Hawes & Swan
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35 Buckingham Street
Surry Hills NSW 2010

10 November 2016

Ben Lusher
Director Key Sites Assessments
NSW Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Attention – Ashley Cheong

ashley.cheong@planning.nsw.gov.au

Dear Mr. Cheong,

Submission to Remediation, Renewal and Adaptive Re-Use of Campbell's Stores, 7 – 27 Circular Quay West, The Rocks, (SSD 7056) – Submission on Behalf of Park Hyatt

Thank you for notifying Park Hyatt of further amendments to the proposal that has been submitted for your consideration at 7-27 Circular Quay West, The Rocks.

As previously noted, Hawes and Swan Planning Pty Ltd act on behalf of Park Hyatt, the owners of 7 Hickson Road, The Rocks located immediate to the north of the proposed development. Park Hyatt is a luxury Hotel which prides itself on its location, view lines and ability to blend in with iconic views of the Harbour Bridge and Sydney Opera House. The proposed development is of significant interest to Park Hyatt given potential impacts on the hotel.

We note that the applicant has amended their application and based on expert independent heritage and design advice, the free standing 'Bay 12' building has been removed from the application. This resolves one of the main issues raised in our previous submission.

Having reviewed the revised plans and documentation made available, our principal concern is the adverse impact that the new outdoor dining area (Bay 12), with a capacity of approximately 50 people (Dining Area 1), which is proposed to operate between 7am and 12am.

Concern is raised that the use of this space as proposed will have an adverse noise impact on Park Hyatt. Hotel guests will be attempting to sleep during the operating times and if excessive noise impacts occur, their amenity will be adversely impacted.

In this regard, expert acoustic advice from Koikas Acoustics Pty Ltd has been sought and Koikas Acoustics have now undertaken a peer review of the Noise and Vibration Impact Assessment prepared by Acoustic Logic (ALC) on behalf of the applicant.

Koikas Acoustics state:

"Our primary concern lies with the ALC Report applying the NSW Industrial Noise Policy (EPA, 2000) commercial amenity criteria of LAeq Period 65dB to Park Hyatt hotel rooms. In our opinion, adopting the INP commercial amenity noise criterion will not offer satisfactory noise level amenity for guests residing in affected rooms of the hotel…"

As shown in **Figure 1** below, the location of outdoor space is in close proximity to the Park Hyatt, with Hotel bedroom's orientated and looking onto this space.

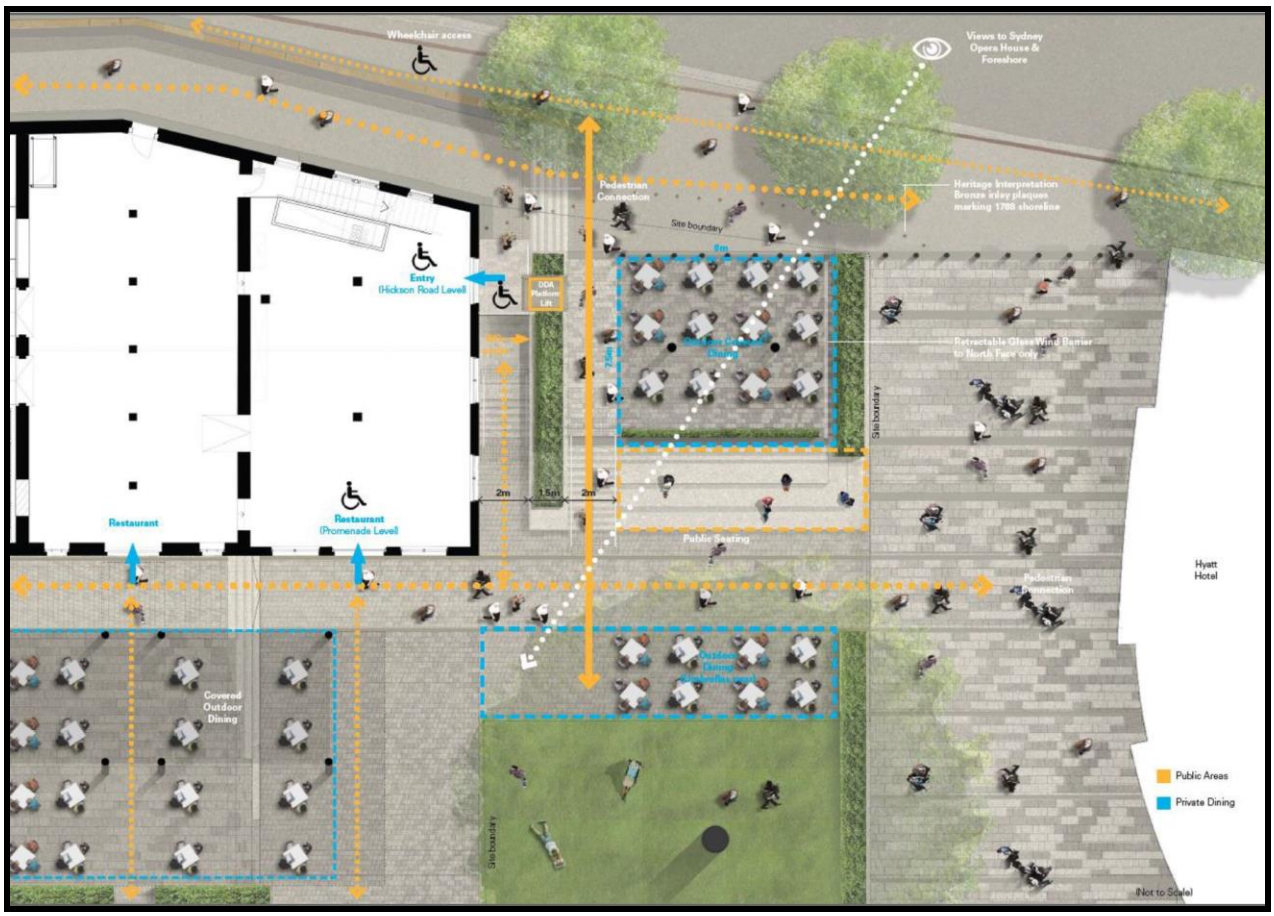

Figure 1 – Extract of Bay 12 Site Plan *(Figure 1, Pg. 5, SSD 7056: Response to Submissions, Urbis)*

It is noted that Koikas Acoustics recommends that based on their expert view, the applicants Noise and Vibration Impact Assessment is unsatisfactory and there are a number of 'areas of concern' and technical deficiencies. To that end, Koikas Acoustics have recommended the following:

1. Further measurements, calculations and reporting should be conducted to ensure that adequate acoustic privacy is provided for the nearest impacted receiver locations within hotel rooms of Park Hyatt Sydney, and for additional noise sensitive receivers further surrounding The Campbell Stores proposed development site.

2. It is the opinion of KA that the proposed The Campbell Stores development in its current form should not be approved by the NSW Department of Planning and Environment until such time that relevant acoustic privacy concerns as stated within this report have been adequately addressed.

It is therefore requested that the Department undertakes a further detailed review of potential noise impacts based on the noise report submitted in order to ensure that the amenity of guests of Park Hyatt is protected.

