

**Massey, Bridget**

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**From:** Lynne Harvey <Lynne.Harvey@cobbetts.com>  
**Sent:** 31 October 2012 16:28  
**To:** Massey, Bridget  
**Cc:** Holroyd, Vanessa  
**Subject:** Village Hotel South Leeds, Capitol Boulevard, Tingley, Leeds LS27 0TS - Christmas Marquee  
**Attachments:** 20121031162159768.pdf

Dear Bridget

In support of the Planning Application our clients have had the attached Noise Assessment report carried out.

Apart from the conditions agreed with the Environmental Health our clients shall be implementing the suggestions in the attached report.

Please note that we will rely on this report in any hearing before the Licensing Committee.

I am copying this email to the Environmental Health.

Kind regards.

**Lynne Harvey**  
Paralegal  
For and on behalf of Cobbetts LLP  
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ACOUSTIC  
CONSULTANTS

**VILLAGE HOTEL MARQUEE, TINGLEY**  
**NOISE IMPACT ASSESSMENT**

architectural  
environmental  
occupational  
industrial  
noise control at source  
project management  
planning  
legal services  
expert witness

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AMBIENT NOISE SURVEY LOCATION AND MARQUEE LAYOUT

AMBIENT NOISE SURVEY MEASUREMENTS

## 1.0 SUMMARY

At the request of the Village Hotel, Leeds South, Tingley an assessment has been made of the noise impact of the temporary marquee proposed for the hotel car park to the north of the hotel building.

The noise propagation from the marquee to the rear of the nearest noise sensitive residences off Topcliffe Lane has been calculated.

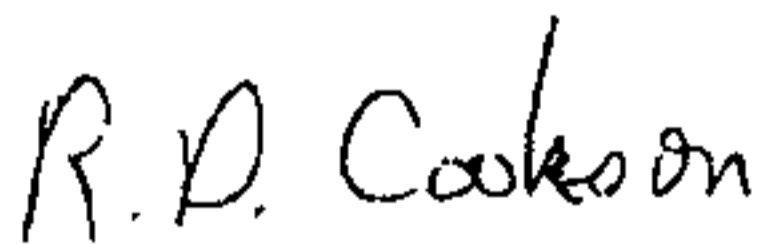
With the currently proposed marquee a likely acceptable noise criterion of 5 dB below background in each octave band between 63Hz and 4kHz will be met providing the noise levels within the disco area are limited to the values shown in Table 4. Where a higher noise level in the disco area is desired the disco area should be relocated to the western end of the marquee and the walls surrounding the disco area should be upgraded by lining the walls with 18mm MDF which will allow the noise levels to be increased to the values shown in Table 5.

The speakers in the stage and dance floor area should be installed at close to floor level. Any reinforcement speakers within the seating area should be set to levels around 20dB lower than those near the stage.

We would recommend the fitting of a noise limiter system to ensure that these levels are not exceeded as discussed in Section 8. Particular care will need to be taken with any proposed live music to ensure that the levels are not exceeded with visiting artists as discussed in Section 8.

Report Prepared By:

Report Approved By:



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## 2.0 BRIEF FOR CONSULTANCY

PDA Ltd. was engaged to carry out the following:

- A) We will travel to the site in Leeds and undertake a survey to establish the ambient noise climate in the vicinity of the nearest noise sensitive residences to the proposed Marquee. Measurements will be made between 23:00 – 02:00. Measurements will be conducted close to the nearest noise sensitive premises and will be fully manned.

All measurements shall be made in accordance with the provisions of BS 7445 "Description and Measurement of Environmental Noise". The measurements will include dB(A) and octave bands in terms of  $L_{eq}$ ,  $L_{max}$  and  $L_N$  values.

Noise limits for the proposed development will be formulated from measured results and will be in accordance with the criteria of the Local Authority or other suitable assessment criteria of your choice.

- B) PDA will consult with the Marquee manufacturer to model the noise breakout of the marquee. This will take into account the sound insulation performance of the marquee envelope, the location of the dance floor and speakers and absorption within the marquee space. Using these results PDA will undertake a noise propagation exercise to determine the likely noise transfer from the proposed Marquee to the nearest noise sensitive receptors. Propagation calculations will include for the effect of shielding by intervening buildings between the marquee and the receiver.
- C) If the results to Part B indicate noise levels exceed the limit set out in Part A, we will specify suitable remedial measures such that the noise criteria of the Local Authority will be attained. Remedial measures are likely to include advice on the layout of the marquee, treatments to the fabric of the marquee and the setting of upper limits on the entertainment noise levels permitted within the marquee.
- D) We will prepare a full consultants report detailing the noise models, the results and any conclusions with respect to necessary noise control. This report will be in a format suitable for submission to the Local Authority to support your planning application.

