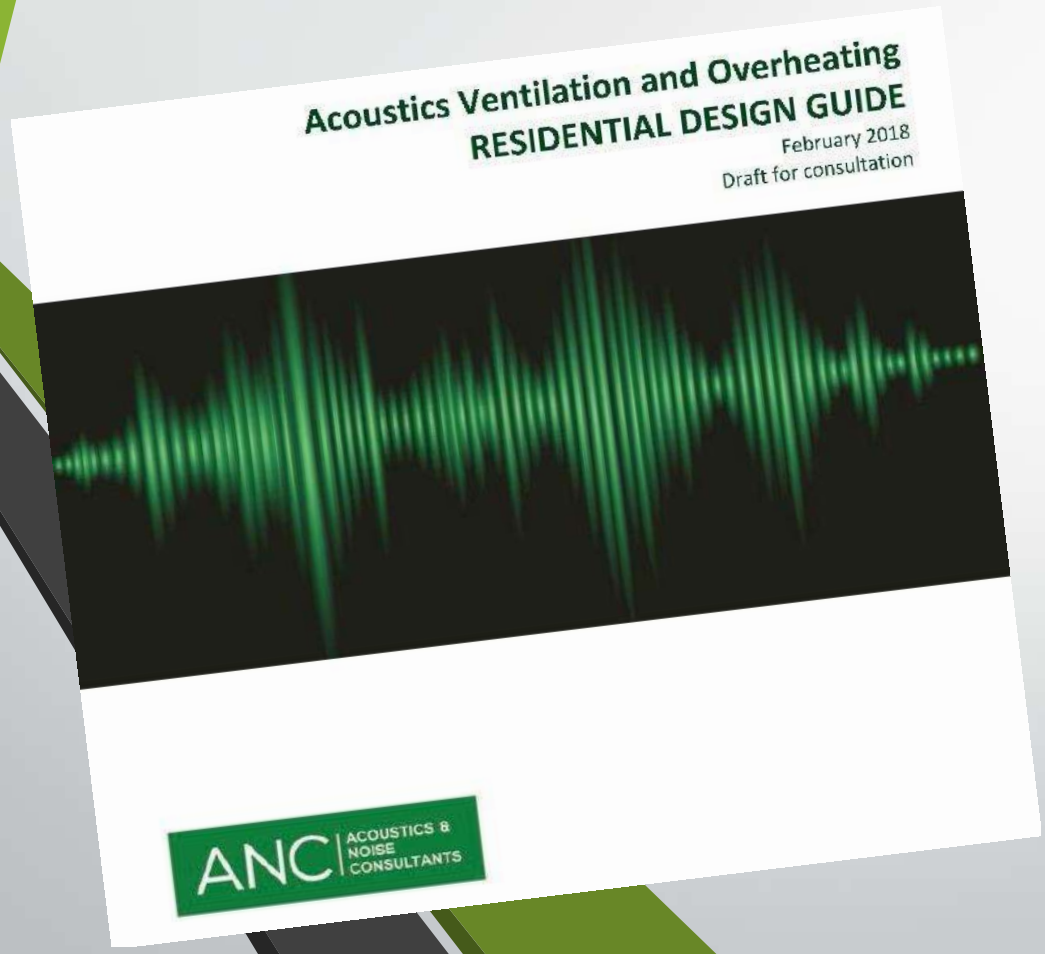
Acoustics, Ventilation and Overheating Consultation Feedback



ANC | ACOUSTICS & NOISE CONSULTANTS

Anthony Chilton

MAX FORDHAM

ANC Annual Conference – 27th June 2018

AVO Guide – Purpose

- To provide a practical method to address the requirements of Paragraphs 2.34, 2.35, 2.36 & 2.38 of ProPG

Paragraph 2.35 - "design the accommodation so that it provides good standards of acoustics, ventilation & thermal comfort "

Paragraph 2.36 - "[where a] scheme is reliant on open windows to mitigate overheating, it is also necessary to consider the potential noise impact during the overheating condition".

Extracts from ProPG

AVO Guide – Purpose

- To provide a practical method to address the requirements of Paragraphs 2.34, 2.35, 2.36 & 2.38 of ProPG
- To promote integrated design and avoid inconsistencies between acoustic and overheating assessments.

- *Of 122 planning applications with both noise and overheating assessments.*
- *96% of noise assessments assume windows are closed.*
- *92% of overheating assessments assume windows are open.*

N Conlan & J Harvie-Clark, Proc. IOA Vol. 40. Pt. 1. 2018

AVO Guide – What is covered?

- Overview of ventilation (Part F) and overheating (TM59).
- Set out desirable indoor ambient noise levels
  - 2x situations - ventilation & overheating
  - 2 x noise sources - transport noise sources & mechanical services noise
- Give worked examples showing how the guide might be applied.

