



The Sage Gateshead



Noise at Work Regulations

a venue perspective

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The Sage Gateshead

this talk

- quick quiz
- about us
- our work and staff
- examples
- things we have done
- tech specs from bands
- our challenges
- discussion

quick quiz

- are you a live sound engineer?
- are you a professional musician?
- do you work in a venue?
- last time you had a hearing test.....??
 - 6 months
 - 1 year
 - 10 years
 - never.....

about us



halls





our work and staff





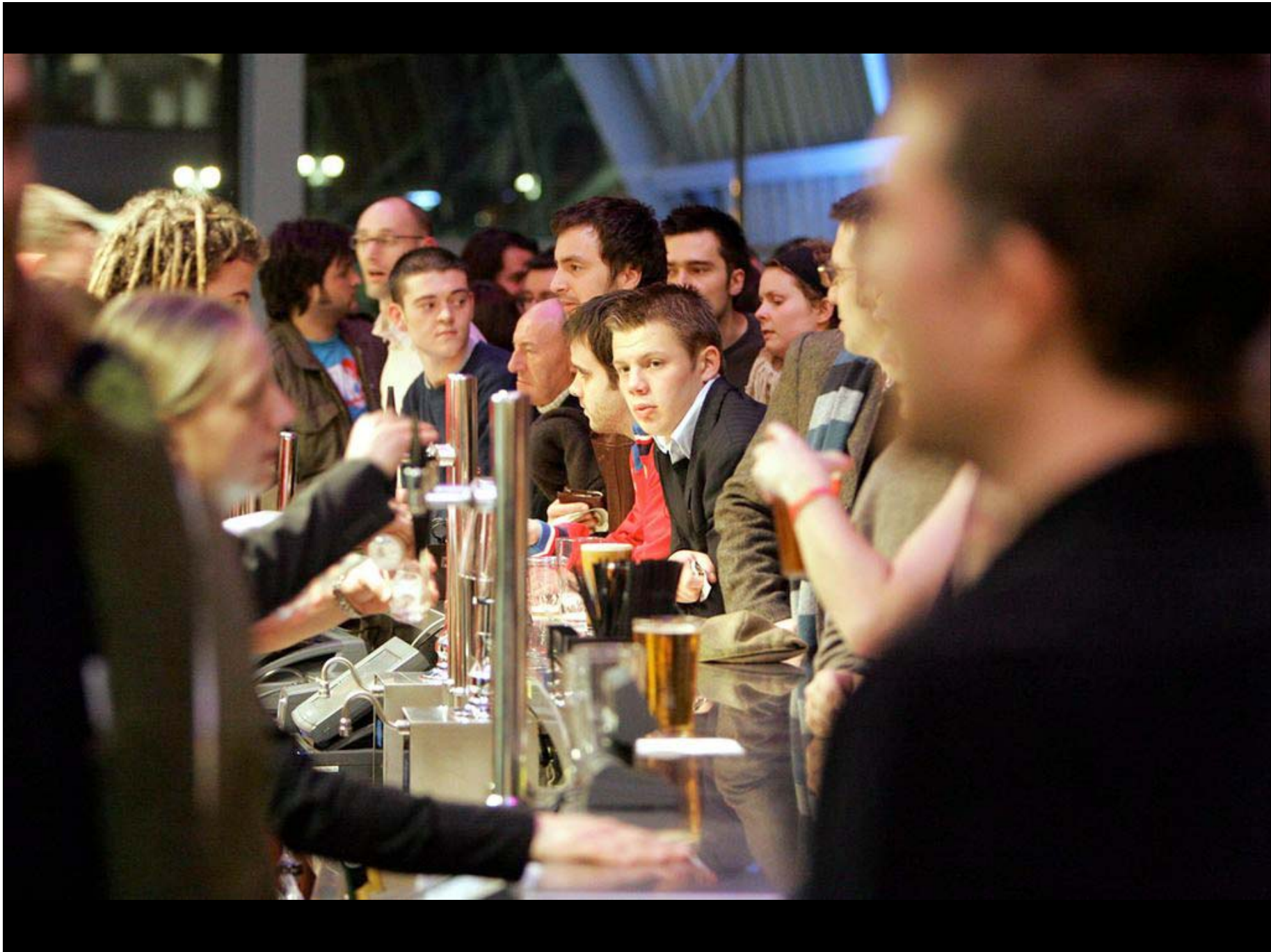












examples

Exposure Calculator

	Noise Level (L_{Aeq} dB)	Exposure duration (hours)	Exposure points (job/task)	Exposure points per hour
Job / task 1	90	1	40	40
Job / task 2				
Job / task 3				
Job / task 4				
Job / task 5				
Job / task 6				
Job / task 7				
Job / task 8				
Total duration		1		
Daily noise exposure ($L_{EP,d}$)		81 dB	40 points	

eg 1 - sound engineer during a soundcheck

eg 1 - sound engineer during a soundcheck

Weekly Noise Exposure Calculator	
Daily exposure ($L_{EP,d}$ dB)	
Day 1	81
Day 2	
Day 3	
Day 4	
Day 5	
Day 6	
Day 7	
$L_{EP,w}$	74 dB

.....weekly exposure if only 1 day worked

eg 2 - sound engineer during a soundcheck & gig

Exposure Calculator

	Noise Level (L_{Aeq} dB)	Exposure duration (hours)	Exposure points (job/task)	Exposure points per hour
Job / task 1	90	1	40	40
Job / task 2	90	3	119	40
Job / task 3				
Job / task 4				
Job / task 5				
Job / task 6				
Job / task 7				
Job / task 8				
Total duration		4		
Daily noise exposure ($L_{EP,d}$)		87 dB	159 points	

eg 2 - sound engineer during a soundcheck & gig

Weekly Noise Exposure Calculator	
Daily exposure ($L_{EP,d}$ dB)	