## 3.0 SURVEY DETAILS

### 3.1 Site Description

The proposed temporary marquee is a 15m x 45m marquee to be located in the hotel car-park, to the north of the hotel buildings. The Marquee is to be used to hold parties and entertainment and includes a disco and dance floor area.

The construction of the marquee is a floor, 3mm abs panel walls, and a 650g/m<sup>2</sup> pvc sheet roof with a pleated nylon lining. The dance-floor area has an additional sound absorbent lining of 50mm bagged mineral wool and wool serge cloth.

The nearest noise-sensitive properties to the proposed marquee are houses on Topcliffe Lane, approximately 230m to the west of the stage area at the centre of the marquee.

### 3.2 Survey Times and Personnel

An ambient noise was carried out in the vicinity of the nearest noise sensitive residences to determine the background noise levels in the absence of the proposed marquee. The survey was carried out on Wednesday 10<sup>th</sup> and Thursday 11<sup>th</sup> October 2012 between 2330 and 0200. Measurements were made by Mr Wes Charlton of PDA Ltd.

### 3.3 Equipment

The survey was conducted with a CEL 573 sound level meter. The sound level meter is a type 1 sound level meter capable of operating as integrating sound level meter in compliance with BS EN 60204:1994 (IEC 804).

The sound level meter was mounted on a tripod approximately 1.5 metres above ground level and at least 3.5 metres from any reflecting surfaces, throughout the survey.

The sound level meter was field calibrated both before and after each the measurements, during which time no significant deviation from the calibrated level was observed.

### 3.4 Weather

During the survey the temperature was 10°C and the wind speed varied between 0m/s and 1m/s. The weather was dry.

### 3.5 Measurement Positions & Procedure

Measurements were taken from the car park immediately to the rear of the houses on Topcliffe Lane (see Figure 1 appended to this report).

## 4.0 ASSESSMENT CRITERIA

There are no nationally agreed criteria for the assessment of noise impact due to entertainment noise, however we would recommend that an  $L_{eq}$  noise level of 5 dB below the  $L_{90}$  background noise level in each octave band between 63 Hz and 4kHz would be suitable to prevent excessive disturbance due to the noise. This criterion ensures that any possible low-frequency noise from the development is controlled as well as the overall level.

## 5.0 SURVEY RESULTS

### 5.1 Existing ambient noise levels

The measured 'A' weighted broad band sound pressure levels from the measurement position are presented in terms of  $L_{Aeq}$ , and  $L_{A90}$  in Table 1 below. The  $L_{Aeq}$  levels are the logarithmic average of all of the measurements. The  $L_{A90}$  levels have been shown as a minimum to maximum range as there is no valid method to average statistical noise parameters. The levels presented in the table have been rounded to the nearest decibel. Full data is presented at the end of this report.

Table 1 – Summary of results

Time period	$L_{Aeq}$ dB.	$L_{A90}$ min-max, dB.
2330 - 0200	51	43 - 49

During the period of the lowest night-time background noise level of 43 dB  $L_{A90}$  the octave-band  $L_{90}$  values were as follows;

**Table 2: Lowest background level octave bands**

Frequency	63	125	250	500	1k	2k	4k	Hz
$L_{90}$	51	44	38	40	40	34 <sup>1</sup>	27 <sup>1</sup>	dB

**Notes**

- Noise levels at 2kHz and 4kHz were below the range of the instrument (below 35 dB). We have estimated the likely  $L_{90}$  values for these frequency bands based upon measurements at sites with a similar noise climate.

**6.0 DESCRIPTION OF NOISE SOURCES****6.1 Ambient noise levels to the rear of residences on Topcliffe Lane**

The dominant noise source at the nearest residential properties was continuous road traffic noise from the nearby M62 motorway supplemented by occasional traffic on the A650 Tingley Common and other local roads. In addition to road traffic noise there were also building services noises from the office blocks on Capitol Boulevard and intermittent noise from aircraft. A generator or similar noise source was noted to operate intermittently in a building to the rear of the office building behind the houses on Topcliffe Lane.

**6.2 Disco / live music levels**

Noise levels in a loud disco / night-club are generally between 90 dB and 100 dB in each octave band from 63Hz to 1kHz, then about 5 dB lower in the bands above 2kHz. This corresponds to approximately 95 – 105 dBA. In terms of subjective loudness a level of 90 dBA may be described as the noise level where 'you have to shout to talk to someone 1m away.'