We thank you for the opportunity to comment on this proposal. Please contact Jeremy Swan on his mobile 0438 398 079 or email at jeremy@hawesandswan.com.au if you would like to discuss any of the contents of this submission.

Yours sincerely

Jeremy Swan

DIRECTOR
Hawes and Swan Planning Pty Ltd

Attachment – The Campbell Warehouses, The Rocks Peer Review – Acoustic Logic Consultancy prepared by Koikas Acoustics Pty Ltd dated 9 November 2016

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THE CAMPBELL WAREHOUSES, THE ROCKS

PEER REVIEW — ACOUSTIC LOGIC CONSULTANCY

Date: Wednesday, 9 November 2016

File Reference: 3075R20161108asParkHyatt.docx

Koikas Acoustics Pty Ltd

Commercial 1, Unit 27,

637-645 Forest Road,

Bexley NSW 2207

DOCUMENT CONTROL			
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Issue Date	Wednesday, 9 November 2016		
Revision	INT	09/11/2016	Issued for internal quality control
	V1	09/11/2016	Report issued to Client
Prepared By	Adam Semple		
Approved By	Nick Koikas 		
Client	Park Hyatt Sydney C/o Hawes and Swan Planning Attention: Mairead Hawes Email: mairead@hawesandswan.com.au		

THE CAMPBELL STORES, THE ROCKS

PEER REVIEW — ACOUSTIC LOGIC CONSULTANCY

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Table of Appendices

1.0 INTRODUCTION

Koikas Acoustics Pty Ltd (KA) have been commissioned by Park Hyatt Sydney to conduct a peer review of the Noise and Vibration Impact Assessment prepared by Acoustic Logic Consultancy (ALC) for The Campbell Stores, The Rocks. Our review has been prepared to identify any concerns regarding the applied criteria, assessment methodology, noise controls recommendations, or conclusions reached by ALC.

The review addresses the ALC document referenced as follows (hereafter referred to as the ALC Report):

- Project Number: 20150802.4
- Project Name: The Campbell Warehouses, The Rocks
- Document Title: Noise and Vibration Impact Assessment
- Revision: 1
- Date: 21/10/2016

Our client (Park Hyatt Sydney) has raised concerns with the fact that hotel rooms have been classified as commercial development and have been associated with a noise criteria to this effect. Their concern is that appropriate and reasonable noise amenity may not be afforded to guests residing at the hotel, especially considering the proposal for an outdoor seating/dining terrace (referred to as Dining Area 1 in the ALC Report) which is to be located directly adjacent to the nearest hotel rooms within Bay 12 of The Campbell Stores.

2.0 THE DEVELOPMENT PROPOSAL

According to the ALC Report, the development proposal is as follows:

"The Campbell Stores development is a three-storey building comprising multiple tenancies, consisting primarily of restaurants and ancillary office space.

The restaurants have both indoor and an outdoor dining area which is located on the eastern side of the building (adjacent to the harbour side promenade).

The proposed redevelopment works include:

- *Internal refurbishment of the existing tenancies to provide building shells to be occupied by future tenants (anticipated to be restaurants/bars/function centres).*
- *Refurbishment of the existing outdoor dining area on the eastern side of the site. The final capacity of this area is expected to be similar to the current level of usage.*
- *Creation of two new outdoor dining areas:*
    - *At the northern end – a new covered outdoor dining area (Bay 12), with a capacity of approximately 50 people (Dining Area 1).*
    - *Midway along the western façade – a new dining area with a capacity of approximately 60 people (Dining Area 2)."*

Indoor areas within The Campbell Stores are said to have existing licenses that allow for operation up until 2am, however all outdoor areas are said to have no patrons within them after 12 midnight, or before 7am.

3.0 ISSUES AND CONTENTIONS

The following section identifies our issues and contentions with the ALC Report made after reviewing its contents with regard to potential noise impacts from The Campbell Warehouses on Park Hyatt hotel.

3.1 NOISE CRITERIA APPLIED FOR HOTEL ROOMS

Our primary concern lies with the ALC Report applying the NSW Industrial Noise Policy (EPA, 2000) commercial amenity criteria of $L_{Aeq\ Period}$ 65dB to Park Hyatt hotel rooms. In our opinion, adopting the INP commercial amenity noise criterion will not offer satisfactory noise level amenity for guests residing in affected rooms of the hotel for the following reasons:

1. KA contend that a hotel room would be more aligned with a residential premises rather than as a commercial premises, and that any noise impacting the hotel room should be assessed to criteria that acknowledges the sensitivity of the space, being for sleeping and/or passive recreation and relaxation. KA are aware that not all acoustic consultants agree on whether a hotel room should be classified as commercial or residential, but we would expect a duty of care be applied by acoustic consultant in selecting a reasonable noise criteria that acknowledges the noise-sensitivity of the affected space/s.
2. The assessment of noise as an overall dB(A) level will not sufficiently define the noise impact on

guests residing in the hotel as it does not consider the 1/1 octave band components of the source noise. The frequency spectrum of noise emanating from licensed premises is important when assessing noise intrusion, disturbance, or offense. Assessing 1/1 octave band noise levels from licensed premises is standard practice under the OLGR/LAB criteria and City of Sydney Council (CoS) conditions of development consent.

3. KA are concerned that should the 65dB(A) INP commercial amenity criterion be accepted as satisfactory by the NSW Department of Planning and Environment for the licensed outdoor dining areas, then it would also be considered for applications relating to fit-outs of other tenancies within the subject development, including restaurants/bars/function centres that will likely include amplified entertainment. Issues could arise in relation to the transmission of low-frequency noise (bass notes) from the amplification system to nearby hotel rooms, which may not register as a breach of the 65dB(A) amenity criteria, but due to the limited ability of typical building façade constructions to attenuate low frequencies, could result in offensive noise to persons within the hotel rooms, especially after midnight.

4. The 65dB(A) INP commercial noise criterion is up to 15dB above the prevailing background noise level, measured at 50dB(A) by ACL and KA (See Section 3.2) during the night period between 10pm and 12 midnight. A 15dB exceedance of the background noise level is expected to *"interfere unreasonably with the comfort or repose of a person who is outside the premises from which it is emitted"* and therefore be considered as offensive noise under the Protection of the Environment Operations Act 1997 (POEO Act 1997).

3.1.1 Recommended criteria for hotel rooms

For the assessment of noise from The Campbell Stores to hotel rooms with the Park Hyatt Sydney we recommend that a more detailed 1/1 octave band assessment of noise is conducted in relation to L_{A10} criteria defined by either the OLGR/LAB or as is applied throughout the CoS.

KA recognise that the CoS is not the relevant planning authority for this site, however they also adopt a detailed 1/1 octave band noise assessment approach similar to that of the OLGR/LAB in terms of assessing noise from licensed premises and entertainment venues. Furthermore, the CoS have also directly addressed noise criteria from licensed premises within hotel rooms previously in development consent conditions.

The OLGR/LAB standard L_{A10} criteria is as follows:

- The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz – 8kHz inclusive) by more than 5dB between 7:00am and 12:00 midnight at the boundary of any affected residence.
- The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz – 8kHz inclusive) between 12:00 midnight and 7:00am at the boundary of any affected residence.
- Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 7:00am.

