

## **A comparison of the results of a regional survey of attitudes to ambient noise with those of a national survey in the United Kingdom**

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**Abstract [213]** The paper describes the results of a large scale noise and attitude survey carried out in the Merseyside region of the United Kingdom during 2003. The results are compared against some of the findings of a similar national survey carried out in 1999/2000. The research work was carried out by Hepworth Acoustics Ltd, with assistance from Woodholmes ksa and Entec on behalf of the five Merseyside local authorities and Merseytravel. The research was commissioned to provide information for the future development of an environmental noise strategy and noise action plan for the Merseyside region. A major study relating to attitudes to ambient noise was carried out across the United Kingdom in 1999/2000 following on from an earlier study in 1991. The 1999/2000 study questioned 2,524 residents throughout England and Wales, but only included 50 residents from one of the five Merseyside local authorities. In order to determine whether the national survey results were applicable on Merseyside, a total of 1,170 attitude surveys were carried out, 10 in every ward on Merseyside. In addition, 24 hour noise measurements were carried out at 90 locations across Merseyside to provide information on the range of noise levels in the area.

### **1 INTRODUCTION**

The key aim of this project has been to ascertain the extent to which people on Merseyside perceive noise to be a problem and to identify which types of noise and noise sources are perceived to have the greatest effect. The information has been gathered to provide reliable base data to use in developing an Environmental Noise Strategy for Merseyside, and subsequently a Noise Action Plan. The project was particularly concerned with the contribution of transportation noise on Merseyside.

Merseyside is located in the north-west of England, and contains five local authorities, and one Passenger Transport Authority. The population of Merseyside was 1.4 million in 2001.

It is necessary to understand the impact of noise on the resident population, in order to recommend a framework in which an environmental noise policy can be developed. In order to achieve the key aim of the study and to be able to use the findings of the study to develop future policy, the following work items were carried out:

- i) Review of available research and information about the contribution and significance of transport noise to overall background noise levels.
- ii) Review of current thinking and research on the effects of noise, specifically transport-related noise, on quality of life and interpretation of its relevance for Merseyside.
- iii) Identification and assessment of the perception of the noise environment experienced by people in Merseyside and, in particular, the sources that are most prevalent and most likely to cause annoyance, with specific reference to the perception of transport sources.
- iv) Characterisation of the range of ambient noise conditions occurring on Merseyside, particularly in relation to transport noise.
- v) Recommendation of a framework within which a possible future Merseyside environmental noise strategy could be developed that will address key noise related issues and the possible role of the transport sector.
- vi) Identification of the requirements for further research and information as a basis for better describing the key factors affecting people's experience of noise.

The following specific work items were carried out in order to achieve the above specified project aims:

- i) A public perception survey on noise sources and attitudes to noise, carried out at a random sample of 10 households in each of the 117 wards on Merseyside.
- ii) A survey of noise levels over a 24 hour period at 90 locations throughout Merseyside. The survey locations covered ten examples of nine different noise environments.

The noise environments where measurements were carried out are shown below:

- i) Adjacent to a busy urban road.
- ii) Adjacent to a motorway.
- iii) Adjacent to a railway line.
- iv) Adjacent to a transport interchange.
- v) In a suburban residential street.
- vi) In a city/town centre.
- vii) Near the airport.
- viii) In a city park.
- ix) In a rural area.

National noise and attitude surveys have been carried out recently in England, with the National Noise Attitude Survey (NAS) [1] being carried out in 1999/2000 and the National Noise Incidence Study (NIS) in 2000/2001. It was considered that the national surveys did not provide sufficient detail for Merseyside to allow an Environmental Noise Strategy for Merseyside to be developed. The need for the Merseyside specific survey is because the national surveys do not have sufficient sites to allow 'drilling down' into the data to uncover the trends in Merseyside. The only NAS sites on Merseyside were 10 addresses from each of 5 wards in Liverpool. These data are obviously not sufficient to provide the necessary information on the response to different types of noise on Merseyside that is necessary to develop a Noise Action Plan. Similarly with the NIS, noise measurements were only carried out at twenty sites in Merseyside, all in Liverpool.

## 2 RESULTS

### 2.1 Noise Measurement Survey

The results of the Merseyside noise monitoring show that 47% of the locations had noise levels above a daytime level of 55 dB  $L_{Aeq,16hr}$  and 67% of the locations exceeded the night time level of 45 dB  $L_{Aeq,8hr}$ . The NIS 2000 found that 55% +/- 3% of the population of England and Wales was exposed to daytime noise levels above 55 dB  $L_{Aeq,16hr}$  and 68% +/- 3% of the population was exposed to night time noise levels above 45 dB  $L_{Aeq,8hr}$ .

In Merseyside, 14% of the monitoring locations experienced noise levels of 68 dB  $L_{A10,18hr}$  or above, the qualifying level for the provision of noise insulation for new roads. The NIS 2000 found 8% +/- 1% of the population of England and Wales experiencing these levels.

In comparing the results obtained from the Merseyside measurements and the NIS, it must be remembered that the results are not directly comparable. The measurement locations for the NIS were chosen to be statistically representative of the population of England and Wales so that figures could be derived for percentage of the population exposed to different noise levels. The locations on Merseyside were chosen to provide a representation of the noise levels experienced in a number of land use categories across Merseyside. The locations were not chosen to make the noise measurements statistically representative of the population of Merseyside.

### 2.2 Attitude Survey

The initial comparison between Merseyside residents and the results of the national survey is shown in the table below.

Noise Category [Base - Merseyside=1170] [Base - National=2524]	Hear (%)		Bothered, annoyed or disturbed to some extent (%)	
	Merseyside (03)	National (99)	Merseyside (03)	National (99)
Road Traffic	79	83	44	42
Neighbours (inside their homes)	51	58	15	18
Neighbours (outside their homes)	59	70	18	22
Other people nearby	61	67	27	21
Aircraft/airports/airfields	53	71	14	19
Building, construction, demolition, renovation or road works	30	47	9	14
Trains or railway stations	28	38	4	6
Sports events	23	35	3	4
Other entertainment or leisure	27	32	7	7
Community buildings	14	29	0	4
Forestry, farming or agriculture	9	27	0	3
Factories or works	15	23	3	5
Other commercial premises	16	24	2	3
Sea, river or canal traffic	10	16	1	0

A lower percentage of residents on Merseyside reports hearing the different categories of noise than the national average. This pattern is generally reflected in the percentage of residents that are bothered, annoyed or disturbed to some extent, apart from road traffic and 'other people nearby' categories, where a higher than national average response is reported.

### **3 CONCLUSIONS**

The study has provided a wealth of data on the attitude of residents on Merseyside to environmental noise. The format of the survey has allowed comparisons to be made with the results from a national study carried out in 1999.

The study has shown that not only is the greatest percentage of residents bothered, annoyed or disturbed to some extent by road traffic, but also the percentage of residents reporting this effect is greater than the national average.

The study has provided information that will serve as a robust and reliable basis for developing a noise management strategy and action plan.

### **ACKNOWLEDGEMENTS**

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### **REFERENCES**

- [1] Department of Environment Food and Rural Affairs, 'The UK National Noise Attitude Survey 1999/2000'
- [2] Department of Environment Food and Rural Affairs 'The UK National Noise Incidence Study 2000/2001'