proposed development, the same crossover would be utilised which leads to the parking area that caters for both staff and visitors.

The proposed Centre is to entail 15 on-site parking bays for staff and visitors, including 7 staff parking bays and 8 visitors bays, including 1 disabled parking bay. However, reference to the City of Joondalup's Policy 3.1.1 – Child Care Centres indicates that for a Type 2 Centre (centres with one access/egress point) the Centre should entail one bay for each staff member and 7 bays for 31 to 56 children. Therefore the parking layout should be remarked to show 8 staff bays and 7 visitor's bays (including the disabled bay).

The proposed Centre satisfies other requirements and intent of the City of Joondalup Policy, however to improve access and circulation it is suggested that the site layout be modified so that an appropriate turn around facility is provided at the end of the parking circulation isle.

Finally, it is concluded that the traffic related issues should not form an impediment to the approval of this proposed Child Minding Centre.





SHAROSE INVESTMENTS PTY LTD
P & A CHEMELLO NOMINEES PTY LTD

PO BOX 2034
MARMION WA 6020
PH (08) 9243 4134
FAX (08) 9243 4135
MOBILE 0418 956 157

ACN 052 261 748
ABN 70 919 918 501

21 April 2005

Chief Executive Officer
PO Box 21
JOONDALUP WA 6919

City of Joondalup DOCUMENT REGISTRATION 220113
Reference # : 39873
Letter # : 513221
Action Officer : APP09 CC: APP01
Date Received : 21/04/2005
Action Required: ACTION
Note : ORIGINAL TO ACTION OFFICER

Attn: Andrew McBride, Planning Officer

Re: Proposed Child Care Centre
107 Warwick Road, Duncraig
File No 39873
Application No DA04/0860

Dear Andrew

I refer to your correspondence of 15 March 2005 and herein submit a comprehensive traffic report prepared by Transcore and a comprehensive acoustic consultant's report prepared by Herring Storer Accoustics.

I trust that this information is of assistance and look forward to a positive outcome in the very near future.

Yours faithfully


S. J. HUGHAN
Director

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:

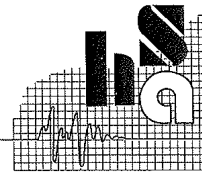
HERRING STORER ACOUSTICS

Suite 34, 11 Preston Street, Como, W.A. 6152
P.O. Box 219, Como, W.A. 6952

Telephone: (08) 9367 6200

Facsimile: (08) 9474 2579

Email: hsa@hsacoustics.com.au



ALLAN HERRING M.I.E. AUST. M.A.A.S.
LYNTON STORER M.A.I.E.A., M.A.A.S.
TIM REYNOLDS M.I.E. AUST. M.A.A.S.

Our ref: 4505-1-05071

5 April 2005

Sharose Investments Pty Ltd
PO Box 2034
MARMION WA 6020

Attention: Shane Hughan

Dear Sir,

PROPOSED CHILD CARE CENTRE - Lot 501 (No. 107) WARWICK ROAD, DUNCRAIG ACOUSTICAL ASSESSMENT

As requested, an acoustic assessment of the proposed childcare centre to be located at Lot 501 (No. 107) Warwick Road, Duncraig has been made with respect to the *Environmental Protection (Noise) Regulations 1997*. This report considers noise emissions from the child care centre including, children playing outside and vehicle movements within the car park for compliance with the Regulations at the neighbouring residential premises.

SUMMARY

In accordance with the *Environmental Protection (Noise) Regulations 1997* the relevant assigned daytime noise levels at noise sensitive premises adjacent the proposed child care centre are an L_{A10} value of 52 dB(A) and an L_{Amax} value of 72 dB(A).

In terms of child play activities, prediction of the worst case noise propagation indicate that compliance with the Regulatory criteria will be achieved at all residential locations.

Similarly, noise from cars, including closing of doors and engine start-up, will also be within the relevant criteria at all neighbouring residences.

CRITERIA

The criteria used are in accordance with the *Environmental Protection (Noise) Regulations 1997*. These regulations stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown in Table 1. The influencing factor is calculated for the usage of land within the two circles, having a radii of 100m and 450m from the premises of concern.

AAAC MEMBER FIRM OF THE ASSOCIATION OF
AUSTRALIAN ACOUSTICAL CONSULTANTS



Herring Storer Acoustics
Our ref: 4505-1-05071

2

TABLE 1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Received Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Residential	0700 – 1900 hours Monday to Saturday	45 +IF	55 +IF	65 +IF
	0900 - 1900 hours Sunday and Public Holidays	40 +IF	50 +IF	65 +IF
	1900 – 2200 hours all days	40 +IF	50 +IF	65 +IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 +IF	45 +IF	55 +IF
Commercial Premises	All Hours	60	75	80
Industrial & Utility Premises	All Hours	65	80	90

Notes:

L_{A10} is the noise level exceeded for 10% of the time.

L_{A1} is the noise level exceeded for 1% of the time.

L_{Amax} is the maximum noise level.

IF is the influencing factor.

It is a requirement that noise from the mechanical plant, at another premises, be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

“impulsiveness” means a variation in the emission of a noise where the difference between L_{Apeak} and L_{Amax Slow} is more than 15 dB when determined for a single representative event;

“modulation” means a variation in the emission of noise that –

- (a) is more than 3dB L_{A Fast} or is more than 3 dB L_{A Fast} in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

“tonality” means the presence in the noise emission of tonal characteristics where the difference between –

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands, is greater than 3dB when the sound pressure levels are determined as L_{Aeq,T} levels where the time period T is greater than 10% of the representative assessment period, or greater than 8dB at any time when the sound pressure levels are determined as L_{A Slow} levels.