  *For the purposes of this condition, the LA10 can be taken as the average maximum deflection of the noise emission from the licensed premises.

A standard CoS noise criteria taken from 2015 is as follows:

NOISE – ENTERTAINMENT

a) The $L_{A10,\ 15\ minute}$ noise level emitted from the use must not exceed the background noise level ($L_{A90,\ 15minute}$) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) by more than 5dB between the hours of 7.00am and 12.00 midnight when assessed at the boundary of any affected residence.

b) The $L_{A10,\ 15\ minute}$ noise level emitted from the use must not exceed the background noise level ($L_{A90,\ 15\ minute}$) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) between the hours of 12.00 midnight and 7.00am when assessed at the boundary of any affected residence.

c) Notwithstanding compliance with (a) and (b) above, noise from the use when assessed as an $L_{A10,\ 15\ minute}$ which enters any residential use through an internal to internal transmission path is not to exceed the existing internal $L_{A90,\ 15\ minute}$ (from external sources excluding the use) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) when assessed within a habitable room at any affected residential use between the hours of 7am and 12midnight. Where the $L_{A10,\ 15\ minute}$ noise level is below the threshold of hearing, Tf at any Octave Band Centre Frequency as defined in Table 1 of International Standard ISO 226:2003 - Normal Equal-Loudness-Level Contours then the value of Tf corresponding to that Octave Band Centre Frequency shall be used instead.

d) Notwithstanding compliance with (a), (b) and (c) above, the noise from the use must not be audible within any habitable room in any residential use between the hours of 12.00 midnight and 7.00am, or any room within a separate commercial premise which is used for sleep, rest or passive recreation and relaxation.

e) The $L_{A10,\ 15\ minute}$ noise level emitted from the use must not exceed the background noise level ($L_{A90,\ 15\ minute}$) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) by more than 3dB when assessed indoors at any affected commercial premises.

Note: The $L_{A10,\ 15\ minute}$ noise level emitted from the use is as per the definition in the Australian Standard AS1055-1997 Acoustics – Description and measurement of environmental noise. The background noise level $L_{A90,\ 15\ minute}$ is to be determined in the absence of noise emitted by the use and be representative of the noise sensitive receiver. It is to be determined from the assessment L_{A90} / rating L_{A90} methodology in complete accordance with the process listed in the NSW EPA Industrial Noise Policy and relevant requirements of AS1055.1997.

3.2 1/1 OCTAVE BAND BACKGROUND NOISE MEASUREMENT

Unattended noise logging has been conducted by ALC over a one week period from 25th June to 2nd July 2015. The logged noise data was stored as an overall dB(A) level. Analysis of the logger data found that background noise levels during the daytime (7am to 6pm), evening (6pm to 10pm), and night (10pm to 12 midnight) were 53dB(A) / 53dB(A) / 50dB(A) respectively.

An attended noise survey was also conducted by ALC to define a background noise spectrum. Concern is raised over the statistical reliability of the attended background noise spectral measurement as it appears only a single 15 minute sample has been acquired by measurements. Furthermore, the report includes no detailed information regarding the date, time, measurement duration, and number of measurement samples taken.

Given the ALC 1/1 octave band background noise spectrum adds to a total of 50dB(A), KA assume that the measurement was taken during the night period at some time between 10pm and 12 midnight. We would contend that the standardised use of a single night-time background noise spectrum to define all periods of the day and evening is insufficient, and that further 1/1 octave band noise logging should be conducted to fully quantify the background noise spectrum during each period of the day over a full week period.

KA installed on short notice an 1/1 octave band noise logger on the balcony of Room 147 of the Park Hyatt, directly overlooking Bay 12 of The Campbell Stores during the afternoon of Friday 4th November and was retrieved during the morning of Tuesday 8th November 2016 to ascertain whether the ALC background noise spectrum levels were appropriate for assessment purposes. A period shorter than one full week needed to be considered on account of time restraints in preparing this report.

The instrument installed was a Type 1 Svantek 977 noise logger (serial number 34134). The meter was set to linear weighting and fast time response. Conversion to A-weighted levels was undertaken during the post-survey analysis. Periods of extraneous noise recorded by the logger were removed from the overall survey data as per standard assessment procedures. This extraneous noise was likely due to nearby mechanical plant.

The instrument was field calibrated before and after the measurements with no system drift noted. 1/1 octave band background noise levels measured by KA and proposed by ALC are summarised in Table 1.

Table 1. Noise logging results – 1/1 octave background levels, LA90 (dB)

	1/1 octave band centre frequency (Hz)									
Time interval	31.5	63	125	250	500	1000	2000	4000	8000	dB
Day: 7am to 6pm										
KA noise logger data	30.1	31.3	38.4	43.9	48.3	50.2	46.8	38.4	25.9	54.2
ALC assumed spectrum	19	32	40	45	48	48	43	35	31	53
Evening: 6pm to 10pm										
KA noise logger data	25.2	27.6	35.3	41.2	45.9	48.0	44.8	37.9	27.1	51.9
ALC assumed spectrum	19	32	40	45	48	48	43	35	31	53
Night: 10pm to 12 midnight										
KA noise logger data	23.1	25.5	32.7	39.6	44.6	46.6	43.0	35.3	26.6	50.4
ALC attended survey	16	29	37	42	45	45	40	32	28	50

From the abbreviated noise logging survey data recorded by KA it can been seen that, although overall A-weighted background levels are similar between KA and ALC, the spectrum that has been measured by the noise logger does not agree with the short-term attended noise survey data recorded by ALC.

Furthermore, the KA noise logging results indicate that applying a single background noise spectrum globally for the day, evening, and night periods is not accurate and technically incorrect.

Our recommendation is that additional 1/1 octave band noise logging be conducted over a full

one-week period to provide more clarity on the actual background noise level spectrum in the local area.

3.3 SOURCE SOUND POWER LEVELS FOR PATRONS WITHIN DINING AREA 1

ALC have considered in their calculations that within Dining Area 1, of the 50 people assumed that only 25 will be talking at any one time. The sound power level associated with a single talker is taken to be 77dB(A) and is stated to include the contribution of background music.

Calculated to an equivalent sound power level for all people in Dining Area 1 would be 91dB(A).

The assessment methodology employed by ALC does not take into consideration the Lombard Effect, which by definition follows that in crowd-type environments, a patron's vocal effort will increase as the background noise increases as a way of maintaining adequate verbal communication.

Furthermore, a source sound power level spectrum is not included within the report that would allow us to verify that receiver noise levels stated within the report can be achieved, and that noise levels predicted to the hotel rooms could comply with a recommended detailed 1/1 octave band noise criteria to Park Hyatt Sydney hotel rooms.

In contrast to ALC methodology, KA approximate the sound power level for small groups of patrons occupying outdoor terrace areas by applying the calculation algorithm published within the research paper submitted for the 2011 conference of the Australian Acoustical Society entitled *Prediction of Noise from Small to Medium Sized Crowds (Hayne, Taylor, Rumble, Mee, 2011)*. For 50 patrons congregating within Dining Area 1, calculated L_{A10} sound power levels are 92.5dB.