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	87
Day 6	
Day 7	
$L_{EP,w}$	80 dB

.....weekly exposure if only 1 day worked
first action level - assessment needs to be done

eg 2 - sound engineer during a soundcheck & gig

Weekly Noise Exposure Calculator	
Daily exposure ($L_{EP,d}$ dB)	
Day 1	
Day 2	87
Day 3	
Day 4	87
Day 5	
Day 6	87
Day 7	
$L_{EP,w}$	85 dB

.....weekly exposure if 3 days worked
second action level - measures required

eg 3 - sound engineer during a festival

Exposure Calculator

	Noise Level (L_{Aeq} dB)	Exposure duration (hours)	Exposure points (job/task)	Exposure points per hour
Job / task 1	95	0.25	31	125
Job / task 2	95	1	125	125
Job / task 3	95	0.25	31	125
Job / task 4	95	1	125	125
Job / task 5	95	0.25	31	125
Job / task 6	95	1	125	125
Job / task 7	95	0.25	31	125
Job / task 8	95	1	125	125
Total duration		5		
Daily noise exposure ($L_{EP,d}$)		93 dB	624 points	

eg 3 - sound engineer during a festival

Weekly Noise Exposure Calculator	
Daily exposure ($L_{EP,d}$ dB)	
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	93
Day 6	93
Day 7	93
$L_{EP,w}$	91 dB

.....weekly exposure if 3 days worked

second action level & weekly limit - measures required

eg 4 - sound engineer on tour

Exposure Calculator

	Noise Level (L_{Aeq} dB)	Exposure duration (hours)	Exposure points (job/task)	Exposure points per hour
Job / task 1	100	0.5	198	395
Job / task 2	100	2	791	395
Job / task 3				
Job / task 4				
Job / task 5				
Job / task 6				
Job / task 7				
Job / task 8				
Total duration		2.5		
Daily noise exposure ($L_{EP,d}$)		95 dB	989 points	

eg 4 - sound engineer on tour

Weekly Noise Exposure Calculator

Daily exposure ($L_{EP,d}$
dB)