**7.0 IMPACT ASSESSMENT****7.1 Calculation Procedure**

In order to assess the noise impact of the marquee we have calculated the noise propagation to the nearest noise-sensitive residence in octave bands. We have assumed a reverberation time within the marquee of 0.1 seconds in each octave-band and from this calculated the sound power of the sound system required to produce the assumed target levels (95dB in each octave-band up-to 1 kHz, then 90 dB in the 2kHz and 4kHz octave bands) within the disco area. As the marquee has walls of a heavier construction than the roof we have calculated noise propagation treating the marquee walls as a lightweight barrier. We have calculated the noise level at the noise sensitive properties by summing the direct sound passing through the barrier and the sound refracting over the barrier, including a small calculated attenuation for the lightweight pvc roof material. Propagation from the source to the receiver has been calculated assuming hemispherical propagation over a reflecting plane using the method of ISO 9613 'Acoustics – attenuation of sound during propagation outdoors' with Soundplan acoustic propagation modelling software. The office buildings to the west of Capitol Boulevard have also been included in the model, in terms of reflections and barrier effects, and the ground between the marquee and the noise sensitive receivers has been set as 'hard' ground.

In order to determine the sound reduction indices of the abs panel walls of the marquee, and the pvc lightweight roof we have used INSUL sound insulation prediction software, using similar material with the density and thickness adjusted to correspond with those of the abs panels and pvc sheet. The effect of the nylon, bagged mineral wool and wool serge linings in terms of sound insulation is not likely to be significant and have been neglected.

## 7.2 Calculation Results

An assessment was carried out by calculating the noise levels at the nearest residences on Topcliffe Lane as discussed above. Noise levels at the residences were calculated by summing noise transmitted through the abs panels and noise diffracted above (using a 3m barrier in the noise modelling software to represent the ABS walls).

Using the assumed noise levels for a loud disco given in Section 6.2 above, the limiting criterion of 5dB below background is exceeded at the nearest residences by the amounts shown in Table 3.

**Table 3: Noise levels in excess of limiting criterion for basic marquee**

Frequency	63	125	250	500	1 k	2 k	4 k	Hz
$L_{eq}$	14	14	20	15	9	0	0	dB

As can be seen the noise levels in the marquee would need to be reduced by 20 dB in the 250Hz octave band to meet the noise criterion. Using the un-treated marquee the noise levels within the marquee would need to be limited to the values shown in Table 4.

**Table 4: Noise limits in disco area for untreated marquee**

Frequency	63	125	250	500	1 k	2 k	4 k	Hz
$L_{eq}$	81	81	75	80	86	90	90	dB

The above noise levels equate to an overall value of 95 dBA within the marquee. This would likely be adequate for most functions as it is above the 90 dBA which is described subjectively in Section 6.2 as the noise level where 'you have to shout to talk to someone 1m away.'

Although limiting the marquee noise levels to those of Table 4 would prevent unacceptable noise levels at the nearby houses on Topcliffe Lane, these do limit noise levels in the 250 Hz octave band to a relatively low level.

If it were desirable to increase the noise levels in the disco it would be necessary to move the dance floor to the western end of the marquee (nearest to Topcliffe Lane) and upgrade the sides and end of the marquee surrounding the dance floor using 3m high 18mm MDF panels (the external entrance would also need to be relocated). These would act as a barrier to propagation in the direction of Topcliffe Lane. In this case the noise limits in the marquee could be increased to the following values:

**Table 5: Noise limits in disco area for marquee with dance floor relocated to western end of marquee and mdf panels lining marquee around dance floor / stage area**

Frequency	63	125	250	500	1 k	2 k	4 k	Hz
$L_{eq}$	88	89	85	91	95	90	90	dB

## 8.0 DISCUSSION

Noise levels within the disco area will need to be limited to the levels shown in Table 4 for the basic marquee with 3mm ABS panel walls, or limited to the levels shown in Table 5 for a marquee with the dance floor / stage relocated to the western end and wall panels around the stage area upgraded by lining with MDF. These levels are reasonable for a disco on a reasonably small dance floor as proposed in the marquee. We would suggest



that a noise limiter is fitted within the dance floor to limit noise to the above levels (using the correct levels for the particular layout selected). The Formula Sound "Sentry MK2" limiter would be a suitable limiter which has a visual indication as the maximum level is approached and prevents the limit being exceeded by cutting the power to the sound system. Formula Sound also supply the 'AT-1' unit which fits between the mixer or pre-amplifiers and the power amplifiers of the sound system and attenuates the levels when the limit is approached, preventing the sound system from inadvertently exceeding the limit and hence avoiding the 'cut-off' effect of the power to the system being cut if levels are not monitored. A number of AT-1 units can be fitted and we would recommend that one is fitted to the house system and another is reserved for use of visiting bands and live acts if these are to be used within the marquee. Any 'live' entertainers will need to be briefed to ensure they understand the importance of not exceeding the noise limits and are aware that levels will need to be lower than in a typical 'indoor' venue.

