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ISO9001 Certified Quality Management System

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30th April 2013

Crown International Holdings
Level 11
68 Alfred Street
Milsons Point NSW 2061

Attention: Chris Pope

RE: Acoustic Comments – Response to Atkins Acoustics letter (43.6673.L2:GA/DT/2013)

Following our meeting of 24th April at Botany Bay Council and discussions regarding Atkins Acoustics comments on the acoustic report, we hereby provide our response to the points raised in the meeting.

1. *Council noise criteria have been addressed*. Noted.
2. *Existing road traffic noise levels are not reported by VIPAC in accordance with NSW Road Noise Policy.*

   Table 12 of VIPAC report presents the L_{eq} 1 hour traffic noise on Gardener Road. The following Table 1 presents the existing traffic in accordance with OEH RNP.

Table 1: Summary of Traffic Noise measurement Levels

All Values in dBA

Location	Day (0700-2200)		Night (2200-0700)	
	Noisiest $L_{eq\ (1\ Hour)}$	$L_{eq\ (15hr)}$	Noisiest $L_{eq\ (1\ Hour)}$	$L_{eq\ (9hr)}$
Gardeners Road boundary	68	66[1]	65.5	60.5
Barber Avenue boundary	66	62	59	54

Note 1: The daytime noise data on Gardeners Road was not continuous set of data (from 10:45 on the 21st February to 09:45 on 22nd February 2012). These results indicates levels exceed the criteria by 6dB during day and 5dB during the night. It is our opinion that additional noise monitoring is not warranted. Accordingly the development is not considered to be located in a quite area.

The outcome of any additional noise monitoring is expected to confirm our current measurements that existing noise levels already exceed the criteria and therefore this development is not considered as a "quiet area". As defined in the application notes, 'Quiet area' is intended to mean areas 'that are 12 dB or more below the relevant noise assessment criterion that applies day or night'.

Consequently any additional traffic is not to increase noise levels by more than 2dB.

3. *Road Traffic Noise Impacts have not been assessed in accordance with the Procedures of NSW Road Noise Policy.*

The RNP criteria are stated in Section 3.4.3 (page 15 and 20). We agree Gardeners Road should not be considered as a "quiet area" as defined by the *Application Notes*. As the measured noise level on the local roads and on Gardeners Road already exceed the Assessment Criteria, the relative increase in traffic noise is to be within 2 dB as permitted by the RNP.

As a new item not previously raised, Atkins Acoustics has recommended treatment of the surrounding residential buildings (ie not included in the development) according to RTA Environmental Manual. The RTA Environmental Manual is applicable to road projects, which include:

- New, upgraded and existing roads and transitway;
- Individual vehicles; and
- Road construction and maintenance works.

It is our opinion that for the assessment of this residential and commercial development, the RTA Environmental Manual is not applicable to this mixed-use development. The appropriate assessment should be based on NSW Road Noise Policy as this provides the most relevant criteria.

4. *Predicted Traffic Noise Levels.*

The noise level measurements presented in the acoustic report indicate that the existing noise levels exceed those levels recommended by the RNP. The traffic volumes presented in VIPAC Table 19 were obtained from CBHK traffic report dated April 2012 (Table 3.2), which was the only report available to us at that time.

Generated traffic noise impacts based on the new traffic report dated July 2012 are calculated and presented below. The figures for existing traffic are for the residential and retail (including service) vehicles. The figures for the generated traffic are for residential and retail (excluding service) vehicles. The service vehicle volumes were added to the figures to calculate the cumulative noise impact.

The vehicle volumes are given for the three periods, Thursday morning, Thursday afternoon and Saturday midday (Tables 2.1 and 3.2 of the traffic report).

Sections 3.38 to 3.42 of the traffic report state that the existing shopping centre has some 75 service vehicles per day. The proposed shopping centre is predicted to have 80 vehicles per day (an increase of 5 vpd over the existing). The service vehicles will be mainly vans and small commercials and will include 4 to 5 semi trailers.

The service vehicle traffic is spread throughout the day with larger volumes throughout the mornings. Our understanding is that the increase in number (5 vpd) will be spread during delivery hours, however in the peak delivery hour, 2 service vehicles will be added to the existing volumes. After discussion with the traffic consultant the following traffic flow has been taken for service vehicles.

- The service vehicles have an existing volume of 15 vph at Thursday morning peak, 10 vph on Thursday afternoon peak and 5 vph on Saturday midday peak.
- The service vehicles will have a nett increase of of 2 vph at Thursday morning peak, and 1 vph on Thursday afternoon and Saturday midday peak hours.

Service vehicles primarily access the centre from Gardeners Road, via Racecourse Place. Large service vehicles access the centre from Maloney Street, via Evans and Barber Avenue. The following Table 2 and Table 3 present a summary for total generated traffic volumes and the cumulative noise impact from the generated traffic.