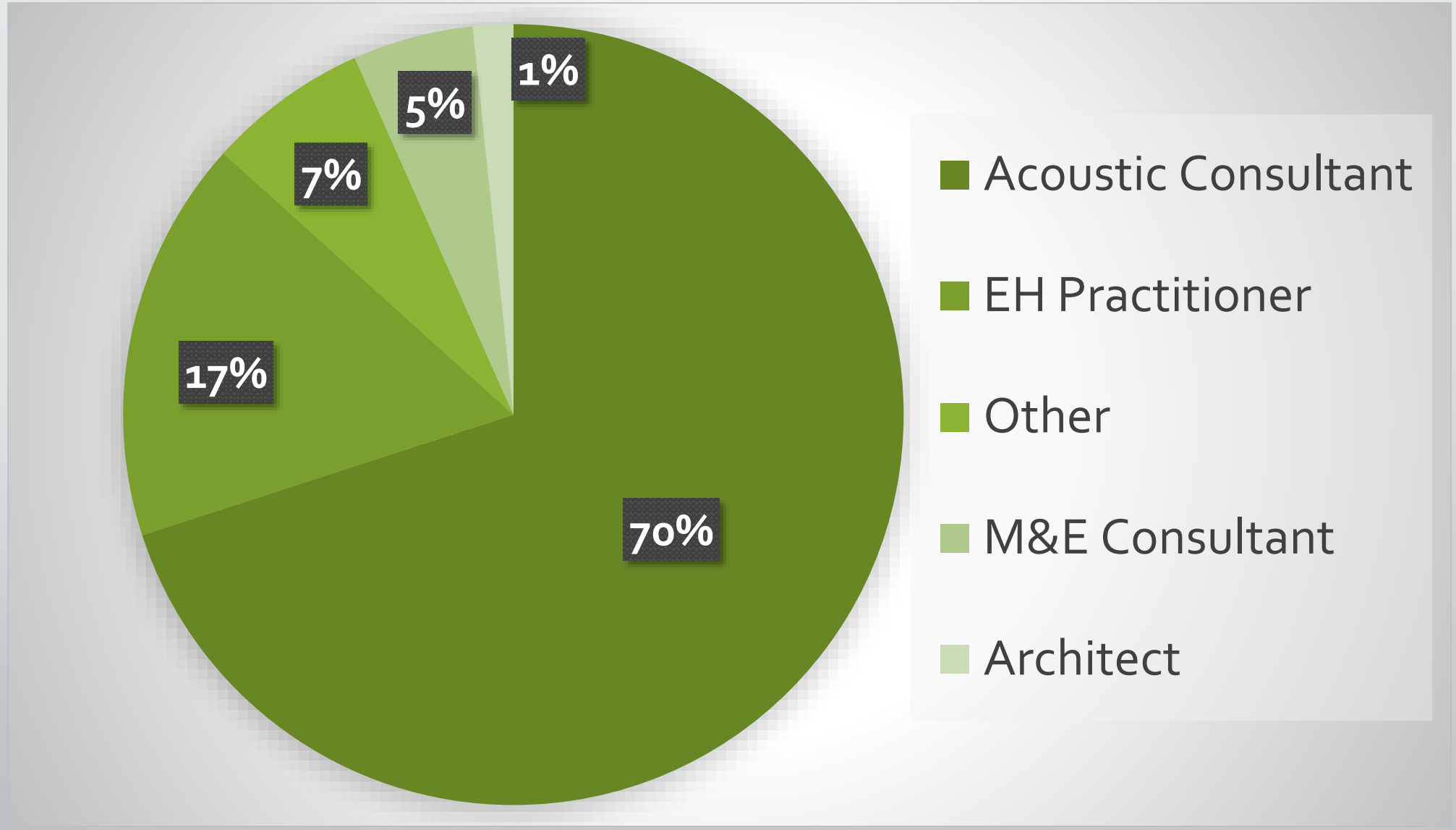
AVO Guide – What is **not** covered?

- External noise sources other than transport noise.
- Additional/new guidance regarding individual noise events.
- Quantitative guidance on how noise impact is affected by frequency and duration of occurrence.

