

NOISE MAPPING AND GIS: OPTIMISING QUALITY, ACCURACY AND EFFICIENCY OF NOISE STUDIES. H. De Kluijver, J. Stoter, *NS Technisch Onderzoek, Delft University of Technology, Section of GIS Technology, Department of Geodesy, Faculty of Civil Engineering and Geosciences*

Noise levels are calculated with special noise prediction computer models. Till now there is no widely used far-reaching integration of GIS and noise prediction models. GIS is only used as a pre- and post-processor (for example to gather and store data and to calculate the impact of noise on the environment). As a consequence GIS and the available digital data are not optimally used. This paper describes the results of a preliminary study on the possibilities and advantages of an integrated system of GIS and noise prediction models. The study shows the following benefits of an integrated system: - With a central database unnecessary data conversion between both systems is prevented. This ensures the use of the same data. - Input data for noise prediction models can automatically be generated, using available 3D-geographic information. - With advanced interpolation techniques in GIS it is possible to obtain an accurate picture of the acoustic situation based on a limited number of sample points (calculated in a noise model). - The accuracy and quality of the results depend on the scale and detail of the input data. The information density should be high enough, but redundant information can be avoided. A GIS-module can tackle this problem. The points mentioned above improve the quality and efficiency of noise studies while reducing the data quantity, modelling effort and computation time. This paper also gives examples of a system to analyse the effects of noise caused by railways. For this purpose the Dutch railways developed a distinctive GIS-solution in 1995. Furthermore it shows future developments on noise mapping of highways and in towns in the Netherlands.