Health Impacts due to living near major roads

Land development and frequent requirements for associated new or improved roads and junctions is a controversial topic that is sure to bring out strong opinions from all sides of the table. This includes the relationship between the two with the perpetual argument that new development generates traffic which leads to congestion on roads and stifles economic growth having a detrimental effect on those regions or communities that are affected in this way. With the need for new roads, consideration should be given to the resulting pollution and impacts on health and wellbeing of those who live within close proximity to busy roads.

One of the impacts relating to road traffic pollution that is often an emotive element of the planning process and frequent cause for public concern is noise. Noise impact assessments are typically undertaken using the assessment frameworks set out in well-proven guidance provided by the World Health Organisation (WHO, 1999). This guidance draws on various studies to determine the appropriate acceptable levels of noise inside dwellings and externally in private gardens. The evidence and studies that have supported the WHO guidance suggest a link between high noise levels and impacts on communities. The extent of annoyance to a community varies between disturbance of specific activities, such as reading and communication, to continual disturbance such as sleep disturbance. The more intense the background noise, the more disturbing is its effect on sleep. The ‘night noise guidelines for Europe’ produced by the World Health Organisation notes that several studies have shown that sleep fragmentation can result in various conditions such as tiredness, loss of concentration, aggression, irritability, anxiety attacks and, in chronic situations, depression.

As land available for new development comes under increasing pressure, inevitable ‘conflicts’ arise where noise sensitive development, typically residential developments, are to be developed in close proximity to sources of significant noise such as roads and other transport infrastructure.

With the publication of National Planning Policy Framework (NPPF) and removal of previous planning guidance designed to assist planners and developers alike in establishing appropriate locations for noise sensitive development (such as Planning Policy Guidance 24 (PPG24)) there is now a ‘vacuum’ where the quantitative and prescriptive guidance previously existed. This is leading to added uncertainty on acceptable boundaries/buffer areas from major transportation links, and what is, and isn’t an appropriate noise climate for sensitive development close to these sources. PPG24 was the overarching guidance in relation to planning and noise in England and Wales giving local authorities guidance on the use of planning powers to minimise the adverse impact of noise. It provided numerical values, drawing on the sum of the main research completed at the time of its publication, which proposed acceptable noise levels for residential development from various transport related sources. Whilst new policy objectives have been introduced, supporting technical advice and guidance is largely missing and Government has advised that it does not intend to provide such technical guidance, wishing instead to allow local planning authorities to make appropriate decisions based on the circumstances in their own geographical area, and the standard balance of material considerations to be weighed in the planning process (including the economic requirement, need for housing, alternatives, sustainability etc.).

Since the revocation of PPG24 guidance, new concepts such as ‘lowest observed adverse effect level’ (LOAEL) and ‘significant observed adverse effect level’ (SOAEL) have been introduced to the assessment, management and control of noise via the planning system. These objectives are currently defined by drawing on guidance criteria provided in World Health Organisation and BS 8233:2014 Guidance on sound insulation and noise reduction for buildings, with consultants and local authorities proposing their own interpretation of the guidance to fit into the LOAEL and SOAEL concepts.

Research in the area of health impacts and roads is progressing rapidly, the requirement for which stems from the importance of public health implications informing planning decisions, which is a material consideration in the overall planning balance.
Recent media coverage of one such study brought into light the potential health impacts of chronic exposure associated with noise and air pollution close to roads. The study undertaken in Canada and led by scientists at Public Health Ontario (PHO) and the Institute for Clinical Evaluative Sciences (ICES), considered the relationship of living near major roads and incidence of three neurological diseases. The research studied over 6 million people living in Ontario over a 10-year period.

While impacts on annoyance and sleep disturbance have been previously researched, little is known on other potential links or possible relationships between pollution from transportation sources and illness. The study considered incidence of three neurological diseases, namely dementia, Parkinson’s disease and multiple sclerosis. Globally about 55 million people have these disorders, with rising numbers expected given increasing longevity. Therefore, without cures for these diseases, identification of modifiable risk factors (i.e. what factors might contribute to the onset of these diseases and what might be done to reduce or mitigate exposure to these triggers) is important. The study concentrated on residents between the ages of 20 and 85 years old living at varying distances from major roads. To understand the potential influence of Nitrogen dioxide and PM2.5, long term monitoring of these pollutants was undertaken. The results of the study concluded that living near major roadways was associated with increased dementia incidence. There was no such relationship linking traffic proximity to Parkinson’s disease or multiple sclerosis. The association between traffic exposure and dementia was insensitive to additional controls for smoking, obesity, physical activity and education (or in other words the conclusions of the study allowed for these factors to be taken into account).

In further sensitivity analyses for the same group of participants the association between living less than 50 m from a major roadway and dementia appeared stronger among participants who lived in urban areas, who lived in one of the six major cities or who never moved and have always been exposed to the road. There was no increase in risk in those living more than 200 m away. This is the first study to investigate the onset of three major neurodegenerative diseases and given the potentially significant implications, this study adds weight to previous observations suggesting that road traffic is an important source of environmental stressors.

This research does not provide evidence that living near a busy road directly causes dementia. It is also not clear from the study which element of living near a busy road was related to dementia risk, for example, whether air pollution, traffic noise or other factors not controlled for in the study might be contributing to the conclusions.

However, future studies targeting the effects of different aspects of chronic exposure on health to the environmental effects of traffic such as traffic related air pollutants and noise would seem to be the next steps to take.

With more research and studies in this area, the importance of the links between health, land use planning and impact assessment is becoming clearer. Land use planning aimed at reducing exposure to traffic impacts (in particular noise and air pollution) might have far reaching impacts, beyond the typical sleep disturbance, speech intelligibility and respiratory impacts that tend to be associated with noise and air pollution.

For instance, the causal relationship may be based around elevated levels of road noise deterring people from becoming more active, including choosing to walk or cycle, which in turn results in a predisposition to other health effects. It is therefore considered that such implications should be considered at policy level with health impacts factored into urban planning and building design to reduce exposure, such as planning cycle routes for residents along quieter roads where possible.

The requirement for ‘health’ to be considered in Environmental Impact Assessment (EIA) is part of the new EIA regulations (The Town and Country Planning (Environmental Impact Assessment) Regulations 2017) which are due to come into force on the 17th May 2017. Health impacts are therefore likely to continue to be given greater consideration through the EIA process, and be a determining factor in planning decision makers.

There are also other initiatives that promote health and development such as the launch of the ‘Healthy New Towns’ programme by NHS England in 2016 and the increasing requirement for Health Impact Assessment as part of development proposals.

Updates to the World Health Organisation Guideline on noise are also currently being consulted upon and are likely to provide further guidance for land use planners and associated professionals alike. This could potentially lead to a clearer direction with regards to the adverse impact levels quoted in NPPF and provide more certainty to developers, consultants and councils providing a more succinct and coherent planning process with regards to health impacts and noise for new residential development. Well one can dream!!

Peter Brett Associates, April 2017.

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