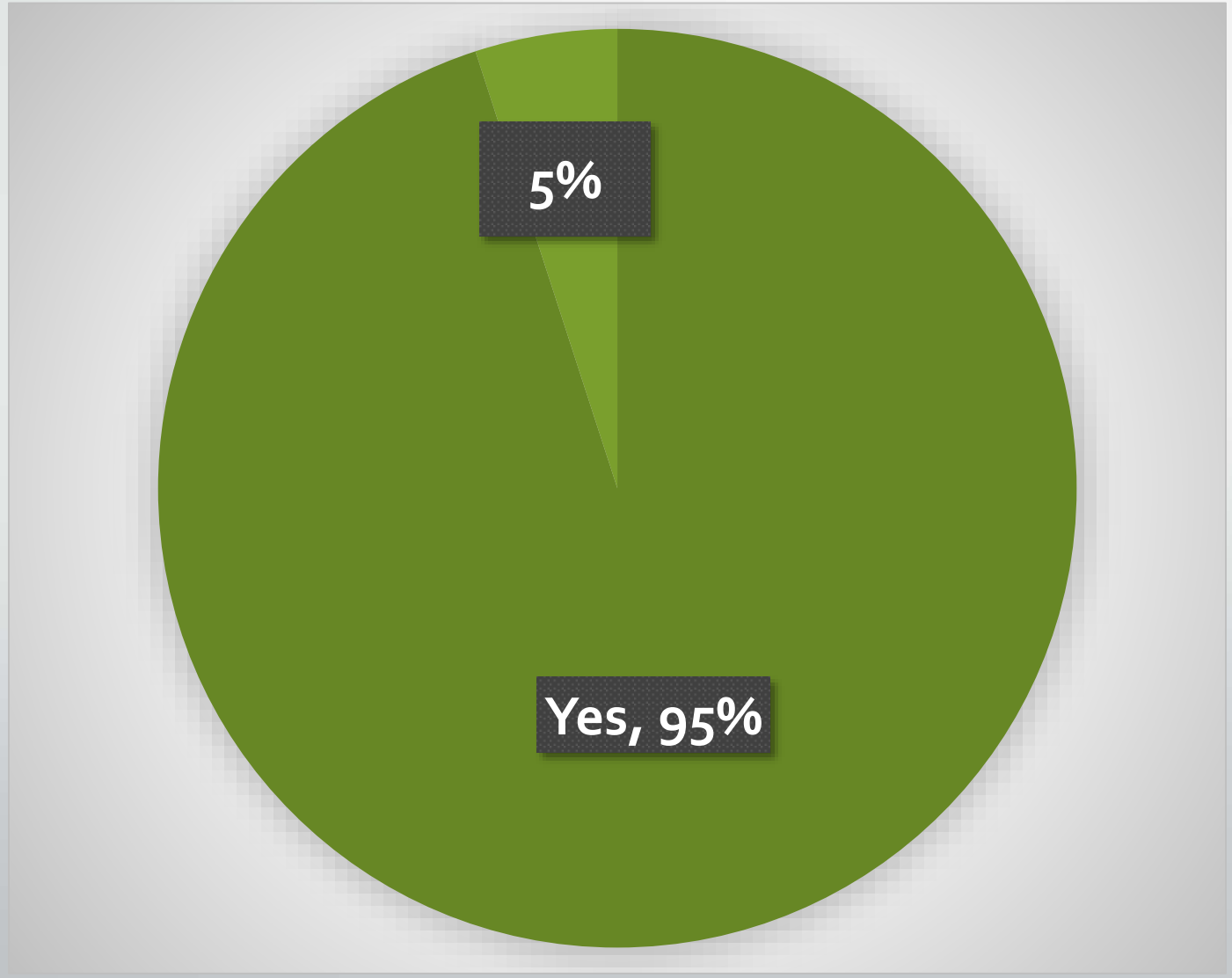
AVO Guide – Consultation

- Consultation draft released in February 2018
- Consultation closed May 2018
- 60 online responses received.
- Roughly 10 responses received outside online system.

AVO Guide – Consultation



Is there a need for Guidance?



Open Window – Sound Insulation

- Paragraph 3.20 of AVO Guide
- 12dB outside-to-inside level difference.
- This is based on 15dB WHO 1999 value with -3dB correction from façade to free-field (BS 5228-1)
- "Representative of typical domestic rooms with simple façade openings of around 2% of floor area".