Day 1	
Day 2	95
Day 3	
Day 4	95
Day 5	95
Day 6	
Day 7	95

$L_{EP,w}$ **94** dB

.....weekly exposure if 4 days worked

second action level & weekly limit - measures required

acoustic levels

Instrument	Exposure Level dB(A)
Viola	86
Cello	86
Double Bass	83
Flute	95
other wind	89
Brass	92-94
Harp	87
Percussion	95
Conductor	88

eg 4 - conductor for one concert and two rehearsals

Exposure Calculator

	Noise Level (L_{Aeq} dB)	Exposure duration (hours)	Exposure points (job/task)	Exposure points per hour
Job / task 1	88	3	75	25
Job / task 2	88	3	75	25
Job / task 3				
Job / task 4				
Job / task 5				
Job / task 6				
Job / task 7				
Job / task 8				
Total duration		6		
Daily noise exposure ($L_{EP,d}$)		87 dB	150 points	

eg 4 - conductor for one concert and two rehearsals

Weekly Noise Exposure Calculator

Daily exposure ($L_{EP,d}$
dB)

Day 1	
Day 2	87
Day 3	
Day 4	87
Day 5	87
Day 6	
Day 7	

$L_{EP,w}$ 85 dB

.....weekly exposure if 3 days worked

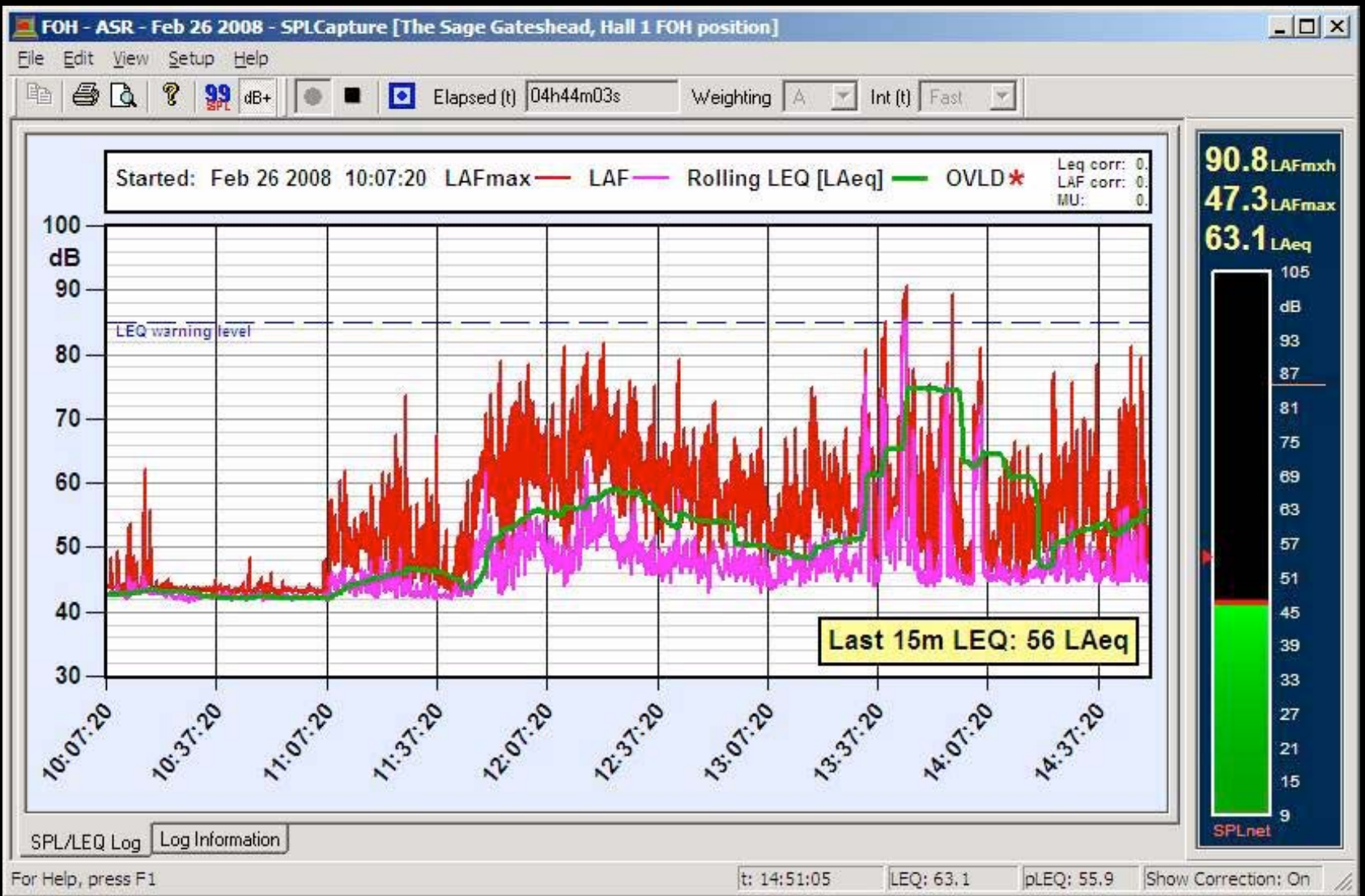
second action level & weekly limit - measures required