Table 2. Licensed premises source noise levels, dB

Source	Noise Metric	1/1 octave band centre frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	dB
50 patrons in Dining Area 1	LAw	-	61	70	78	88	88	83	78	67	92
Notes 1.	Speech spectrum taken from ANSI 3.5 for raised vocal effort and includes on-axis directivity correction to the sound power level.										

4.0 RECOMMENDATIONS

Based on our review of the ALC Report into The Campbell Stores, The Rocks, we recommend that a revised acoustic report should be submitted for The Campbell Stores that addresses the following:

1. A more suitable noise criterion be adopted to assess the 1/1 octave band noise levels from licensed areas with The Campbell Stores. Suitable criteria could be referenced from the LAB/OLGR standard L_{A10} criteria or from the City of Sydney Council standard conditions of development consent (as published within this report). The new criteria should replace the use of the NSW INP commercial amenity criteria which is primarily applied to outdoor spaces.
2. Additional noise logging should be undertaken to fully define the background noise spectrum in the area of potentially noise affected hotel rooms directly adjacent to the proposed Dining Area 1 during the daytime, evening, and night-time for indoor and outdoor spaces.
3. Calculations of noise propagation from the proposed Dining Area 1 to nearby noise-affected hotel rooms should be conducted and should consider a reasonable adjustment to allow for the Lombard Effect which will be apparent when assessing noise generated by small to medium-sized crowds in open spaces.

5.0 CONCLUSION

KA was requested to prepare a peer review of the Noise Impact Assessment Report prepared by ALC for The Campbell Stores at The Rocks. In reviewing the ALC Report, KA have identified a number of 'areas of concern' and technical deficiencies in the ALC Report that suggest further measurements, calculations and reporting should be conducted to ensure that adequate acoustic privacy is provided for the nearest impacted receiver locations within hotel rooms of Park Hyatt Sydney, and for additional noise sensitive receivers further surrounding The Campbell Stores proposed development site.

It is the opinion of KA that the proposed The Campbell Stores development in its current form not be approved by the NSW Department of Planning and Environment until such time that relevant acoustic privacy concerns as stated within this report have been adequately addressed.

APPENDIX A

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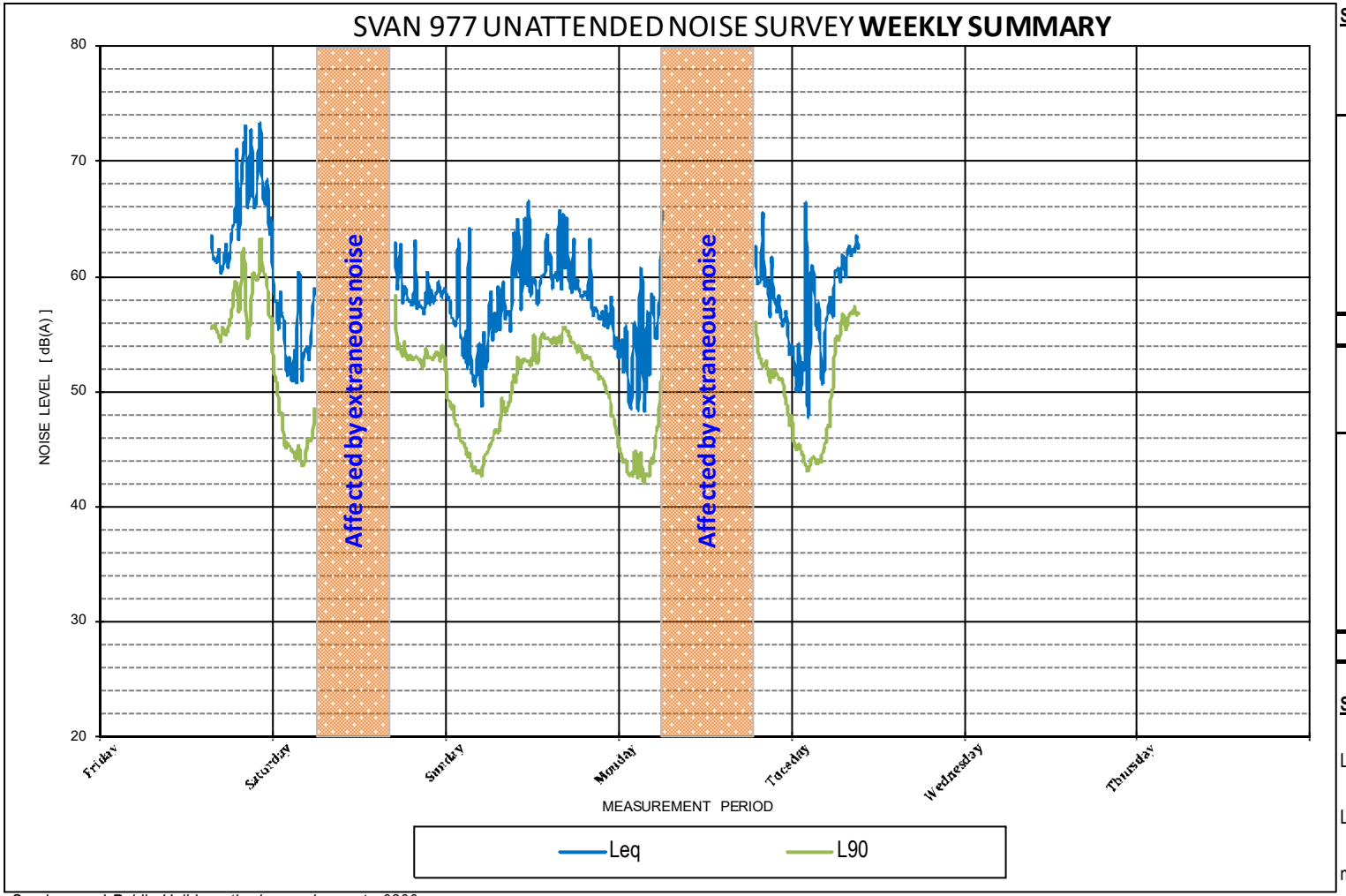
WEEKLY SUMMARY **LOGGER LOCATION:** Park Hyatt Sydney - Room 147 **PERIOD:** 4th to the 8th November 2016



Sundays and Public Holidays the hours change to 0800

WEEKKLY SUMMARY	Period		Frequency [Hz]									
Descritpor	**Start**	**End**	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Total A**
10% min L90 Daytime	7:00 AM	6:00 PM	30.1	31.3	38.4	43.9	48.3	50.2	46.8	38.4	25.9	54.2
10% min L90 Evening	6:00 PM	10:00 PM	25.2	27.6	35.3	41.2	45.9	48.0	44.8	37.9	27.1	52.0
10% min L90 Night	10:00 PM	12:00 AM	23.1	25.5	32.7	39.6	44.6	46.6	43.0	35.3	26.6	50.4
10% min L90 Period	7:00 AM	10:00 PM										
10% min L90 Period	10:00 PM	7:00 AM										
Leq 15 hours	7:00 AM	10:00 PM										
Leq 9 hours	10:00 PM	7:00 AM										
Max Leq 1 hour Day	7:00 AM	10:00 PM										
Max Leq 1 hour Night	10:00 PM	7:00 AM										

