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GATEWAY ENTERPRISE PARK, BATHURST – NOISE IMPACT ASSESSMENT

Report No. 08-210

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TABLE OF CONTENTS

1. INTRODUCTION

It is proposed to construct and operate a new road/rail freight terminal between the Great Western Highway and the Great Western Railway at Kelso east of Bathurst. Concept Plan Approval (05-0047) was granted on 12 August 2006.

A noise impact assessment was prepared in January 2006 and was included as annexure 7 of the part 3(a) Major Project Environmental Assessment. Since then several modifications to the development have been proposed. This report assesses the potential noise impact on nearby residences resulting from the proposed concept plan modifications.

2. PROPOSED MODIFICATIONS

The site is in Kelso east of Bathurst. The Great Western Highway forms the northern boundary with approximately 900m frontage. The southern boundary is the Great Western Railway with approximately 575m frontage. The depth is approximately 350m.

The modified Concept Plan comprises a double private siding, loading area, storage and hardstand for a container loading/unloading facility; large Warehouses; Highway Uses Development, Fast Food outlets and a Service Station/Truck Stop along the highway frontage (refer drawing MA-002, annexure 01).

2.1. Modifications to the Development

The proposed changes to the Concept Plan Approval are:

- Some differences to the layout and positioning of the bulky goods and terminal warehouses. However, the total areas remain similar.
- Some changes to parking areas.
- The addition of 2 fast food outlets along the highway frontage.

The proposed hours of operations remain the same except that the fast food outlets will operate 24hours a day as will the service station.

The development will be staged in a similar manner to the original. Whilst individual developments may take place at various times the expected essential features of the staging are:

Stage 1

- Highway uses Lots 1 to 9 including the service station and fast food outlets
- Private Siding and loading hard stand

Stage 2

- Warehousing Lots G to M

Stage 3

- Warehousing Lots A to F

Stage 4

- Future development Lot 10. This will be the subject of a separate future application.

2.2. Changes to the Surrounding Area

The area in and around Kelso has continued to develop. The essential changes are:

- To the east a new Latex Bedding outlet and Team Poly near the disused timber mill.
- To the north, west of Harvey Norman, a new highway development called Bathurst Supa Centre including Pet Barn, Homemakers, Fantastic, Original Mattress Factory and Boating Camping Fishing.
- To the north behind the new Bathurst Supa Centre the residential area of Diamond Close has been largely built.
- To the north the Lot 35 residential area east of the Gold Panner Motor Inn has not been developed.
- To the south, on the southern side of the railway line an extensive new industrial estate has been partially developed.

2.3. Closest Residences

There have been no changes to the potential nearby residences or known residential areas. However, an isolated house at Lot 6 on the Great Western Highway has been identified to the west of the burnt-down Horse and Riding Supplies. The Diamond Close residential area is now largely built and Lot 35 has not yet been developed.

The closest residences are all to the north across the Highway except for one house on the site on the southern side of the Highway. This house forms part of the development so is not considered in this assessment. Similarly the house at Lot 6 is in a general business zone and is therefore not considered in this assessment.

The Highway is in a valley so this site rises from the Highway southwards to the railway line at the top. On the northern side of the Highway the land rises to the Gold Panner Motor Inn with the caravan park and Ashworth Estate over a hill. The roofs of only a few houses, on Ashworth Drive, are visible from the top of the site. The new subdivision on Diamond Close (west of Ashworth Drive behind Harvey Norman and the Bathurst Supa Centre) is largely shielded by the Supa Centre. Houses further away to the northwest on Sundowner Drive are visible. The Motor Inn is clearly visible as would be any future development on Lot 35. To the south west at a greater distance is The Scots School. This school is visible from the top of the embankment next to the main railway.

The approximate distances from the closest point of the rail loading area are:

- Gold Panner Motor Inn 450m
- Lot 35 450m
- Diamond Close 300m
- Sundowner Drive 450m
- Ashworth Estate 600m
- The Scots School 1000m

3. NOISE GOALS

The noise goals are unchanged from the previous report and are shown in Table 1.