Open Window – 12dB Sound Insulation

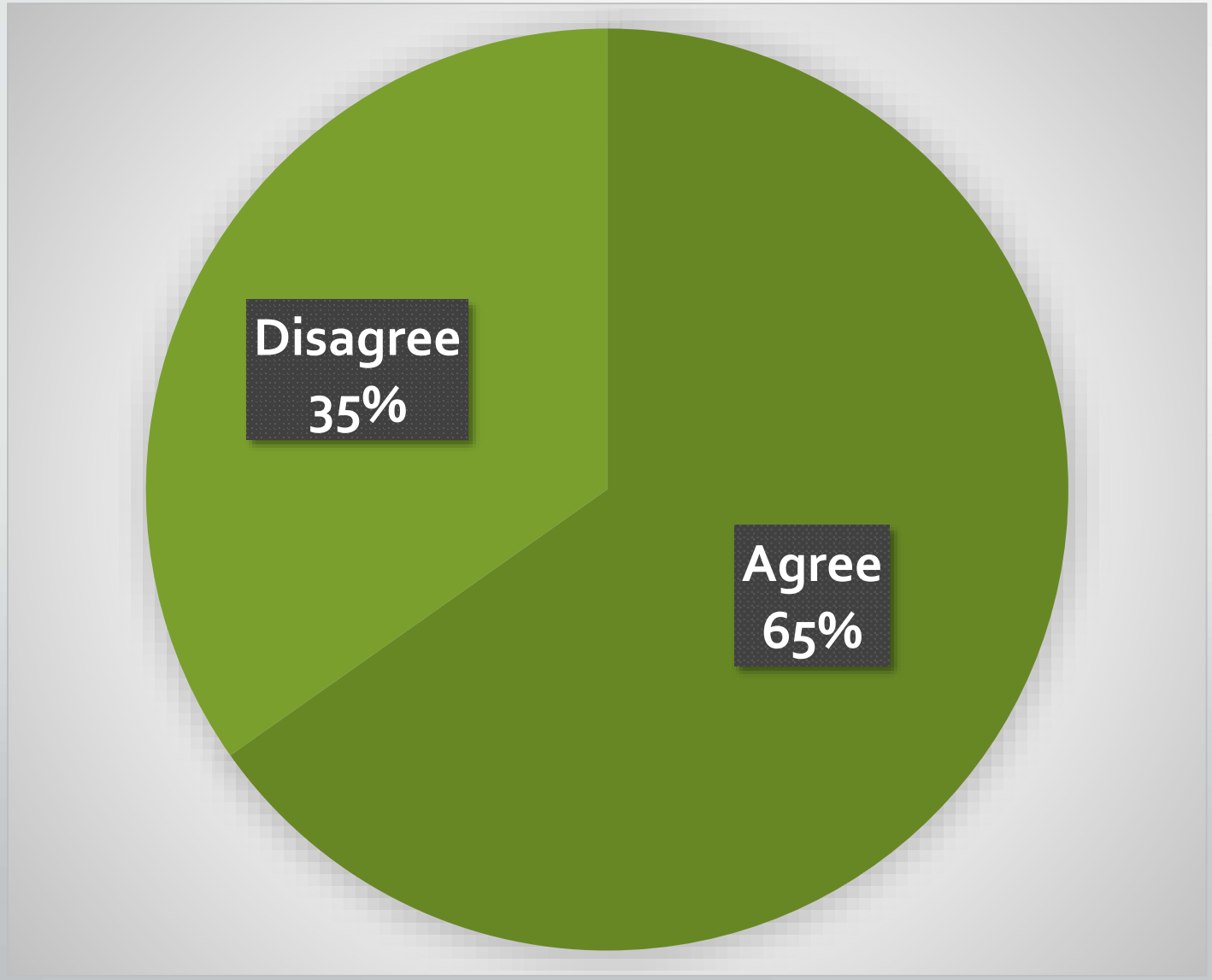


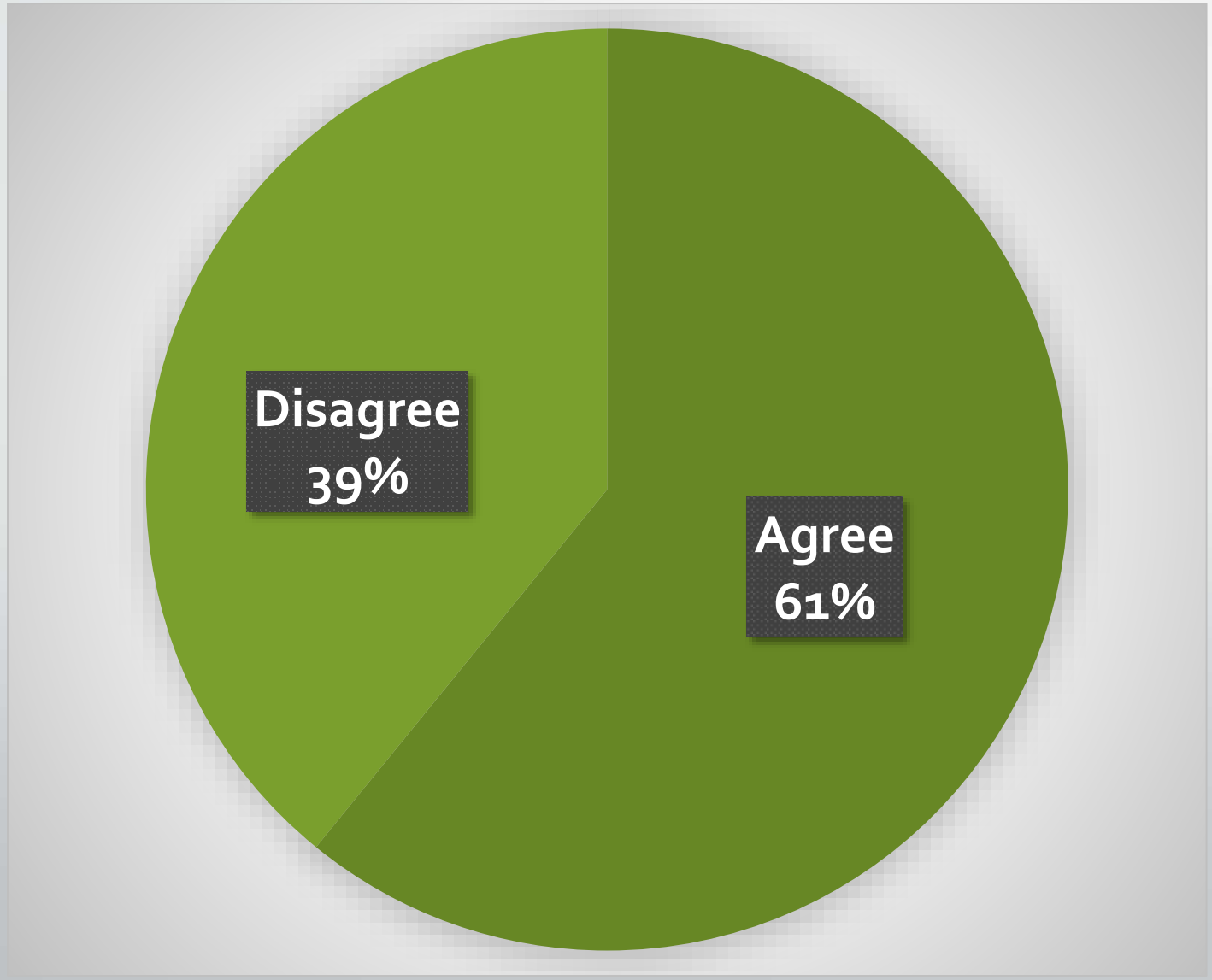
Table 3-3 Noise Risk Categories

Low/Med

Med/High

Internal ambient noise level [Note 1]		Examples of Outcomes	Risk category for Level 2 assessment [Note 4]
$L_{Aeq,T}$ [Note 2] during 07:00 – 23:00 [Note 5]	$L_{Aeq,8h}$ [Note 3] during 23:00 – 07:00		
> 35 dB and ≤ 40 dB	> 30 dB and ≤ 35 dB	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in the quality of life.	Low
> 40 dB and ≤ 50 dB	> 35 dB and ≤ 43 dB	Increasing risk of adverse effect due to impact on reliable speech communication during daytime or sleep disturbance at night. Although noise levels at the lower end of this category will cause changes in behaviour, they may still be considered suitable. Noise levels at the upper end of this category will result in more significant changes in behaviour and are only likely to be considered suitable if they occur for limited periods.	Medium
> 50 dB	> 43 dB	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	High

Low/Medium Boundary



Low/Medium Boundary

- No-one suggested the values should be lower.
- 4% of respondents suggested the values should be higher.