SUMMARY OF AMBIENT LEVELS

	L90 Daytime	*L90* Evening	*L90* Nighttime
Day 1	55	56	
Day 2	54	53	56
Day 3	49	51	53
Day 4		51	47
Day 5	56		48
Day 6			
Day 7			
RBL	**54**	**52**	**50**

	Leq Daytime	*Leq* Evening	*Leq* Nighttime
Day 1	62	69	
Day 2	62	59	64
Day 3	61	59	57
Day 4		61	57
Day 5	62		58
Day 6			
Day 7			
Average	**62**	**64**	**60**

SUMMARY OF TRAFFIC LEVELS

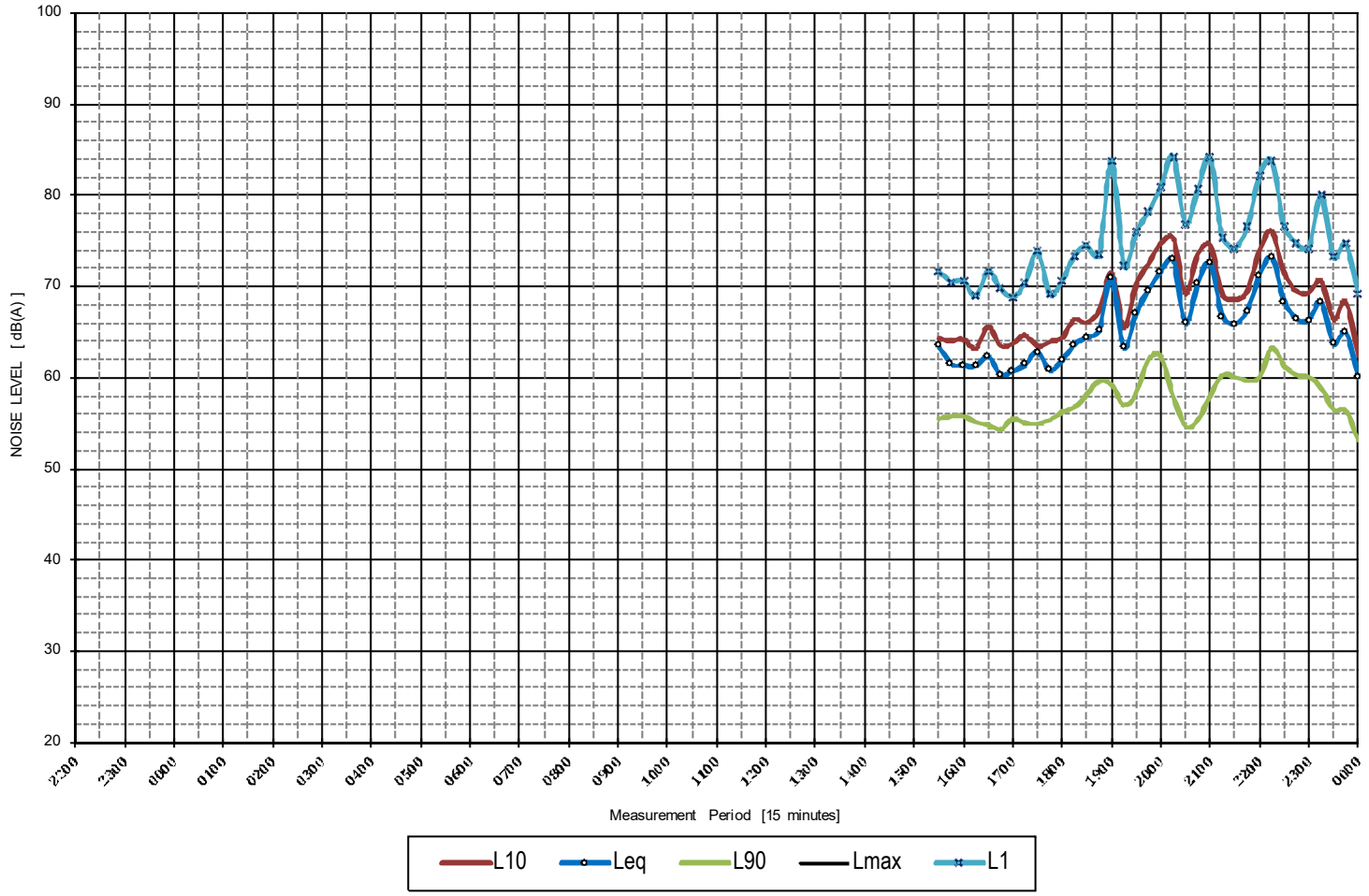
Leq 15 hrs	0700-2200	dB(A)
Leq 9 hrs	2200-0700	dB(A)
max Leq 1 hr	0700-2200	dB(A)
max Leq 1 hr	2200-0700	dB(A)

Maximum noise events as defined in the Environmental Noise Management Manual

7 day average - [Lmax - Leq ≥ 15]

KOIKAS ACOUSTICS PTY LTD

DAY 1 **LOGGER LOCATION:** Park Hyatt Sydney - Room 147 **DATE:** Friday , 4 November 2016



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
L90 Daytime	0700-1800	55	dB(A)
L90 Evening	1800-2200	56	dB(A)
L90 Nighttime	2200-0000		dB(A)
Leq Daytime	0700-1800	62	dB(A)
Leq Evening	1800-2200	69	dB(A)
Leq Nighttime	2200-0700		dB(A)