Table 2: Summary of generated traffic volume, vehicles per hour

Road	Thursday am peak			Thursday pm peak			Saturday midday peak		
	Retail & residential	Service vehicles	Total	Retail & residential	Service vehicles	Total	Retail & residential	Service vehicles	Total
Gardeners Road (east of Racecourse Pl)	3560	17	3577	3570	11	3581	2870	6	2876
Gardeners Road (west of Racecourse Pl)	3055	17	3072	3075	11	3086	2520	6	2526
Racecourse pl	905	17	922	840	11	851	930	6	936
Evans (east of Racecourse pl)	620	17	637	515	11	526	435	6	441
Evans (west of Racecourse Pl)	415	17	432	410	11	421	390	6	396
Barber Ave (south of Evans Ave)	340	17	357	275	11	286	265	6	271

Table 3: Summary of generated traffic noise levels, peak hour

Road	Thursday am			Thursday pm			Saturday midday		
	Existing (vph)	Total Generated (vph)	Noise level increase (dBA)	Existing (vph)	Total Generated (vph)	Noise level increase (dBA)	Existing (vph)	Total Generated (vph)	Noise level increase (dBA)
Gardeners Road (east of Racecourse Pl)	3500	3577	0.1	3490	3581	0.1	2805	2876	0.1
Gardeners Road (west of Racecourse Pl)	3025	3072	0.1	3055	3086	0.1	2470	2526	0.1
Racecourse pl	815	922	0.5	745	851	0.6	815	936	0.6
Evans (east of Racecourse pl)	720	637	-	720	526	-	775	441	-
Evans (west of Racecourse Pl)	375	432	0.6	325	421	0.1	310	396	0.1
Barber Ave (south of Evans Ave)	325	357	0.4	225	286	0.1	260	271	0.2

It should be noted that for the other roads in the surrounding network, the vehicle volumes and the noise level increases are in the same order of increase.

The above results summary indicates that the noise level increase on the surrounding roads is less than 2 dBA and is within the level increase permitted by the RNP.

5. *Loading dock noise:*

Our recommendation is to incorporate absorption materials/panels to the internal wall and/or soffit surfaces of both loading docks. This will result in reduction of noise emission to the residences across the road necessary to achieve the day time criteria. To control the likelihood of noise exceedances during the evening, the roller doors of the south dock will need to be closed during any unloading activity.

The assessment considers the residential receivers directly opposite Evans and Barber Ave from the loading docks as they are more likely to have a noise impact. The units above the docks will have lower airborne noise impact due to directivity attenuation.

A summary of the predicted noise levels at the residential buildings opposite the loading docks, with and without this acoustic treatment are presented in the following Table 4.

Table 4: Loading docks noise level emissions, Values in dBA.

Loading dock	Noise level at nearest residential bldg, before acoustic treatment	Noise level at nearest residential bldg, with acoustic treatment	Criteria (Day/Evening)	Complies
Service yard north	54	50	50/50	Yes
Service yard south	51	47	50/45	Yes(day) No (evening)

As indicated in our report for the apartments above the loading docks, more detailed assessment should be conducted at the CC stage when the machinery, equipment and activities are better known. This will be to assess the transmission/isolation of noise and vibration to the residential units above. The report provides general recommendations for acoustic and vibration isolation for the DA stage.

As the noise and vibration criteria for these cases is not clearly defined in regulatory polices, VIPAC recommend adopting the following criteria:

- Internal noise level ($L_{Aeq\ 15min}$) associated with the operation of commercial activities should not exceed the background noise level ($L_{A90\ 15min}$) by more than 5dB at anytime within an affected apartment. In more recent projects of mixed-use development, a similar noise intrusion criteria has been adopted by Manly City Council and Willoughby City Council.

- In addition to the above, internal noise level ($L_{Aeq\ 15min}$) associated with the operation of commercial activities should not exceed the recommended satisfactory design level within an affected apartment as given in the Australian Standard/New Zealand Standard AS2107:2000 “Acoustics—Recommended design sound levels and reverberation times for building interiors”.

Table 5: Internal Apartment Noise from Commercial Operation, Values in dBA.

Type of occupancy	Recommended Design Sound Level (Satisfactory)
Houses and apartments near minor road.	
Living	30
Sleeping	30

- For sleep disturbance during the night time (between 10pm and 7am), the WHO Guidelines for community noise 1999 recommends $L_{eq\ (8\ hrs)}$ 30 dBA and L_{max} fast < 45 dBA.

- Vibrations generated by the commercial activities should not exceed the vibration criteria as details in AS2670.2:1990 “Evaluation of human exposure in building (1 to 80 Hz) when measured at any residential apartment.

6. *Direct aircraft flyover noise.*

   The acoustic report dated 14th February has considered aircraft noise for the East-West and the Third runways.

   For the noise impact from the 3rd runway, the peak noise contours as shown on the ANEF curves were used. The application of the AS2021, when determining a curved path uses the centreline of the flight path. Although there may be direct flyovers above the site, the published ANEF contours considers the dispersion of fight tracks about the centreline of the flight path. Accordingly if a direct over fight path assumption were used, this would result in an overly conservative outcome.

