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NOISE MONITORING AS PART OF THE LONDON AMBIENT NOISE STRATEGY

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1. INTRODUCTION

In any strategy, there are two measures of success. One is the purely objective measure of the issue being tackled. The other is the subjective impression of the success of the strategy: Do we believe in our hearts and minds that the strategy has been a success?

In certain areas of life, the objective measures dominate – no more so than in business. I may believe that my marketing strategy has been successful, but if my year-end figures do not support this view.....

With an issue such as noise, the perception of the success of the strategy could well dominate the objective data. Given this, therefore, there is a case with the ambient noise strategy for London of considering not only measures to reduce noise, with all that entails, but also of managing the expectation of Londoners regarding the outcome of the strategy. If this is achieved, this should mean that the success of the strategy is not judged on the basis of unreasonable expectations.

Paradoxically, I believe that noise monitoring can assist in that expectation management because of the historical information we have available.

In this paper, I shall look back at some of the historical data which exists, provide some background to it, and consider how we might make best use of it to assist in the development of the London Ambient Noise Strategy.

2. HISTORICAL DATA - SUBJECTIVE

The noise environment of London has been a feature of its history for centuries. One historian has written that the noise of London is

a token of its energy and of its power

A German duke entered London on the evening of 12 September 1602 and was astonished by the unique character of the city's sound:

> *On arriving in London we heard a great ringing of bells....We were informed that the young people do that for the sake of exercise and amusement and sometimes they lay considerable sums of money as a wager, who will pull the bell longest or ring it in the most approved fashion*

It has been recorded that at the beginning of the 15th century that with regard to London

There was no noisier city in the whole world

It is unclear how that conclusion was reached. But what is interesting is that it seemed to be a proud boast!

Noise was associated with economic activity

Hammers are beating in one place; Tubs hooping in another, Pots clinking in a third

But even though associated with employment, the metal foundries of Lothbury produced

A loathsome noise to the by-passers that hath not been used to the like

Transportation noise was also a feature:

Carts and coaches make such a thundring

As today, there was a mixed response to the noise. Hogarth celebrated it, but Pepys found the sound of a sow-gelder annoying. And others also found the noise disturbing. A quotation from 1771:

I start every hour from my sleep, at the horrid noise of the watchmen bawling the hour through every street and thundering at every door

Evidence of sleep disturbance there, and early evidence too of premature awakening:

I start out of bed, in consequence of the still more dreadful alarm made by country carts, and noisy rustics bellowing green peas under my window

The composer, Haydn, complained that he would leave London for Vienna

To have more quiet in which to work

In the mid-nineteenth century the traffic noise was described as

If all the noises of all the wheels of all the carriages in creation were mingled and ground together into one subdued, hoarse, moaning hum

But of course, we have no data on the average daytime L_{10} in London in, say, 1771 or the external L_{Amax} generated by the watchmen bawling. But these descriptions do give a feel for what it must have been like and to me suggests that London has always been a fairly noisy place.

Another feature of the London noise environment, is its contrast.

An eighteenth century traveller observed that in the smaller streets off the Strand, running down to the Thames, there was 'so pleasing a calm' that it strikes the senses

That contrast still exists today, certainly near to my office in the side streets off Southwark Street! So although London might be perceived to be noisy – it is not noisy everywhere.

3. HISTORICAL DATA – OBJECTIVE

3.1 London Noise Survey

The first significant objective survey of the noise of London was the London Noise Survey. It took place in the early 1960's, through combined work between the former London County Council and the Building Research Station. It comprised 540 measurement sites located on a uniform grid pattern 500 yards apart, over an area of about 44 square miles of central London. The boundary of this area was roughly:

West: Wandsworth, Fulham, Kensington and Paddington;
North: Hampstead, St Pancras, Islington and Hackney;
East: Poplar Greenwich, Deptford and Camberwell; and
South: Lambeth and Wandsworth.

Measurements were made over a 24 hour period at each location through carrying out 2 minute samples each hour. The sound was recorded onto magnetic tape and subsequently analysed. By using this sample period and a time switch arrangement, the quantity of recordings obtained was contained to manageable proportions. The grid pattern appeared to have been followed rigorously in terms of the locations monitored, except when it was impracticable (i.e. when the site fell in the middle of a road or in a building). In these circumstances, alternative nearby locations were used, selected so that they had a similar noise environment. The measurements were made from mobile laboratories parked at the kerbside.

Various results survive. The data was analysed and values for the L_{A10}, L_{A50} and L_{A90} were found. In particular, the phrase 'Noise Climate' was used with the L_{A10} and L_{A90} values being quoted. The 24 hour day was divided into 5 periods, because of the diurnal variation in noise level found. These were:

- 1000 – 1600 Middle of the Day;
- 1600 – 1900 Evening Rush Hour;
- 1900 – 0000 Evening;
- 0000 – 0700 Night;
- 0700 – 1000 Morning Rush Hour.

Importantly, results for over 50 precise locations are available including:

- Munster Square NW1
- St Andrews Gardens, Grays Inn, WC1
- Pater Street, Abingdon Road W8
- Finchley Road, NW8
- Kings Cross Road WC1
- Commercial Road E14
- Friston Street / Wandsworth Bridge Road SW6

With such data available, it would be possible to repeat the measurements at the same locations some 40 years on.