TRAFFIC & MISC. NOISE METRICS

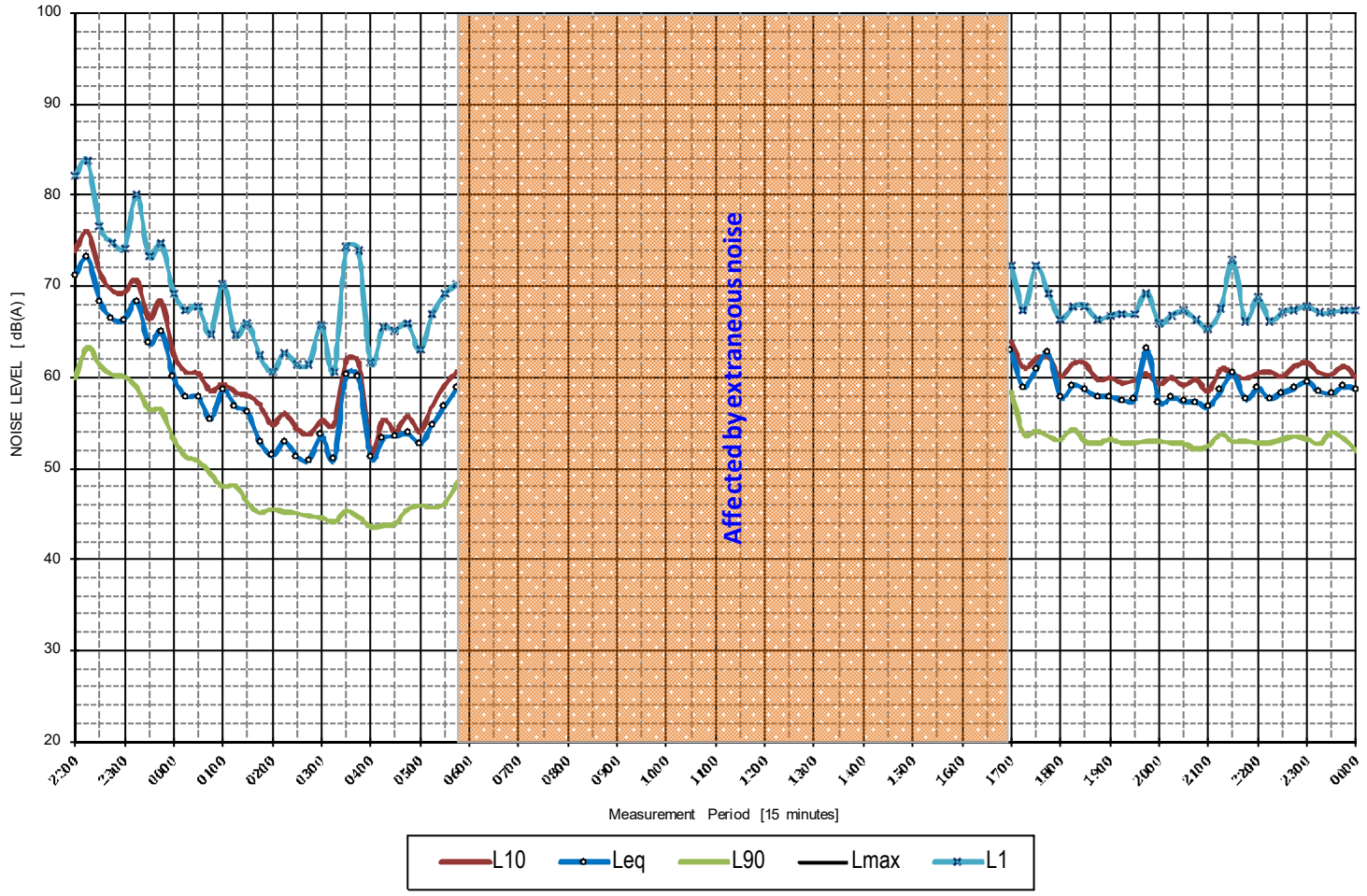
Leq 15 hours	0700-2200		dB(A)
Leq 9 hours	2200-0700		dB(A)
max Leq 1 hour	0700-2200		dB(A)
max Leq 1 hour	2200-0700		dB(A)

Maximum noise events as defined in the Environmental Noise Management Manual [Lmax - Leq ≥ 15]

	Period		Frequency [Hz]									
Descritpor	Start	End	31.5	63	125	250	500	1000	2000	4000	8000	Total A
10% min L90 Daytime	7:00 AM	6:00 PM	33	33	40	45	49	50	47	40	28	55
10% min L90 Evening	6:00 PM	10:00 PM	28	32	40	45	50	52	49	42	30	56
10% min L90 Night	10:00 PM	12:00 AM										
10% min L90 Period	7:00 AM	10:00 PM										
10% min L90 Period	10:00 PM	7:00 AM										
Leq 15 hours	7:00 AM	10:00 PM										
Leq 9 hours	10:00 PM	7:00 AM										
Max Leq 1 hour Day	7:00 AM	10:00 PM										
Max Leq 1 hour Night	10:00 PM	7:00 AM										

KOIKAS ACOUSTICS PTY LTD

DAY 2 **LOGGER LOCATION:** Park Hyatt Sydney - Room 147 **DATE:** Saturday, 5 November 2016



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
L90 Daytime	0700-1800	54	dB(A)
L90 Evening	1800-2200	53	dB(A)
L90 Nighttime	2200-0000	56	dB(A)
Leq Daytime	0700-1800	62	dB(A)
Leq Evening	1800-2200	59	dB(A)
Leq Nighttime	2200-0700	64	dB(A)

TRAFFIC & MISC. NOISE METRICS

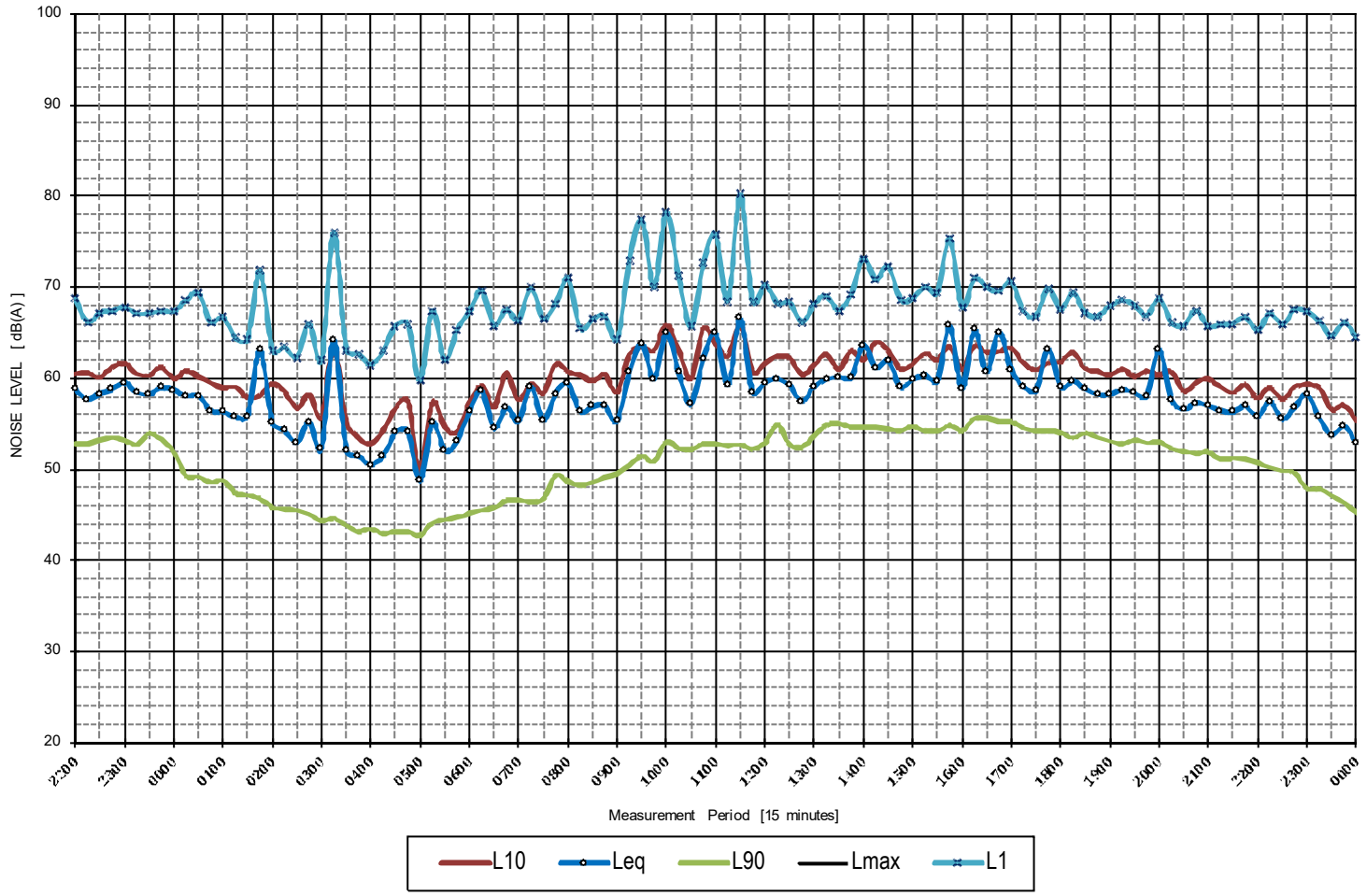
Leq 15 hours	0700-2200	dB(A)
Leq 9 hours	2200-0700	dB(A)
max Leq 1 hour	0700-2200	dB(A)
max Leq 1 hour	2200-0700	dB(A)