Low/Med

Med/High

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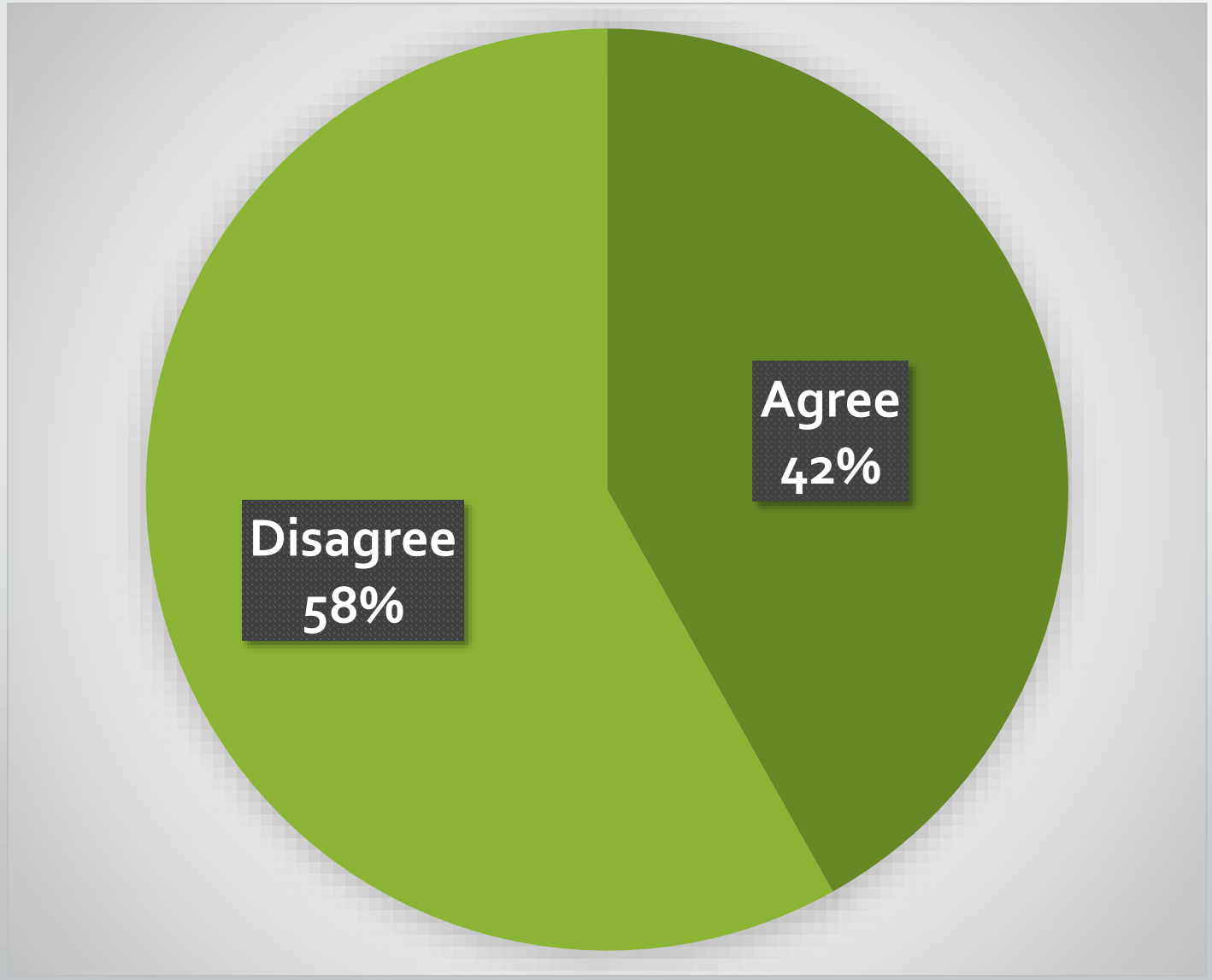
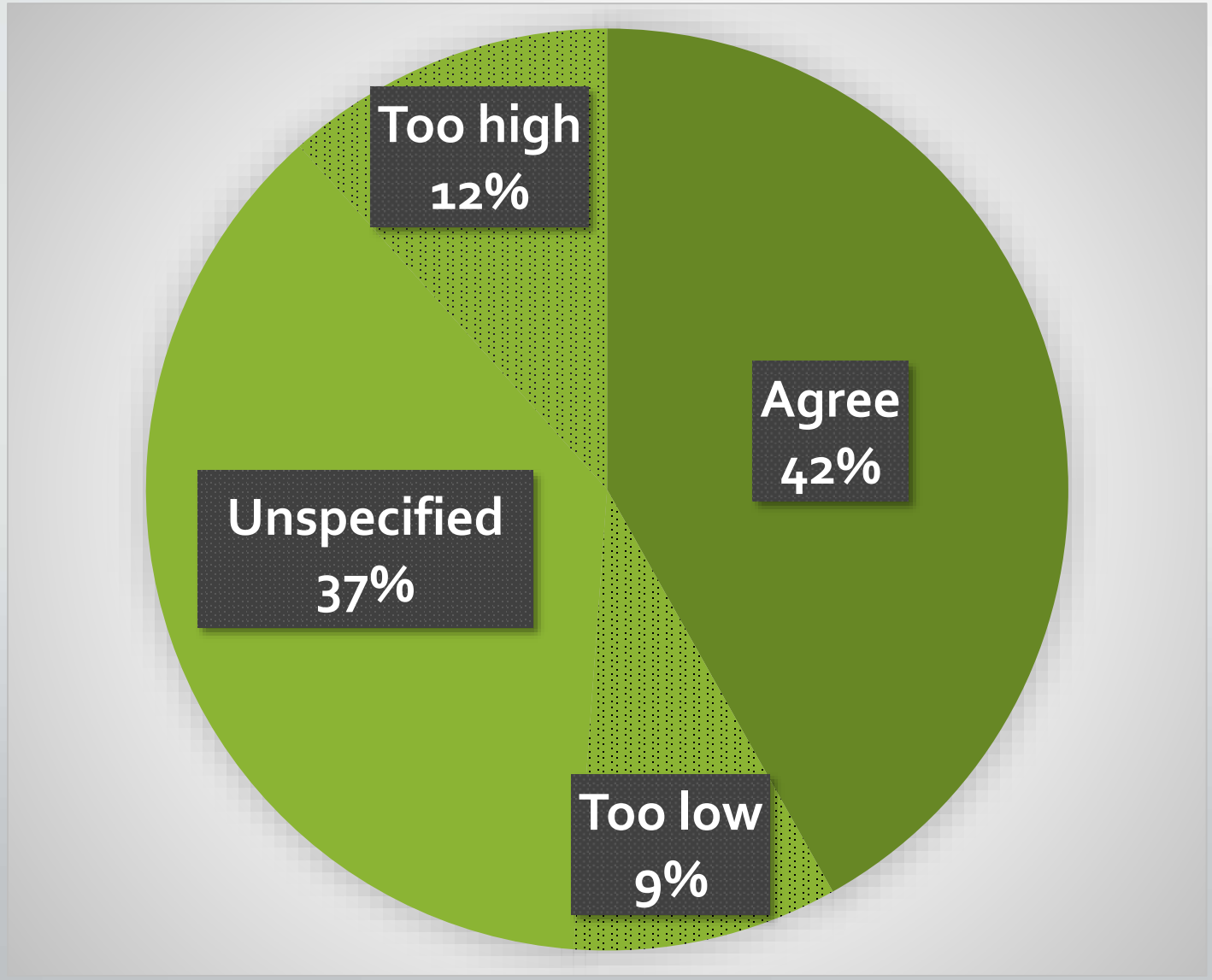
Medium/High Boundary



Medium/High Boundary



Thresholds

- Across several questions – roughly **20-25%** of respondents commented that there should not be fixed thresholds.