In order to initially set the sound levels for the limiter the sound system will need to be operated in conjunction with a calibrated sound level meter to set the limits to those specified in Table 4 or Table 5 of this report. If the Local Authority are agreeable it may be desirable to set these limits in conjunction with an Environmental Protection Officer of the Local Authority.

Main speakers should be located close to floor level in the disco area and the noise limiter should be set to monitor the loudest noise levels in the disco area. Any reinforcement speakers located in the seating area should be set to a much lower level (~ 20 dB lower) than the main speakers and set with an appropriate delay (approximately 3ms per meter distance from the main speakers).

Noise levels in the seating areas are unlikely to be high in comparison with the disco levels, nevertheless, management procedures should discourage noisy or rowdy behaviour in these locations.

## 9.0 CONCLUSION

At the request of the Village Hotel, Leeds South, Tingley an assessment has been made of the noise impact of the temporary marquee proposed for the hotel car park to the north of the hotel building.

The noise propagation from the marquee to the rear of the nearest noise sensitive residences off Topcliffe Lane has been calculated.

With the currently proposed marquee a likely acceptable noise criterion of 5 dB below background in each octave band between 63Hz and 4kHz will be met providing the noise levels within the disco area are limited to the values shown in Table 4. Where a higher noise level in the disco area is desired the disco area should be relocated to the western end of the marquee and the walls surrounding the disco area should be upgraded by lining the walls with 18mm MDF which will allow the noise levels to be increased to the values shown in Table 5.

The speakers in the stage and dance floor area should be installed at close to floor level. Any reinforcement speakers within the seating area should be set to levels around 20dB lower than those near the stage.

We would recommend the fitting of a noise limiter system to ensure that these levels are not exceeded as discussed in Section 8. Particular care will need to be taken with any proposed live music to ensure that the levels are not exceeded with visiting artists as discussed in Section 8.

## APPENDIX



Figure 1 – Ambient noise survey location and proposed marquee layout

Ambient noise survey -  $L_{eq}$  levels

Date	Time	$L_{Aeq}$	$L_{eq}$ Octave Band Centre Frequency						
			64	125	250	500	1000	2000	4000
10-Oct-12	23:36:20	53	62.0	51.7	44.8	47.5	49.6	45.5	35.4
10-Oct-12	23:41:20	53	62.6	54.1	46.4	48.2	50.8	44.5	-
10-Oct-12	23:46:20	54	61.0	51.6	45.0	49.2	51.6	47.6	36.9
10-Oct-12	23:51:20	54	59.9	52.9	45.1	48.6	51.4	45.9	-
10-Oct-12	23:56:20	52	60.4	50.8	44.4	48.2	49.9	43.9	-
11-Oct-12	00:01:20	53	57.9	50.6	43.9	48.0	49.8	45.5	-
11-Oct-12	00:06:20	52	61.7	51.6	43.7	47.7	49.4	45.3	34.5
11-Oct-12	00:11:20	51	58.0	52.0	44.0	46.5	48.5	40.4	-
11-Oct-12	00:16:20	51	57.8	49.7	43.0	46.6	48.9	41.3	-
11-Oct-12	00:21:20	50	57.8	49.3	43.0	46.2	47.7	39.7	-
11-Oct-12	00:26:20	50	57.5	50.7	44.5	45.9	47.2	39.4	-
11-Oct-12	00:31:20	50	57.8	49.8	42.8	46.2	47.4	39.3	-
11-Oct-12	00:36:20	49	56.1	49.1	43.0	45.6	47.2	39.5	-
11-Oct-12	00:41:20	49	57.3	51.0	43.2	45.3	46.8	38.8	-
11-Oct-12	00:46:20	49	57.9	50.5	43.5	45.6	46.2	39.0	-
11-Oct-12	00:51:20	50	57.7	49.7	43.4	46.6	47.4	41.3	-
11-Oct-12	00:56:20	49	56.6	48.7	42.6	46.6	46.7	40.0	-
11-Oct-12	01:01:20	51	57.8	50.3	47.7	48.1	47.7	40.5	-
11-Oct-12	01:06:20	49	58.1	51.9	43.2	46.6	46.9	38.3	-
11-Oct-12	01:11:20	50	59.7	51.4	43.0	47.4	47.2	38.6	-
11-Oct-12	01:16:20	49	58.8	49.5	41.8	46.1	46.9	38.1	-
11-Oct-12	01:21:20	49	55.9	48.5	41.8	45.6	46.6	37.9	-
11-Oct-12	01:26:20	50	61.3	51.6	44.5	47.8	47.4	38.5	-
11-Oct-12	01:31:20	48	55.6	46.8	40.3	44.2	45.5	37.7	-
11-Oct-12	01:36:20	49	59.8	49.6	42.4	46.0	46.8	38.0	-
11-Oct-12	01:41:20	47	55.4	47.9	40.4	44.1	44.9	36.3	-
11-Oct-12	01:46:20	49	57.8	50.1	42.3	45.4	47.0	38.4	-
11-Oct-12	01:51:20	50	59.2	51.0	44.0	47.1	47.3	38.6	-
11-Oct-12	01:56:20	49	57.1	49.5	41.7	45.3	46.3	37.7	-
<b>Overall</b>		<b>51</b>							