Maximum noise events as defined in the Environmental Noise Management Manual [Lmax - Leq ≥ 15]

	Period		Frequency [Hz]									
Descritpor	Start	End	31.5	63	125	250	500	1000	2000	4000	8000	Total A
10% min L90 Daytime	7:00 AM	6:00 PM	27	29	37	43	48	50	46	37	23	54
10% min L90 Evening	6:00 PM	10:00 PM	25	27	34	41	47	49	45	36	23	53
10% min L90 Night	10:00 PM	12:00 AM	23	29	36	44	51	53	50	42	31	56
10% min L90 Period	7:00 AM	10:00 PM										
10% min L90 Period	10:00 PM	7:00 AM										
Leq 15 hours	7:00 AM	10:00 PM										
Leq 9 hours	10:00 PM	7:00 AM										
Max Leq 1 hour Day	7:00 AM	10:00 PM										
Max Leq 1 hour Night	10:00 PM	7:00 AM										

KOIKAS ACOUSTICS PTY LTD

DAY 3 **LOGGER LOCATION:** Park Hyatt Sydney - Room 147 **DATE:** Sunday, 6 November 2016



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
L90 Daytime	0700-1800	49	dB(A)
L90 Evening	1800-2200	51	dB(A)
L90 Nighttime	2200-0000	53	dB(A)
Leq Daytime	0800-1800	61	dB(A)
Leq Evening	1800-2200	59	dB(A)
Leq Nighttime	2200-0800	57	dB(A)

TRAFFIC & MISC. NOISE METRICS

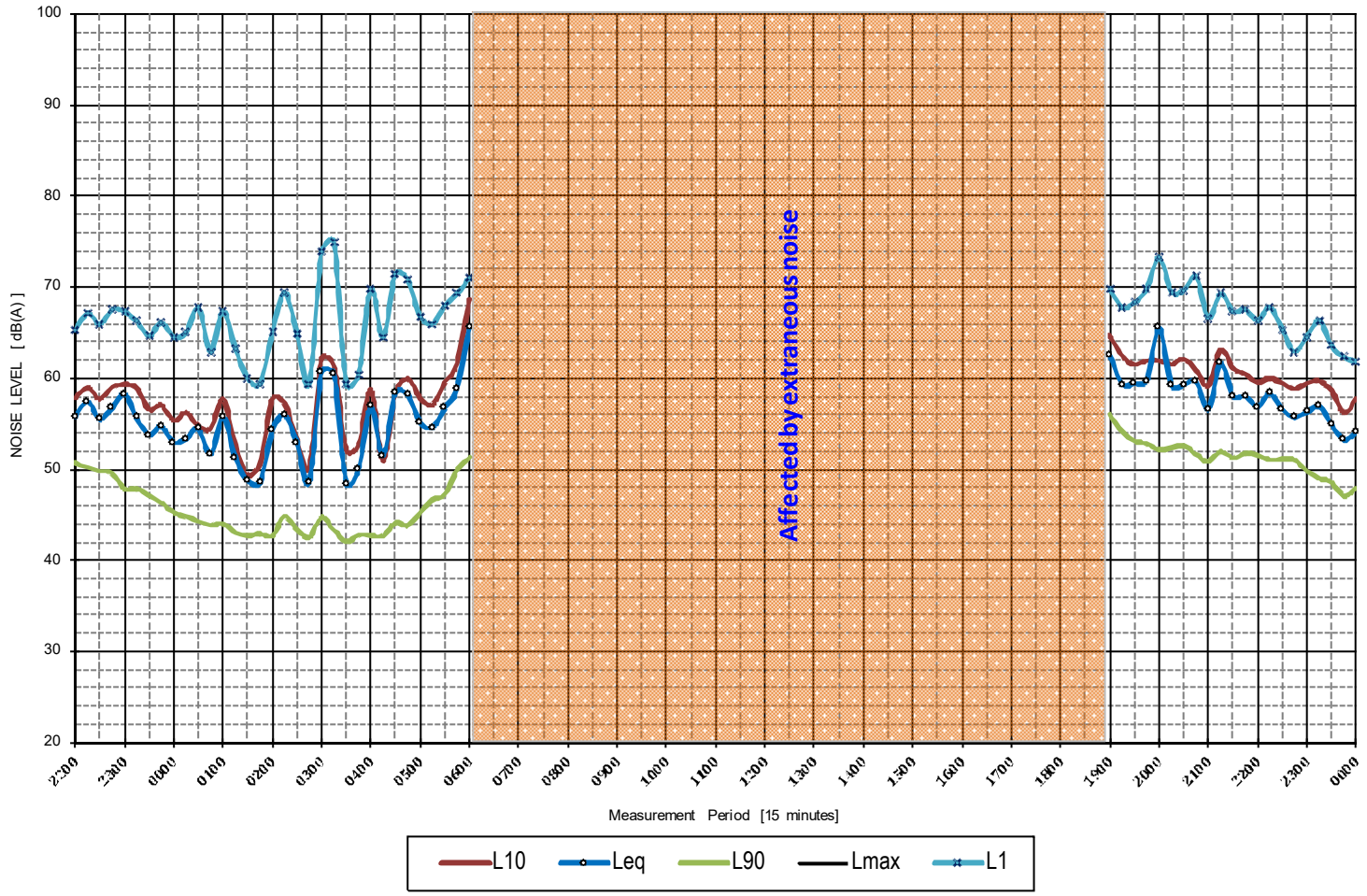
Leq 15 hours	0700-2200	dB(A)
Leq 9 hours	2200-0700	dB(A)
max Leq 1 hour	0700-2200	dB(A)
max Leq 1 hour	2200-0700	dB(A)

Maximum noise events as defined in the Environmental Noise Management Manual [Lmax - Leq ≥ 15]

	Period		Frequency [Hz]									
Descritpor	Start	End	31.5	63	125	250	500	1000	2000	4000	8000	Total A
10% min L90 Daytime	7:00 AM	6:00 PM	24	25	31	38	42	45	40	31	21	49
10% min L90 Evening	6:00 PM	10:00 PM	26	28	36	41	45	47	44	38	24	51
10% min L90 Night	10:00 PM	12:00 AM	25	27	34	41	47	49	46	38	24	53
10% min L90 Period	7:00 AM	10:00 PM										
10% min L90 Period	10:00 PM	7:00 AM										
Leq 15 hours	7:00 AM	10:00 PM										
Leq 9 hours	10:00 PM	7:00 AM										
Max Leq 1 hour Day	7:00 AM	10:00 PM										
Max Leq 1 hour Night	7:00 AM	10:00 PM										