Note to Tables 3-2 and 3-3

Note 1 – The values presented in this table **should not be regarded as fixed thresholds** and reference can also be made to relevant dose-response relationships such as those described in a DEFRA 2014 study.

Dose Response Relationship

2.59 Any acoustic guidelines should not be regarded as fixed thresholds. In reality, there is a continuous relationship between the noise level and the resulting effects. There are many academic studies which investigate the dose-response relationships between environmental noise and effects on humans including annoyance, speech interference, sleep disturbance and other health effects. A good overview of studies can be found in *Adverse effects of noise exposure on health – a state of the art summary* [15].

SOAEL

- Some comments that the document could be interpreted as defining SOAEL.

2.24 The NPSE states that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times.

LOAEL

SOAEL

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LOAEL

SOAEL

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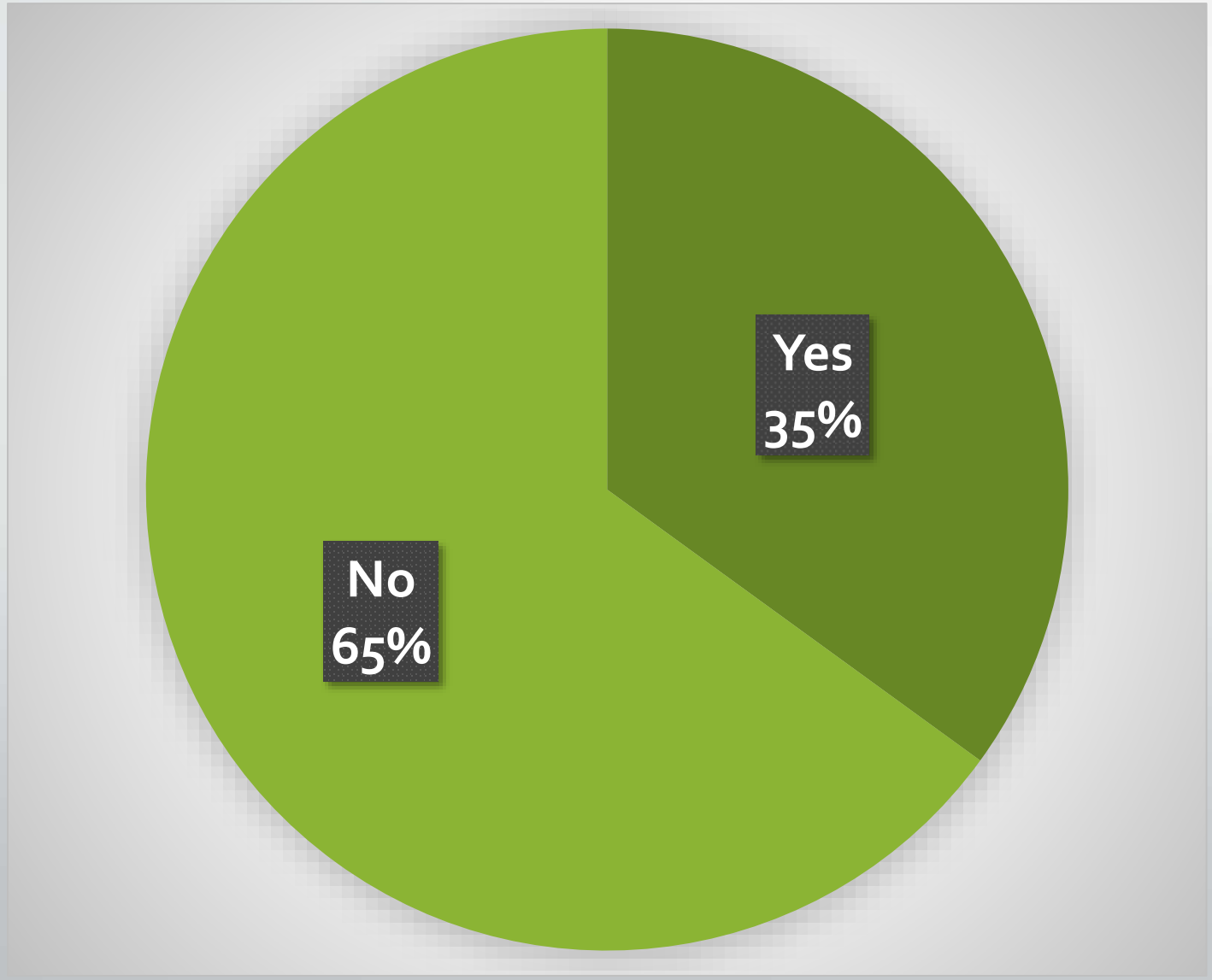
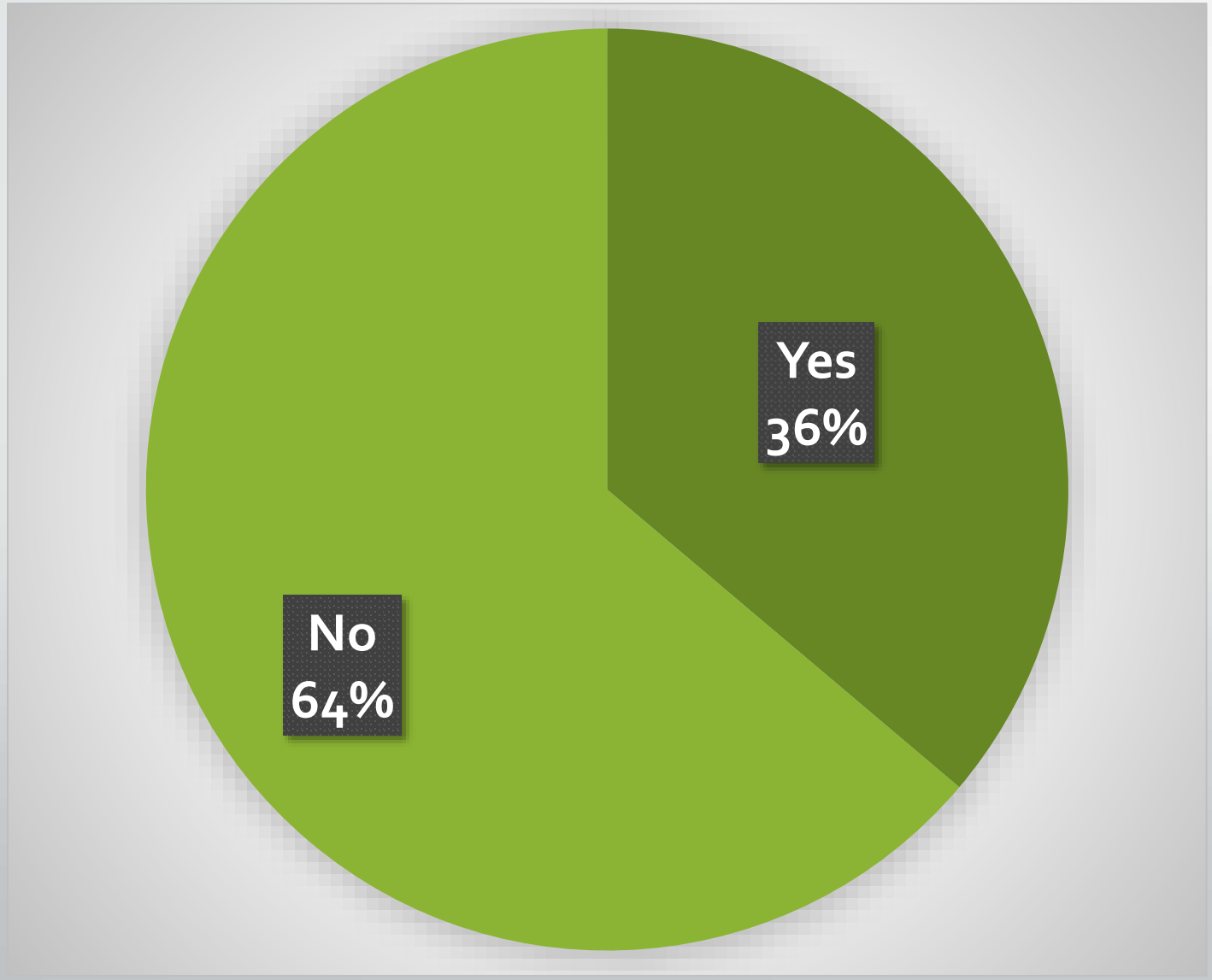
Frequency & Duration – sufficient information?



