

# BS 4142: 2014

## 8. Background Sound Level

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# Background sound level, $L_{A90,T}$

## Definition

3.4 'A-weighted **sound** pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval,  $T$ , measured using time weighting  $F$  and quoted to the nearest whole number of decibels'

There is NO SINGLE background sound level – the Achilles heel ?

# History of $L_{A90,T}$

BS 4142: 1967  $L_{90}$  (i.e.  $L_{A90}$ )

BS 4142: 1990  $L_{A90,T}$

BS 4142: 1997  $L_{A90,T}$

BS 4142: 2014  $L_{A90,T}$

(plus other codes & guidance)

*But systematically has been open to abuse ...*



# BS 4142 (2014) Consultation draft key points & comments

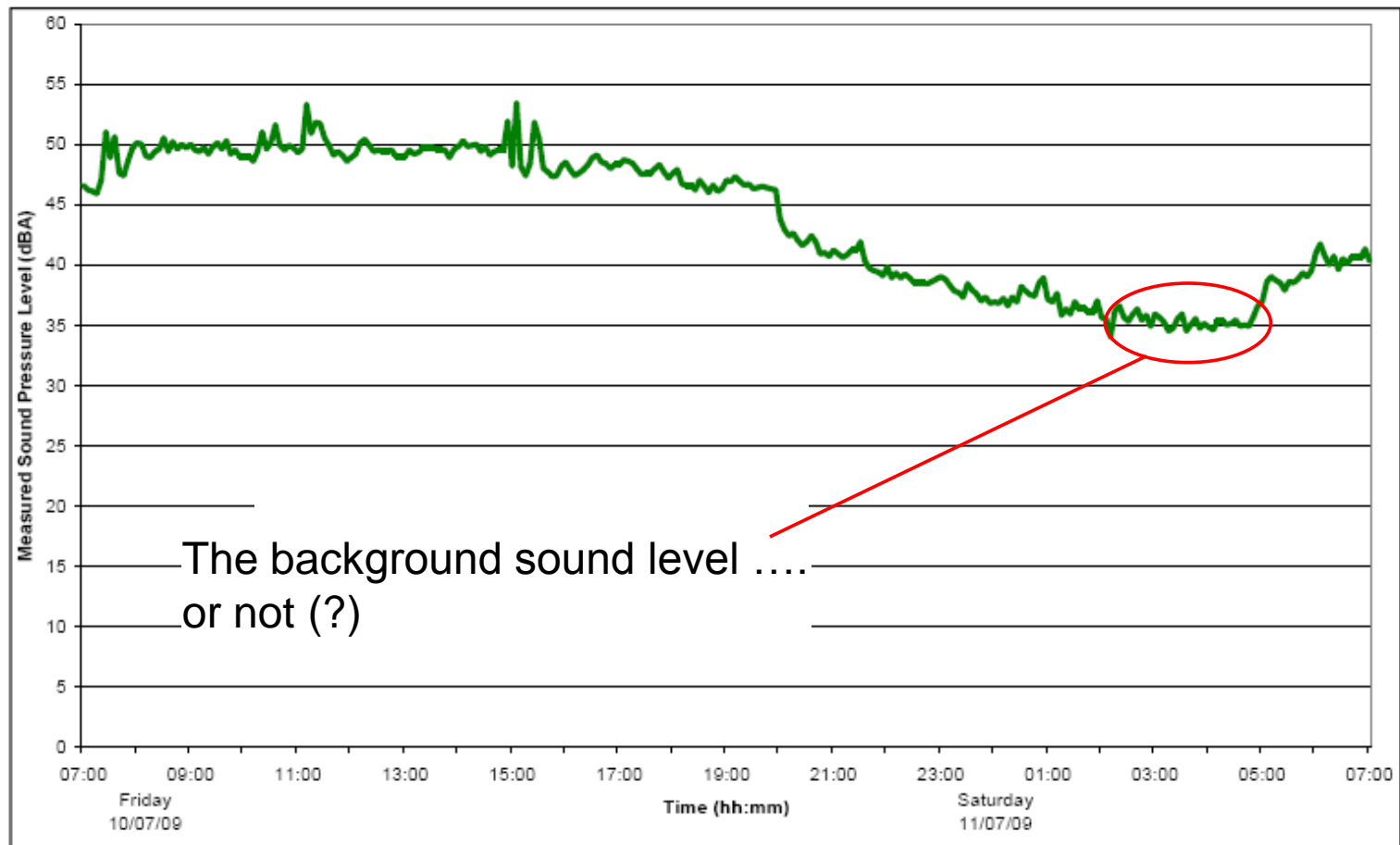
- ▶ Avoid using a lowest measured level
- ▶ Determining representative values and what is '*typical*'
- ▶ Proportional measurements for an assessment
- ▶ Distinctions between periods – day, evening, night, weekdays, weekends
- ▶ Inclusion of other industrial and/or commercial sounds
- ▶ Suitable measurement locations

# Consultation draft key points & comments *cont'd*

- ▶ Measurement period,  $T$
- ▶ Prescriptive means for determining background sound level
- ▶ Application to new sensitive development(s)
- ▶ Uncertainty

# Abuse of $L_{A90,T}$ – a case history

Figure 5.2 Time history graph of  $L_{90}$  noise levels measured at unmanned Position A



# Aspects of the background sound level

‘.... might in part be an indication of relative quietness at a given location’

‘.... does not reflect the occurrence of transient and/or higher sound levels ... ’