**Ambient noise survey – L<sub>90</sub> levels**

Date	Time	L <sub>A90</sub>	L <sub>90</sub> Octave Band Centre Frequency						
			64	125	250	500	1000	2000	4000
10-Oct-12	23:36:20	49	60.0	48.0	42.0	44.0	47.0	40.0	-
10-Oct-12	23:41:20	49	59.0	49.0	42.0	45.0	47.0	40.0	-
10-Oct-12	23:46:20	49	54.0	47.0	41.0	45.0	47.0	39.0	-
10-Oct-12	23:51:20	48	53.0	47.0	41.0	44.0	46.0	38.0	-
10-Oct-12	23:56:20	49	53.0	46.0	41.0	45.0	47.0	39.0	-
11-Oct-12	00:01:20	49	54.0	47.0	41.0	45.0	46.0	40.0	-
11-Oct-12	00:06:20	47	52.0	47.0	40.0	43.0	44.0	37.0	-
11-Oct-12	00:11:20	47	53.0	47.0	41.0	42.0	44.0	36.0	-
11-Oct-12	00:16:20	48	52.0	46.0	40.0	43.0	46.0	38.0	-
11-Oct-12	00:21:20	47	53.0	46.0	40.0	43.0	44.0	37.0	-
11-Oct-12	00:26:20	45	51.0	45.0	39.0	41.0	43.0	35.0	-
11-Oct-12	00:31:20	46	53.0	46.0	40.0	42.0	43.0	35.0	-
11-Oct-12	00:36:20	46	53.0	46.0	40.0	42.0	43.0	35.0	-
11-Oct-12	00:41:20	45	52.0	46.0	39.0	41.0	42.0	-	-
11-Oct-12	00:46:20	44	50.0	44.0	38.0	40.0	41.0	-	-
11-Oct-12	00:51:20	44	53.0	44.0	38.0	42.0	41.0	-	-
11-Oct-12	00:56:20	46	52.0	44.0	39.0	43.0	43.0	-	-
11-Oct-12	01:01:20	45	52.0	44.0	38.0	42.0	41.0	-	-
11-Oct-12	01:06:20	46	52.0	46.0	40.0	43.0	43.0	-	-
11-Oct-12	01:11:20	45	51.0	45.0	39.0	42.0	42.0	-	-
11-Oct-12	01:16:20	45	53.0	46.0	39.0	43.0	42.0	-	-
11-Oct-12	01:21:20	45	52.0	45.0	39.0	42.0	42.0	-	-
11-Oct-12	01:26:20	45	53.0	46.0	39.0	42.0	42.0	-	-
11-Oct-12	01:31:20	43	49.0	43.0	37.0	40.0	40.0	-	-
11-Oct-12	01:36:20	45	53.0	45.0	39.0	42.0	43.0	-	-
11-Oct-12	01:41:20	43	52.0	44.0	37.0	40.0	40.0	-	-
11-Oct-12	01:46:20	44	53.0	45.0	38.0	40.0	41.0	-	-
11-Oct-12	01:51:20	47	54.0	47.0	40.0	43.0	44.0	35.0	-
11-Oct-12	01:56:20	43	51.0	44.0	38.0	40.0	40.0	-	-
<b>Minimum</b>		<b>43</b>	<b>51.0</b>	<b>44.0</b>	<b>38.0</b>	<b>40.0</b>	<b>40.0</b>	<b>34.0</b>	<b>27.0</b>
<b>Maximum</b>		<b>49</b>							