Frequency & Duration

- Some respondents asking for quantitative criteria – e.g. similar to number of hours in BB93 or % of time in TM59.
- Some suggestions of qualitative, illustrative guidance.
- More information in worked example.

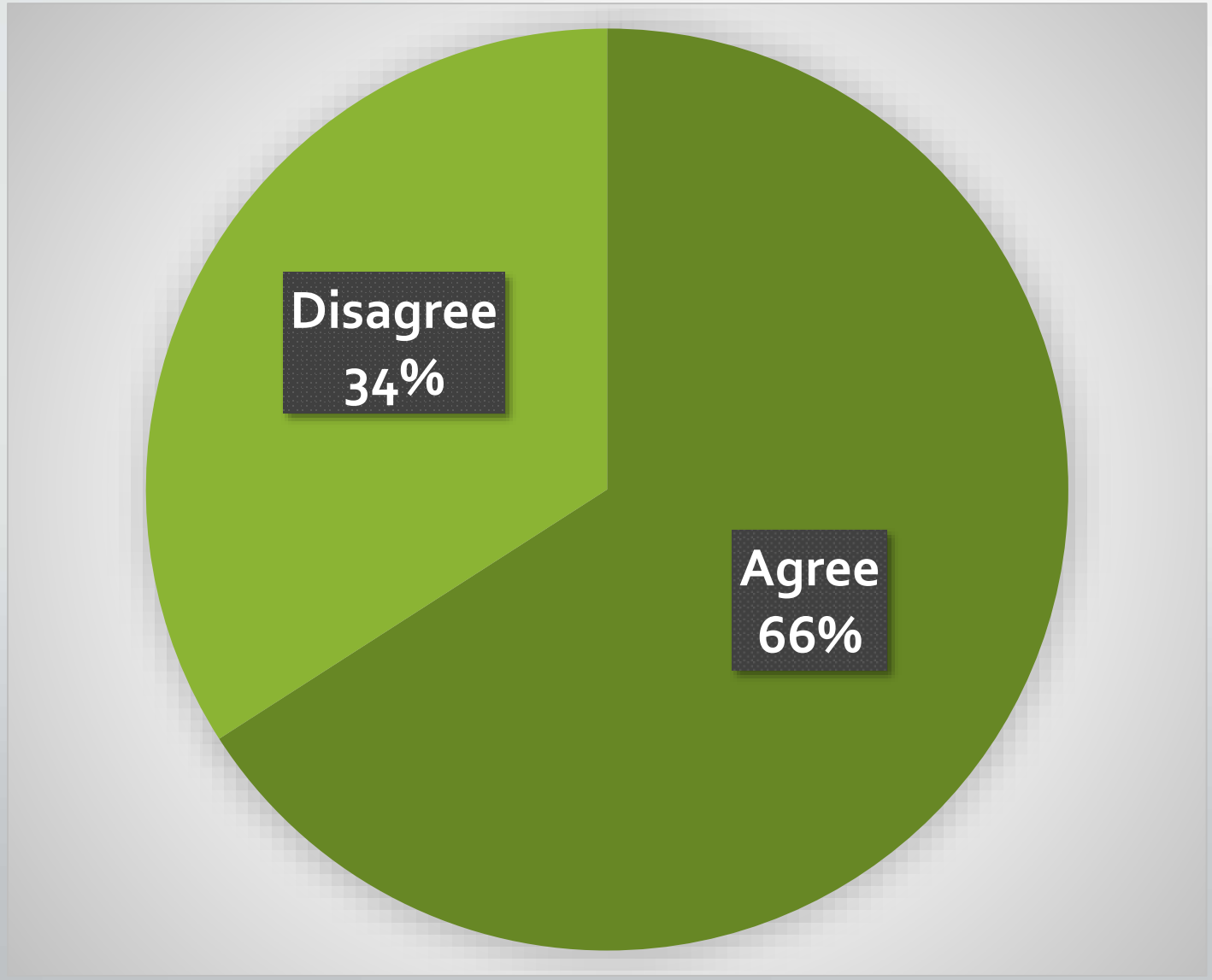
Individual noise events – sufficient information?