If the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 2 below.

Herring Storer Acoustics
Our ref: 4605-1-05071

3

TABLE 2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The IF has been assessed as 7 for the surrounding residential premises. As the childcare centre operates during the day period, the relevant day time assigned L_{A10} level for noise sensitive premises in this area is 52 dB(A) and the L_{Amax} assigned level is 72 dB(A). The L_{A10} parameter is used for the assessment of car movements within car park and child play noise, which is likely to be present for more than 10% of the time, whilst the L_{Amax} parameter is used to assess vehicle noise including closing car doors and engine start-up.

Note that once the vehicles are on the public roads, their noise levels are exempt from the Regulations, as specified in Regulation 3(a).

The air conditioner would only operate during the day period, therefore, noise received at the neighbouring premises needs to comply with the day time assigned L_{A10} noise level of 52 dB(A).

PROPOSAL

The childcare facility basically consists of a main building, outside play areas and car park facilities.

The building construction proposed is capable of containing any noise, from normal activities within, such that it will not be noticeable at adjoining residential locations.

From information supplied, the child care centre normal hours of operations are between 0700 and 1830 hours. The centre will cater for up to 47 children. However, due to the mix of age groups, only 20 – 30 children will be in the play area at any one time.

The parking is located off Currajong Road. Consideration has been given to the maximum noise level received at the neighbouring residence from car park activities, such as resulting from car doors being closed, engines starting up and vehicle movements within the car park.

METHODOLOGY

In order to assess the noise received at the neighbouring residential premises from children using the outdoor play area, the sound power or sound pressure level at a fixed distance is required. This has been obtained from file data of measured levels of a similar operating childcare centre from which the sound power level has been determined. Similarly, file data has been utilised for the noise from a vehicle starting up and car doors being closed.

By acoustic modelling, the propagation of the play ground noise to nearby residences has been determined taking into account attenuation due to distance, ground absorption and any barrier affects due to fences or the like. Also, modelling was undertaken generally in accordance with the *EPA Draft Guidance for Assessment of Environmental Factors No. 8 – Environmental Noise*, including worst case down wind conditions as shown in Table 3.

Herring Storer Acoustics
Our ref: 4505-1-05071

4

TABLE 3 – EPA METEOROLOGICAL CONDITIONS

Type	Day Time
Temperature (°C)	20
Humidity (%)	50
Wind Speed (m/s)	4
Wind Direction	Downwind
Temperature Inversion (°C/100m)	0

Note: SoundPlan does not allow a temperature inversion value to be entered but rather a Pasquil Stability Factor (PSF). Thus, a PSF of Type B was used to represent day conditions.

Calculations were based on measured noise levels from a child care. The sound power levels used in the calculations are listed in Table 4.

TABLE 4 - SOUND POWER LEVELS

Item	Noise Level, dB(A)
Children Playing	83 (per 10 children)
Evaporative Cooler	79
Front of Car	87
Car Moving in Car Park	76
Door Closing	97

ASSESSMENT

The significant acoustic criteria is for the daytime period, where an assigned noise level of 52 dB L_{A10} and 72 dB L_{Amax} applies for the nearest residences, for the period Monday to Saturday; 0700 to 1900 hours.

Acoustic modelling of child play noise was made on the basis that 30 children would be at play outside, utilising 3 of the '10 children sound power level', distributed evenly as plane sources over the play area. Calculations of resultant L_{A10} noise levels were made to points at 1.5 metres above ground level.

A separate model of noise from cars was made on the basis that there would be 3 cars in the car park area, with 1 car closing its doors, 1 moving and the other starting up its engines. Calculations of resultant L_{Amax} noise levels were made at 1.5 metres above.

Residences of concern are located:

- R1 North adjacent to car park
- R2 To east along Warwick Road
- R3 To west across Currajong Road

The results are tabulated in Tables 5 and 6.

Herring Storer Acoustics
Our ref: 4505-1-05071

5

TABLE 5 - ACOUSTIC MODELLING RESULTS L_{A10} CRITERIA dB(A)

Activity	Location / Calculated Noise Level		
	R1 Residence to North	R2 Residence to East	R3 Residence to West
Children Playing	40	15	42
Car Moving	36	41	39
Evaporative Air conditioner	36	30	31
Total	42	41	44

TABLE 6 - ACOUSTIC MODELLING RESULTS L_{Amax} CRITERIA, dB(A)

Activity	Location / Calculated Noise Level		
	R1 Residence to North	R2 Residence to East	R3 Residence to West
Children Playing	40	15	42
Car Moving	36	41	39
Car Door Closing	56	31	57
Car Starting Up	51	34	56
Total	57	42	60

Note: Noise received at the neighbouring residence would not contain any annoying characteristics, due to the background noise level resulting from traffic moving along Warwick Road. Also it is unlikely that a car door closing and a car starting would occur simultaneously. Therefore, the above calculation would be considered conservative.

The resultant noise levels from children playing complies with the Regulatory criteria in that the predicted noise levels at noise sensitive premises are equal to or less than 52 dB(A) L_{10} .

The resultant noise levels from car movements within the car park would also comply with the Regulatory criteria being the assigned L_{A10} noise level for the day period. Noise received from car doors closing and engine starts comply with the assigned L_{Amax} noise level for the day period.

Noise emissions from the mechanical services would also comply with Regulatory requirements.

Based on the above assessment, noise emissions from the child care centre would be deemed to comply with Regulatory requirements. Noise emissions from the evaporative and mechanical services will also comply with Regulatory criteria.

Yours faithfully,
For **HERRING STORER ACOUSTICS**



Tim Reynolds