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THE 1999/2000 NOISE SURVEYS OF ENGLAND AND WALES - A PROGRESS REPORT

M. Ling, P. Wright, C. Grimwood

BRE Acoustics Centre, Garston, WD2 7JR, Watford, United Kingdom

Tel.: 0044 1923 664344 / Fax: 0044 1923 664607 / Email: lingm@bre.co.uk

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ABSTRACT

BRE Acoustics Centre is currently involved in two major environmental noise research projects. The first is to investigate the attitude of people in England and Wales to environmental noise, and the second is to measure the incidence of environmental noise across England and Wales. Both surveys are being conducted for the Department of the Environment Transport and the Regions (DETR) and are amongst the largest environmental noise surveys conducted worldwide. In the noise attitude survey, over 5000 respondents were asked to identify the noise sources that they heard whilst at home, and to describe their response to these noises. For one half of the sample we used a structured questionnaire identical to that used in a previous study in 1991, and for the second half we designed a new questionnaire utilising a revised modular structure. The noise incidence survey is measuring 24 hour noise levels outside 1020 dwellings. One resident of each surveyed dwelling also fills in a self-completion questionnaire about their attitude to environmental noise. This paper describes the survey methodologies, and discusses some of the initial findings.

1 - INTRODUCTION

Two years ago at Internoise in New Zealand we reported [1] on two pilot projects that BRE were undertaking on behalf of DETR. The outcome of those pilot studies was that two major environmental noise surveys were commissioned. Previous similar surveys were conducted by BRE between 1989 and 1991 [2, 3], and both of these new studies seek to produce data that can be compared with that previously obtained to identify changes in noise climate and/or attitude to noise in England and Wales.

2 - THE NATIONAL NOISE INCIDENCE SURVEY (NIS)

The NIS involves 24 hour noise measurements outside a sample of 1020 dwellings throughout England and Wales, using modern monitoring equipment (Norsonics 121). Short L_{eq} time histories, statistical levels and 1/3 octave spectra are being recorded. This will allow a detailed description of the average noise climate to be provided and for comparisons to be made with the previous 1990 data. The acquisition of frequency spectra is an additional feature of the current study and provides a level of data collection that was not possible in the 1990 survey. In addition to the measurements a short self-completion questionnaire is being filled in by a resident of each surveyed dwelling to allow the effects of noise climate on attitude to be investigated.

3 - THE NATIONAL NOISE ATTITUDE SURVEY (NAS)

In the NAS over 5100 respondents were asked to identify the noise sources that they heard whilst at home, and to describe their response to these noises. In order to ensure backward compatibility a structured questionnaire (NAS91) identical to that used in the last study during 1991 was administered to one half of the sample. This questionnaire comprises of a main section with a supplemental section used for each specific noise source identified in the main questionnaire. In order to overcome certain limitations inherent in the NAS91 questionnaire and to take account of the pilot study findings we also designed a new questionnaire (NAS99) which was administered to the other half of the sample. The NAS99 questionnaire utilises a revised modular structure, which retains some comparability with the NAS91

questionnaire but has a greater degree of flexibility for use again in the future. The NAS99 questionnaire consists of a main section, with supplementary questionnaires for each of the following categories of noise sources: road, rail, air, neighbour and other selected noises. Each supplementary questionnaire was designed to be used as a discrete stand-alone tool to investigate attitude to that specific noise source if required.

One particular revision made between the NAS91 and NAS99 questionnaires was an attempt to overcome problems introduced by the use of a filter question in 1991: 'When you are at home do you, personally, hear any of the following noises?..list followed'. One result of this question was that only 48% of our social survey sample reported hearing road traffic noise whilst our surveyors noted that road traffic noise was audible outside 92% of sites. Appendix A provides an excerpt from part of our NAS99 questionnaire illustrating how we have attempted to overcome this difficulty.

4 - SAMPLE SELECTION

Because of the requirement placed upon both studies to maximise comparability between the current and previous studies the sampling strategy used was as similar as possible to that previously implemented. Measurements for the NIS are being carried out in fifty-one districts in England and Wales, the number of districts selected in each region is proportional to regional population. Districts in each region were selected with likelihood proportional to population, and stratified by population density. Two wards were selected in each district along the same lines.

For the NAS the same sampling regime was used, with 5 wards selected to include the 2 wards used in the NIS, plus 3 further wards. The 3 further wards were selected by ranking all remaining wards in the district by population density, and using a random-start and fixed-interval technique with probability of selection proportional to population.