what are we doing?



measurement & assessment





SPLCapture : SPL [The Sage Gateshead, Hall 1 FOH position]

LAFmax hold:

96.7dBA

Rolling LEQ:

66.5LAeq

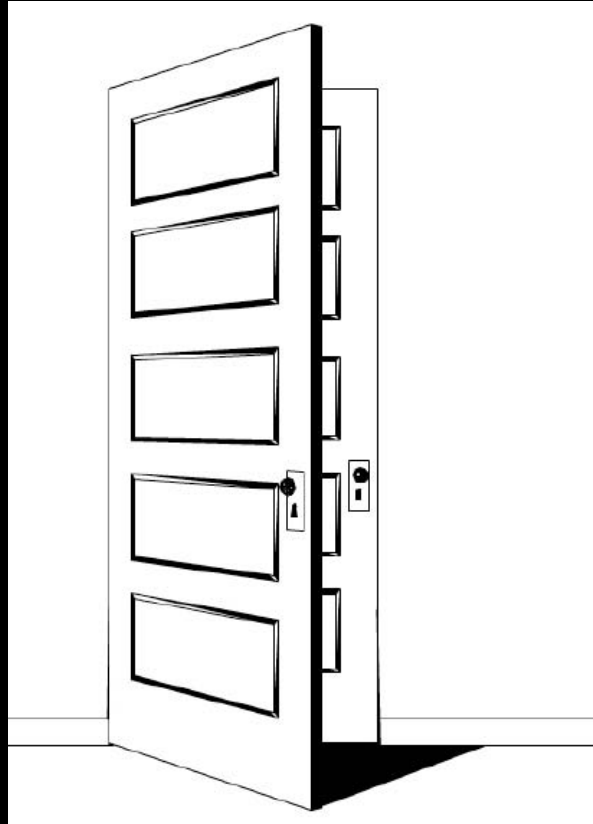
Information:

Continous LEQ : 63.5LAeq
LAFmax : 45.1dBA
LAF : 45.1dBA

SPL *Net*™ **Systems**

www.splnet.net

remove the people



distance



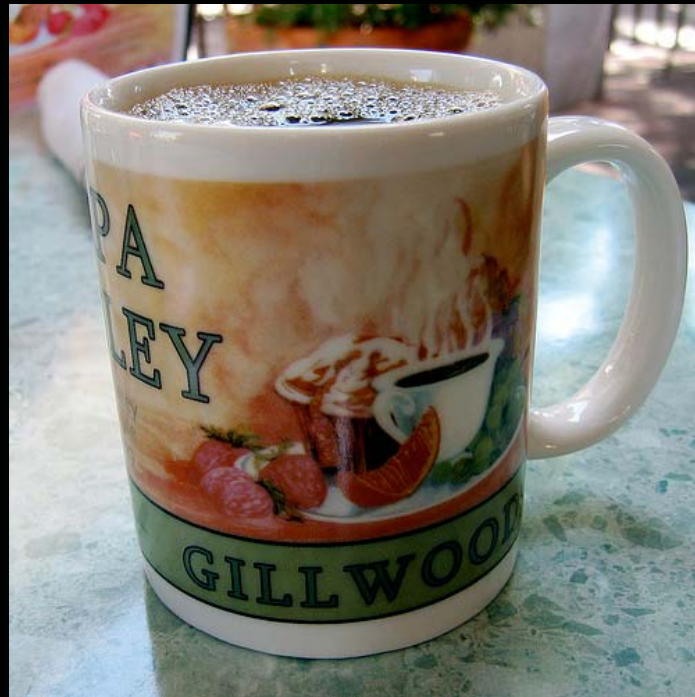
layouts



barriers



exposure time



the last resort - PPE



ER9 / ER15 / ER25

Clear

SPECIFICATIONS

Product:	ER9 / ER15 / ER25
Attenuation Level:	9dB / 15dB / 25dB (flat attenuation)
Filter Type:	Changeable
Colour:	Choice of Colour & Effect
Used By:	Professional Musicians, Clubbers, Gig Goers, Workers in Industry, Bar / Club Staff
Apx lifetime:	4/5 Years

monitoring



tech specs from bands

Nanci Griffith July 2007

F.O.H. SYSTEM :

|

Full range professional speaker system (20 Hz – 20 kHz) capable of delivering 110 dB(A) to all areas of the auditorium, cleanly and without distortion.

Preferred choice : L-Acoustics – V-DOSC (or similar line array), Meyer AAW, D&B, Turbosound.

Where there are noise restrictions, please advise in advance and upon the engineers arrival.

FOH CONTROL :

48 channel console with 8 VCA's, each input to have 4 band, fully parametric EQ, high pass sweep filter, and a minimum of eight auxiliary sends (each with pre/post fader facility).

Since the opening act will be sharing the desk, please ensure the sound company provides charts to note desk settings.

SOUND SYSTEM OVERVIEW / SOUND REQUIREMENTS:

A. MAIN SPEAKER ARRAY:

The house mains system shall be 3- or 4-way, with cabinets of a solid construction, loaded with quality components such as JBL, E/V or Gauss. Typical configuration would be, 2 x 18" bass cabinets and a mid/hi pack using 12" or 10" drivers (horn loaded) and a 2" high end. Super-high components optional. System power should be driven by professional, force-cooled amplifiers with adequate power to drive the system to full power. The system will be large enough to produce a level of 110 db at the front-of-house position and arrayed to give even coverage to all audience areas, including balconies and lawns, and shall be free of noise, etc. System control will be located at the FOH position & include quality stereo drive rack, with 31 band graphics such as Klark-Teknik, or BSS, and an adjustable crossover such as BSS FDS-360, Omnidrive, Yamaha 2040, etc. Where possible, the system will be flown to provide proper coverage of the venue.

B. FRONT OF HOUSE:

The console shall be Yamaha 3000/4000, Midas XL3 or 4, ATI Paragon, or other professional touring-type forty-eight (48) input console in excellent condition.

Beth Nielson Chapman November 2007
measured LAeq FOH - 90db, Mons - 85db

our challenges

- chinese whispers
- stubborn musicians
- touring acts
 - promoters
 - touring sound engineers and companies
 - musicians
- education
 - staff
 - our participants
 - audiences



The Sage Gateshead

www.thesagegateshead.org