Table 1 Project Specific Noise Goals (L_{Aeq})

Time of Day	Gold Panner Motor Inn, Lot 35	Ashworth Estate, Diamond Close, Sundowner Drive	The Scots School
$L_{Aeq,15min}$ Daytime (7am-6pm)	47	42	45
$L_{Aeq,15min}$ Evening (6pm-10pm)	45	42	45
$L_{Aeq,15min}$ Night time (10pm-7am)	40	40	40
L_{A1} sleep disturbance	50	50	51

4. NOISE ASSESSMENT

Table 2 shows the predicted noise levels when the facility is fully developed. Calculations have allowed for distance loss, shielding and ground effects.

Table 2 Predicted Noise Levels from Combined Operations (dBA)

Predicted $L_{Aeq,15min}$	Gold Panner & Lot 35	Diamond Close	Sundowner Drive	Ashworth Estate	Scots School
Train on the private siding stage 1	21	25	33	22	23
Forklifts Loading stage 1	25-30	28-33	33-38	23-28	23-28
Warehouse G to M stage 2	42	37	36	37	23
Warehouses A to F stage 3	42	39	37	38	23
Highway Uses stage 1	40	31	28	29	11
Service Station stage 1	40	31	28	29	11
Fast Food outlets stage 1	23	29	28	25	5
Combined noise level daytime	47	42-43	42-43	42	29-31
$L_{Aeq,15min}$ daytime noise goal	47	42	42	42	45
Excess daytime	OK	**0-1**	**0-1**	OK	OK
Combined evening (no trains)	47	43	43	42	30
$L_{Aeq,15min}$ evening noise goal	45	42	42	42	45
Excess evening	**2**	**1**	**1**	OK	OK
Combined night (Fast food & SS)	40	33	31	30	12
$L_{Aeq,15min}$ night noise goal	40	40	40	40	40
Excess night time	OK	OK	OK	OK	OK

The above predictions generally meet the noise criteria. There are predicted exceedences of up to 2dBA above the noise goals during the daytime and evening periods. The noise source is trucks at the warehouses. There is no practical noise control which can be applied to reduce this noise. These locations are already impacted by truck noise from the Great Western Highway at higher noise levels than those predicted so the predicted exceedence from truck noise is unlikely to be noticed. The existing approval included predictions of up to 3dBA above the noise goals.

Table 3 shows predicted maximum noise levels at night time from the service station and fast food outlets.

Table 3 Predicted sleep disturbance noise levels at night (dBA)

Predicted L_{A1} night time	Gold Panner & Lot 35	Diamond Close	Sundowner Drive	Ashworth Estate	Scots School
L_{A1} night time noise level	42	48	47	44	28
Sleep disturbance noise goal	50	50	50	50	51
excess	OK	OK	OK	OK	OK

The predicted maximum noise levels meet the sleep disturbance noise goals.

In relation to the undeveloped potential residential areas of Lot 35 and the Gold Panner Motor in it has been assumed that these sites are already affected by traffic noise from the Great Western Highway which will restrict their development for residential use. For a new residential development the Environmental Criteria for Road Traffic Noise sets limits near arterial roads of $L_{Aeq,15hr}$ daytime 55dBA and $L_{Aeq,9hr}$ night time 50dBA. Existing traffic noise levels at the Gold Panner Motel have been measured as $L_{Aeq,15hr}$ daytime 56dBA and $L_{Aeq,9hr}$ night time 53dBA. So any new residences should be set back further from the Great Western Highway than the existing Gold Panner Motel.

As the operation of this facility, when fully constructed, meets the noise limits at the Gold Panner Motel it can be concluded that this proposed facility will place no additional restrictions on residential development on the Gold Panner Motel land or Lot 35. A similar argument would apply to the caravan park.

5. GENERATED TRAFFIC NOISE

5.1. Traffic Noise Criteria

The Environmental Criteria for Road Traffic Noise establishes noise criteria for land use developments with potential to create additional traffic. The actual criteria depend upon the type of road.