‘.... generally governed by continuous or semi-continuous sounds’

# Application of background sound level

- ▶ Proposed, new, modified or additional specific noise source(s)
- ▶ Existing specific sound source(s)
- ▶ New noise sensitive receptors



# Determining $L_{A90,T}$

- ▶ Important to ensure values are:
  - reliable
  - representative
  - typical of the period concerned
  - account for the range of levels experienced
- ▶ Objective is **NOT** to obtain the lowest measured level
- ▶ Can include industrial and/or commercial sounds

# Time period, $T$

BS 4142: 1967 – no time period stated

BS 4142: 1990 - no time period stated

examples used: 20 minutes & 30 minutes

BS 4142: 1997 - no time period stated; not 5 minutes

examples used: 15 minutes, 30 minutes & 60 minutes

# What to measure and assess

- ▶  $L_{A90,T}$  ( $T$  normally not less than 15 minutes)
- ▶ Continuous or disaggregated periods
- ▶ rounded integers (0,5 rounded up)
- ▶ not a mean average of values
- ▶ sound sources that comprise the acoustic environment
- ▶ meteorological conditions – wind speeds/ direction, air temperatures, ground conditions etc.

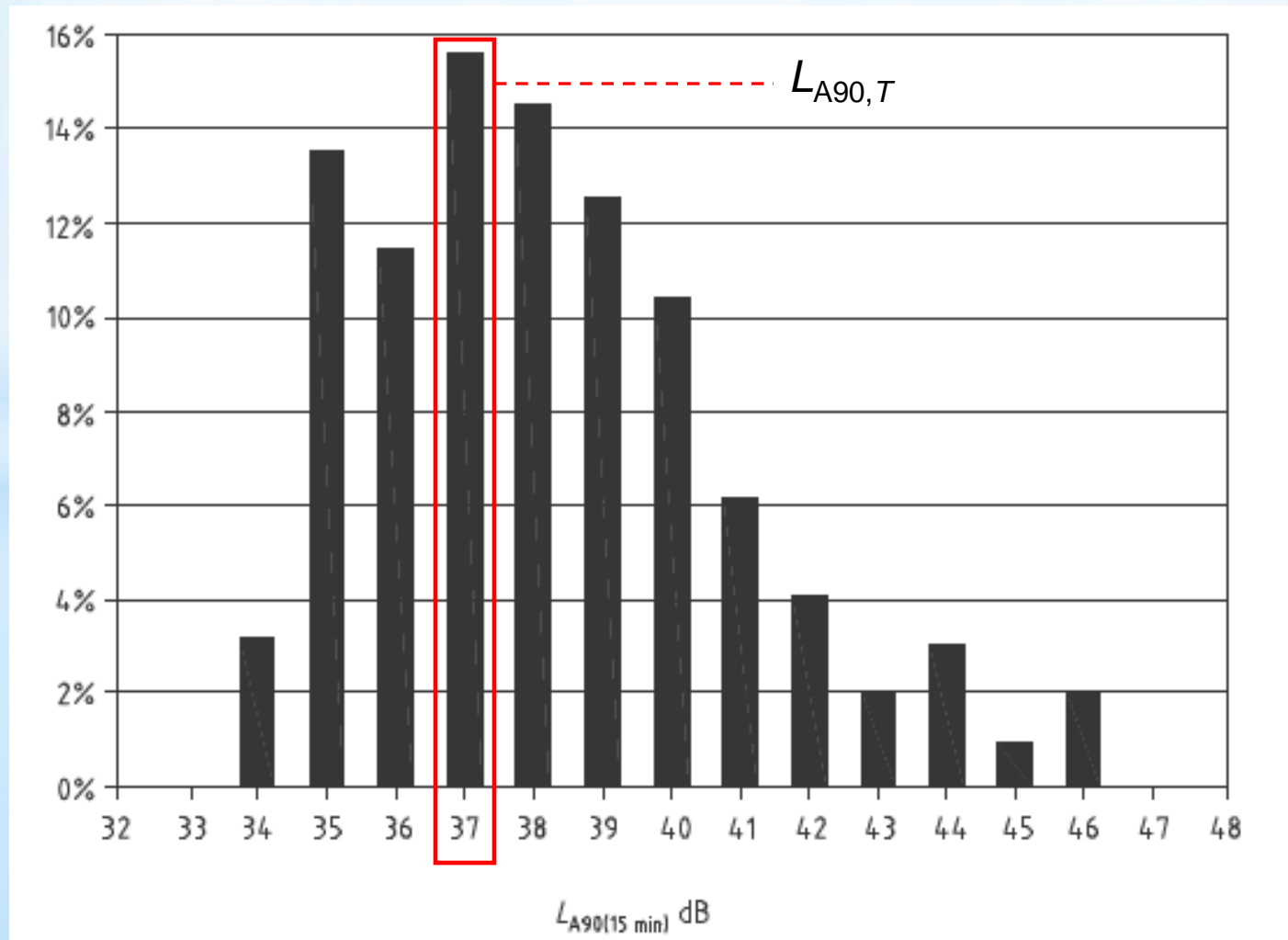
# What to measure and assess *cont'd*

- ▶ describe and report all sources of sound
- ▶ > 10 dB above instrument noise floor

# Measurement Location

- ▶ at the assessment location(s); or
- ▶ alternative, comparable location
- ▶ justify alternative location(s) – consider uncertainty
- ▶ values typical of the period concerned

# Using statistical analyses



# Questions ..