Part of the analysis classified the measurement location by type of area. A sample of the results for the different area classifications is given below in Table 1:

Table 1
Sample of results from the London Noise Survey
(Noise Climate data: $L_{A10} - L_{A90}$)

Area	Rush Hour (am & pm)	Day	Evening	Night
Residential	65.2 – 56.0	65.1 – 55.7	60.5 – 50.7	52.7 – 44.9
Industry	65.6 – 57.5	66.6 – 58.9	58.7 – 50.5	53.5 – 46.3
Shops	70.5 – 60.6	69.9 – 60.9	66.1 – 55.5	58.2 – 48.3
Railway	69.0 – 58.0	67.5 – 57.4	63.9 – 52.8	56.5 – 47.9
Offices	69.4 – 60.7	68.4 – 61.7	64.6 – 54.9	58.0 – 48.4
Open Spaces	65.0 – 56.8	64.3 – 56.4	59.9 – 52.3	54.0 – 46.6
Commerce	65.5 – 57.9	65.6 – 59.0	58.1 – 50.7	53.6 – 47.2

It would be very interesting to know how these values have changed over 40 years.

3.2 Other Historical Data

As part of a study for the Greater London Authority, research was carried out into the availability of ambient noise data after the time of the London Noise Survey from the archives of the Scientific Branch of the former Greater London Council. In addition, records were examined of the London Scientific Services, Rendel Science & Environment, TBV Science and Stanger Science & Environment, the successor companies to the Scientific Branch after the abolition of the GLC.

A range of data was found, associated with a variety of projects. The focus of this research was aimed at data from measurements at clearly identifiable locations, carried out over a reasonable period of time (greater than 24 hours as a minimum, but ideally longer than that). In addition to researching the immediately available files, contact was made with the London Metropolitan Archive, where many of the Scientific Branch and LSS files are archived. Whilst several files were found with helpful data, it was discovered that the Archive had deleted many of the files from their records, including those of some projects which personal recollection of current Stanger staff suggested could have been most useful. Limitations of space no doubt necessitated the reduction in the number of files kept, and it is understandable that the Archive simply used their best judgement on what to keep given they did not have specialist advice readily available to them.

Table 2 below sets out a summary of some of the data which has been located.

Table 5
Historic Data Available

Date	Site
1972 – 73	Oxford Street Area
1975	Battersea / Barn Elms
1981-1983	Various areas, including Streatham, West Cromwell Road, Morden, Vauxhall
1984	Various arterial roads associated with the Lorry Ban
1993 – 1994	Poplar Area
1990	Southwark
1989-1996	Hounslow / Barnes / Whitton (aircraft noise)

As with the London Noise Survey, some of the data is very site specific and in theory it would be possible to carry out exact comparative measurements now. Other data are more general and although it is unlikely that an exact comparative study could be undertaken, the detail appears to be sufficient to enable some indication of noise trends to be obtained were a repeat study carried out now.

4. USING THE HISTORICAL DATA

So, how to make use of this data. As indicated above, I believe it would be interesting simply to see how the noise has changed in London over the last 40 years. It would, of course, be absolutely fascinating to know how it has changed over the last 400 years but that is not possible. Although, from the descriptions of the noise environment set out above, a good impression can be gained about aspects of the noise then.

But with regard to data gathered over the last 40 years, we are able to repeat measurements at many locations in London with a good degree of precision over location. We can emulate the parameters measured; we can copy the time periods and derive data which is directly comparable.

The results of that comparison could, in my view, be used to affect the expectation regarding the outcome of the strategy, and even might affect the content of the strategy. Consider these three outcomes, all referring, for sake of argument, to the change in L_{A10} between the London Noise Survey and now:

1. Noise levels have increased by > 5 dB(A);
2. Noise levels have changed by < 1 dB(A);
3. Noise levels have reduced by > 5 dB(A).

The first case is, I suspect, what people believe has happened. The world has become noisier. Technological advances in the reduction of vehicle noise emission have been outweighed by increasing numbers, and so on. If this were the case, an aim of the strategy could be to restore noise to its 1960's value, and if the increase was due to numbers of vehicles, the direction of the strategy is reasonably clear.

But what about the second case – virtually no change over 40 years. The emission reductions have been balanced by movement increases. The likely reductions in noise that might be brought about by the strategy could be quite limited, given how the status quo has been maintained without much interference. Furthermore, the changes we might achieve in this case may be measurable but might not be particularly perceptible.

And what about the third case – over 40 years the noise levels have reduced by at least 5 dB(A). This suggests that the scope for achieving much more might be quite limited. It might be a question of fine-tuning, of focusing on avoidable hot-spots. Bear in mind, too, that arguably we do not want a quiet city – London should be noisy to act as *a token of its energy and of its power.*

Making use of the historical data, and undertaking a follow up survey now would at least inform us about which of the three cases is the situation we are in. We would then be able to tailor the strategy and the expectations of that strategy accordingly. Without that information, the strategy might be developed without any real idea of what measurable change we might realistically be able to expect and hence without the ability to manage the expectations of Londoners regarding the outcome.

5. CONCLUSION

Historical data about the noise of London has been presented covering the last 400 years or so. Measured data covering the last 40 years have also been identified in sufficient detail to enable precise repeat monitoring to be carried out now.

How noise levels have changed over the last 40 years could be used to influence the content of the London Ambient Noise Strategy and the expectations regarding the outcome of it. And management of those expectations is important because it is likely that the success or otherwise of the strategy will primarily be judged subjectively rather than by objective measurement.

Without care, unrealistic expectations might be raised about the strategy that cannot be met and this would lead to disappointment and/or dissatisfaction. Making use of the historical data in the way suggested above could assist in avoiding that occurring.

Acknowledgement

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