The Great Western Highway would be considered as an '*Arterial Road*'". *For land use developments with potential to create additional traffic on existing arterial roads the noise goals at the building facade are:*

$L_{Aeq,15hr}$ (daytime 7am-10pm) 60dBA
$L_{Aeq,9hr}$ (night time 10pm-7am) 55dBA

In all cases, traffic arising from the development should not lead to an increase in existing noise levels of more than 2dB.

The L_{Aeq} descriptors refer to the equivalent continuous noise level averaged over the whole of the daytime and night time periods.

5.2. Traffic Noise Assessment

An updated traffic assessment has been undertaken by Colston Budd Hunt & Kafes Pty Ltd. The existing and additional traffic from this development has been provided for the Friday afternoon peak and the Saturday lunchtime peak.

Table 4 shows the existing and generated traffic flows and the corresponding predicted increase in noise level.

Table 4 Predicted Increase In Traffic Noise (dBA)

	Friday afternoon peak			Saturday lunchtime peak		
	existing	extra	dBA increase	existing	extra	dBA increase
GWH East of Ashworth Drive	1160	90	<0.5	1085	130	0.5
GWH West of Ashworth Drive	1260	215	0.5	1175	270	1.0
Ashworth Drive	150	30	1.0	130	40	1.0

The predicted increases meet the requirements of the Environmental Criteria for Road Traffic Noise and will be barely noticeable.

6. SUMMARY

The Concept Plan Approval (05-0047) was granted by the minister to allow construction of the proposed road/rail freight terminal and associated infrastructure at Kelso on the 12th August 2006.

It is subsequently proposed to modify the concept plan as follows:

- Some differences to the layout and positioning of the bulky goods and terminal warehouses. However, the total areas remain similar.
- Some changes to parking areas.
- The addition of 2 fast food outlets along the highway frontage.

The proposed hours of operations remain the same except that the fast food outlets will operate 24hours a day as will the service station.

There have also been some changes to the area including:

- To the east a new Latex Bedding outlet and Team Poly near the disused timber mill.
- To the north, west of Harvey Norman, a new highway development called Bathurst Supa Centre including Pet Barn, Homemakers, Fantastic, Original Mattress Factory and Boating Camping Fishing.
- To the north behind the new Bathurst Supa Centre the residential area of Diamond Close has been largely built.
- To the south, on the southern side of the railway line an extensive new industrial estate has been partially developed.

The noise goals were derived in the earlier approved assessment. Noise levels from the proposed changes have been predicted and generally meet the noise goals. There are predicted exceedences of up to 2dBA above the noise goals during the daytime and evening periods. The noise source is trucks at the warehouses. There is no practical noise control which can be applied to reduce this noise. These locations are already impacted by truck noise from the Great Western Highway at higher noise levels than those predicted so these predicted noise levels are unlikely to be noticed.

Traffic generated noise will meet the noise goals.

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APPENDIX A

NOISE MEASUREMENT AND DESCRIPTORS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. This noise is typically measured using noise loggers. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are shown in the graph below, are defined here together with a description of a noise logger.

Sound Level Meter. A Rion integrating sound level meter conforming to Australian Standard 1259 was used. The calibration was checked before and after the measurement periods.

Noise Logger. The noise monitoring equipment used for these measurements consists of Environmental Noise Loggers set to A-weighted, fast response continuously monitoring over 15 minute sampling periods. This equipment is capable of remotely monitoring and storing noise level descriptors for later detailed analysis. The equipment calibration is checked before and after the survey to ensure that the equipment operated correctly.

Maximum Noise Level (L_{Amax}). The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1}. The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time. The L_{A1} is often used as the maximum noise level.

L_{A10}. The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise and is often referred to as the average maximum noise level.

L_{Aeq}. The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

L_{A90}. The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

ABL. The Assessment Background Level is the single figure background level representing each assessment period (day, evening and night) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL. The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period, day, evening and night.

The ABL and RBL descriptors are defined by the EPA in the Industrial Noise Policy.