KOIKAS ACOUSTICS PTY LTD

DAY 4 **LOGGER LOCATION:** Park Hyatt Sydney - Room 147 **DATE:** Monday , 7 November 2016



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
L90 Daytime	0700-1800		dB(A)
L90 Evening	1800-2200	51	dB(A)
L90 Nighttime	2200-0000	47	dB(A)
Leq Daytime	0700-1800		dB(A)
Leq Evening	1800-2200	61	dB(A)
Leq Nighttime	2200-0700	57	dB(A)

TRAFFIC & MISC. NOISE METRICS

Leq 15 hours	0700-2200	dB(A)
Leq 9 hours	2200-0700	dB(A)
max Leq 1 hour	0700-2200	dB(A)
max Leq 1 hour	2200-0700	dB(A)

Maximum noise events as defined in the Environmental Noise Management Manual [Lmax - Leq ≥ 15]

	Period		Frequency [Hz]									
Descritpor	Start	End	31.5	63	125	250	500	1000	2000	4000	8000	Total A
10% min L90 Daytime	7:00 AM	6:00 PM										
10% min L90 Evening	6:00 PM	10:00 PM	24	28	35	41	45	47	45	38	31	51
10% min L90 Night	10:00 PM	12:00 AM	21	22	29	36	41	43	39	31	21	47
10% min L90 Period	7:00 AM	10:00 PM										
10% min L90 Period	10:00 PM	7:00 AM										
Leq 15 hours	7:00 AM	10:00 PM										
Leq 9 hours	10:00 PM	7:00 AM										
Max Leq 1 hour Day	7:00 AM	10:00 PM										
Max Leq 1 hour Night	10:00 PM	7:00 AM										

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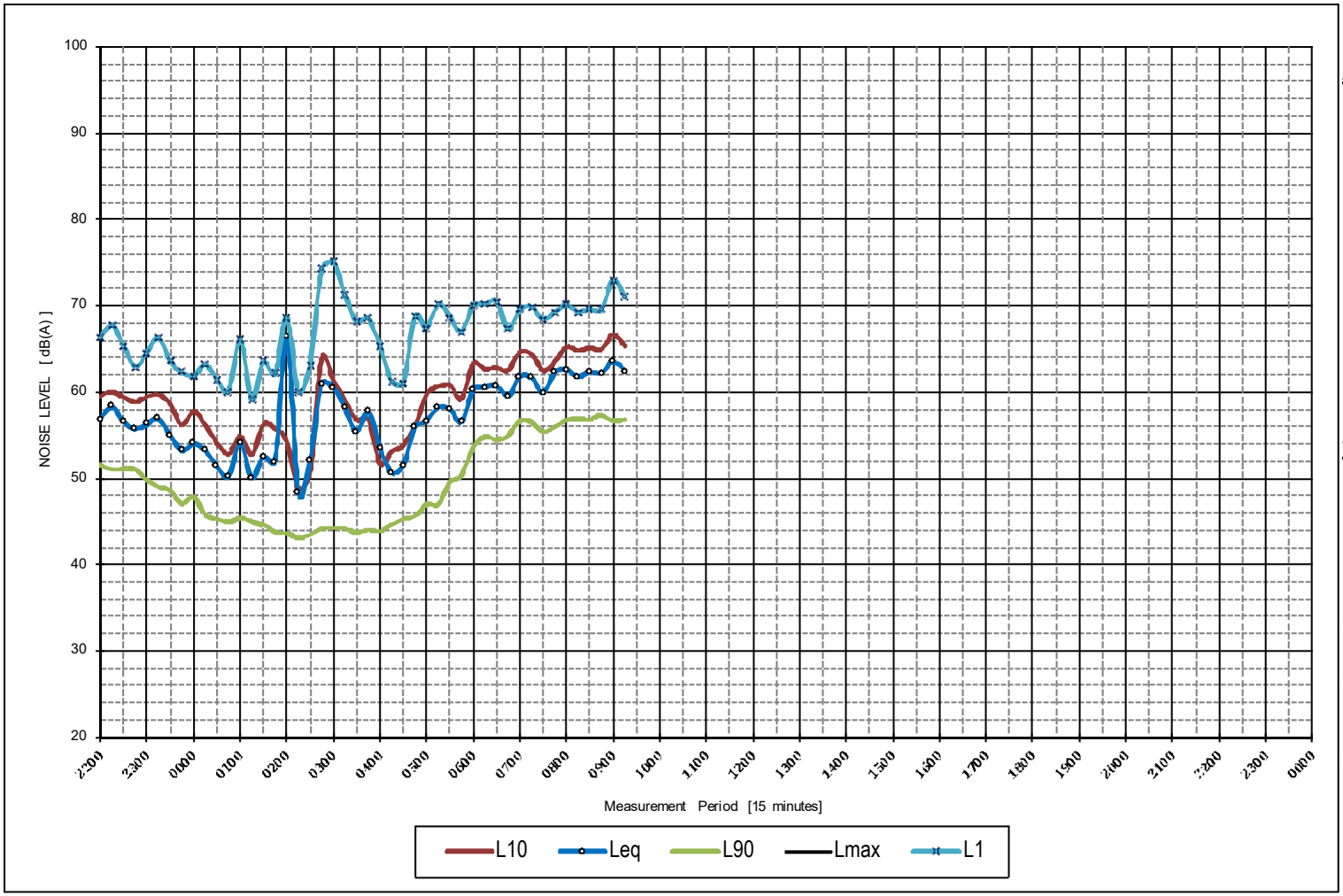
DAY 5 **LOGGER LOCATION:** Park Hyatt Sydney - Room 147 **DATE:** Tuesday, 8 November 2016



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
L90 Daytime	0700-1800	56	dB(A)
L90 Evening	1800-2200		dB(A)
L90 Nighttime	2200-0000	48	dB(A)
Leq Daytime	0700-1800	62	dB(A)
Leq Evening	1800-2200		dB(A)
Leq Nighttime	2200-0700	58	dB(A)

TRAFFIC & MISC. NOISE METRICS

Leq 15 hours	0700-2200	dB(A)
Leq 9 hours	2200-0700	dB(A)
max Leq 1 hour	0700-2200	dB(A)
max Leq 1 hour	2200-0700	dB(A)

Maximum noise events as defined in the Environmental Noise Management Manual [Lmax - Leq ≥ 15]

	Period		Frequency [Hz]									
Descritpor	Start	End	31.5	63	125	250	500	1000	2000	4000	8000	Total A
10% min L90 Daytime	7:00 AM	6:00 PM	37	35	42	47	50	52	48	41	29	56
10% min L90 Evening	6:00 PM	10:00 PM										
10% min L90 Night	10:00 PM	12:00 AM	23	24	31	38	43	44	40	33	29	48
10% min L90 Period	7:00 AM	10:00 PM										
10% min L90 Period	10:00 PM	7:00 AM										
Leq 15 hours	7:00 AM	10:00 PM										
Leq 9 hours	10:00 PM	7:00 AM										
Max Leq 1 hour Day	7:00 AM	10:00 PM										
Max Leq 1 hour Night	10:00 PM	7:00 AM										

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