The NAS required individual named respondents to be identified, so within each of the 255 sampled wards, the addresses were ranked in postcode order. Using a file of voter counts by address, 40 addresses from each ward, with probability of selection proportional to number of voters in the household was selected. (40 addresses were selected to account for the worst case response rate of 50%.) A random-start and fixed-interval technique was used to select addresses, and identify a particular voter from within each address. For example:

51 High Street, Cheltenham – voter number 3 (out of 4).

For each of these sampled addresses, all voters were extracted from the electoral register. The pre-selected voter was then identified for each address. The electronic version of the electoral register in the UK is compiled once a year, based on data received from over 400 local authority districts. The version of the electoral register used for this sampling exercise comprised entries derived from forms completed in October 1998.

5 - FIELD WORK

The NIS fieldwork began in October 1999 and is expected to run until December 2000. The noise measurement survey work has been contracted out to a third party company, who carried out the same role previously. Measurements are only made in favourable weather conditions and during normal working weeks. No measurements are made outside of school terms, as behaviour patterns and local noise sources may differ.

The NAS fieldwork began in November 1999, and was contracted out to two market research companies, experienced in this type of questionnaire survey. The majority of the 5100 interviews were completed prior to the second week of December. Interviews were not conducted over the Christmas and New Year holidays, with the remaining interviews completed by early February 2000. Up to three calls were made to each selected address, before acceptance of a non interview and use of a reserve address. A letter on BRE letterhead was given to each potential respondent by fieldworkers – bilingual in Wales – which clearly stated the objectives of the survey (without mentioning noise) and promised confidentiality of replies. A contact name and number (at BRE) was provided for those requiring further information, and was used by a number of respondent to clarify the aims of the study and ensure that the survey was genuine.

On completion a total of 5,145 interviews had been conducted; 2,584 with the NAS91 questionnaire and 2,561 with the NAS99 questionnaire. Overall response measured in terms of interviews achieved as a proportion of all addresses fully covered was 64% for the NAS91 questionnaire, and 62% for the NAS99 questionnaire. All completed questionnaires were checked both by the fieldwork companies and at BRE. In particular it was necessary to edit the forms in terms of proper completion and to check that all relevant sub sections had been correctly filled in.

6 - CURRENT STATUS

At the time of writing the NIS is nearly 50% complete. The measurements are scheduled to be completed by the end of September 2000. The NAS questionnaire responses (consisting of approximately 24,000 completed sections) have been scanned and entered into a PC system using a computerised data entry system. Analysis of the data is due to start in early May, and initial results will be available by mid August 2000.

7 - APPENDIX

BRE

Road Traffic Noise

RTN

IMPORTANT: Make sure you fill in the serial number for each separate section you complete.

Serial number

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INTERVIEWER NOTE:

For RT1 - ST1 follow the routings for each noise source **carefully** before recording any responses.

INTERVIEWER INSTRUCTION (please read the following instructions to the respondent).

"I am now going to ask you some questions specifically about noise from **road traffic**.

I am going to show you a series of cards, each with a selection of noises printed on it. I will ask a question about each different type of noise in turn, and then ask you to choose a response from the selection of responses in the box at the very bottom of the card. Depending upon how you answer I may need to ask one or two further questions about that particular type of noise. The questions themselves will ask you to reflect over the last year or so about road traffic noises you might have heard when you have been here at this home (that is, when you have been inside your home or outdoors at home, for example, in the garden or on the balcony, if you have either of these)."

"So, thinking about the **last 12 months or so...**"

RT1. ROAD TYPES - NOISE FROM...

i. **SHOW CARD 24** - When you are at home, how much do you personally feel bothered, annoyed or disturbed by noise from...?

Motorways		Not at all A little Moderately Very Extremely				
<input type="radio"/> Don't know	<input type="radio"/> Don't hear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(before coding go to part a)	(code and go to next noise source)	(before coding go to part b)	(code and go to the next noise source)			

a) Is that because you never hear this kind of noise?

YES <i>(i.e. they never hear it)</i>	NO <i>(i.e. they sometimes do hear it)</i>
--	--

Code "**Don't hear**", then go to the **next noise source**.

b) Is that because you never hear this kind of noise?

YES <i>(i.e. they never hear it)</i>	NO <i>(i.e. they sometimes do hear it)</i>
--	--

Code "**Don't hear**", then go to the **next noise source**.

Code "**Don't know**" (unless other responses are offered)

Code "**Not at all**"

Then ignore the routing below the selection and go to the **next noise source**.

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(Continued overleaf)

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Figure 1: Excerpt from road traffic noise questionnaire.

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