   The centreline of the curved flight path flight corridor of the Third Runway and of the East-West runway is shown in Figure 1.

7. *Compliance with DCP 35 (Acoustic & Visual privacy).*

   This is a new item. As we understand and from our meeting at Botany City Council, DCP 35 is not relevant.

   Notwithstanding this, the BCA requires consideration for the design of walls and partitions between habitable and non-habitable spaces in the adjoining buildings. The BCA also provides acoustic requirements when habitable spaces are adjacent to corridors, lift shafts, plantrooms etc. Compliance with the BCA will ensure that acoustic integrity of all such spaces are upheld.

8. *Construction Noise and Vibration:*

   As stated in our report, at the DA stage VIPAC has presented the noise and Vibration criteria and has provided general recommendations to reduce construction noise and vibration. A more detailed assessment will require detailed information such as construction equipment, methodology and schedule/program. This should be included as part of the council approval conditions and a detailed assessment should be conducted prior to commencement of any construction activity.

Sincerely,
VIPAC ENGINEERS & SCIENTISTS LTD

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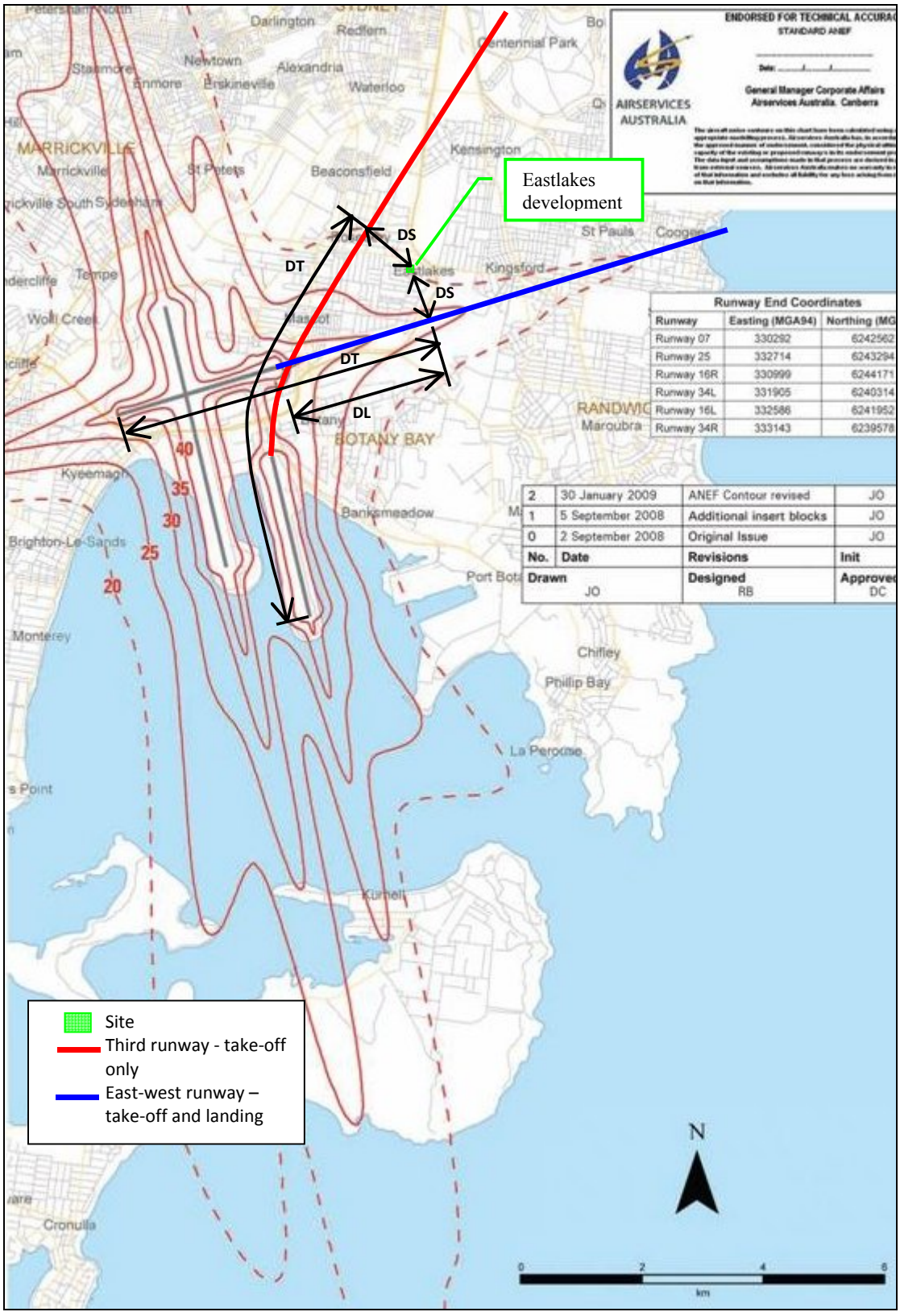

Figure 1: Centre Line of Flight Path – Sydney Airport ANEF 2029