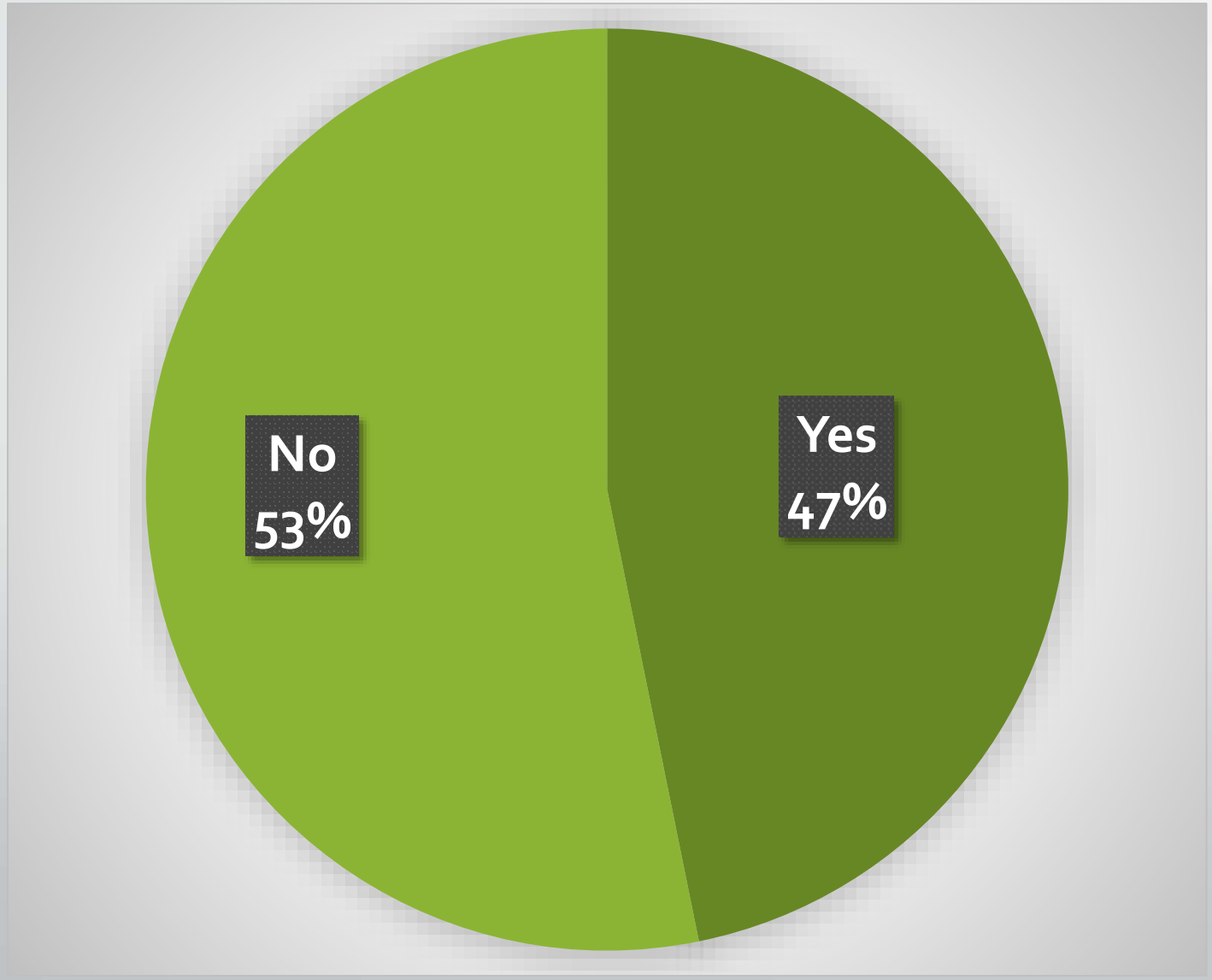
Individual noise events

- AVO Guide currently only provides guidance by signposting other documents (Sections 2.54 – 2.61)
- Particular reference is made to Appendix A of ProPG
- Noted that readers may not be inclined to 'dig through' references and that Lmax may essentially be ignored without clearer guidance.
- Many respondents ask for Lmax values for the noise risk tables.

Noise from Mechanical Services



Planning Conditions relating to Testing?



Planning Conditions relating to Testing?

- Several respondents consider a requirement to test to be 'too onerous'
- Comments distinguish between testing services noise and external noise.
- More appropriate for 'high risk' sites.
- Repeatability of tests would suggest allowing some tolerance to avoid over-design.

Future Work

- The working group met at end of May.
- Currently working through detailed review of responses.
- Amendments to draft to be developed in the next month.
- Working group to meet again in late July.
- Final version of AVO Guide to be released this year.

Thank you for listening

Download the draft AVO Guide

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