

INTISARI

Pembangunan infrastruktur jalur kereta api mampu memberikan dampak positif dalam meningkatkan kesejahteraan rakyat dan menunjang pertumbuhan ekonomi. Dalam proses pemancangan tiang menggunakan *Diesel Hammer*, pada kegiatan ini menimbulkan getaran di daerah sekitarnya dan berpotensi merusak bangunan serta mengganggu aktifitas dan kenyamanan masyarakat di sekitar lokasi pemancangan. Akibatnya terjadi kerusakan pada beberapa rumah, membuat warga sekitar lokasi pemancangan merasa dirugikan dan menuntut perkara ganti rugi. Untuk itu diperlukan identifikasi area dan luas bangunan yang memiliki risiko kerusakan rumah pengaruh getaran pemancangan tiang.

Proyek akhir ini menggunakan metode analisa *buffer* dan *calculate geometry* dalam *geographic information system* (GIS). *Output* proyek akhir ini berupa informasi mengenai luasan bangunan rumah yang memiliki risiko kerusakan rumah pengaruh getaran pemancangan *spunpile* di proyek pembangunan jalur ganda kereta api Solo Balapan- Kadihiro. Pembuatan *buffer* dengan radius zona 20 meter, 50 meter dan 100 meter. Pada zona tinggi memiliki jarak radius yang dekat dan memiliki resiko kerusakan rumah yang tinggi, pada zona sedang memiliki jarak radius yang sedang dan memiliki risiko kerusakan rumah sedang, dan pada zona rendah memiliki jarak radius jauh dan memiliki resiko kerusakan rumah yang rendah.

Proyek akhir ini menunjukkan bangunan yang saling bertampalan dengan zona radius lain. Hal ini dikarenakan menggunakan metode *multi ring buffer* sehingga terdapat area yang bertampalan satu sama lainnya. Luas area bangunan berisiko terdampak pada radius 100 meter sebesar 20802 m² dengan jumlah 313 bangunan, termasuk pada radius 20 meter sebesar 1360 m² sebanyak 14 bangunan, dan pada radius 50 meter 7445 m² sebanyak 107 bangunan.

Kata kunci: getaran, infrastruktur, jalur kereta api, kerusakan bangunan rumah, pemancangan *spunpile*.

ABSTRACT

The development of railway infrastructure can have a positive impact on improving people's welfare and supporting economic growth. In the process of pile driving using Diesel Hammer, this pile driving activity causes vibrations in the surrounding area and has the potential to damage buildings and disrupt the activities and comfort of the community around the pile driving location. As a result, damage occurred to several houses, making residents around the pile driving location feel disadvantaged and demand compensation. For this reason, it is necessary to identify the area and size of buildings that have a risk of house damage due to vibrations from pile driving.

This final project uses the buffer analysis method and calculate geometry in a geographic information system (GIS). The output of this final project is information regarding the area of houses affected by the risk of house damage due to vibrations from spunpile pile driving in the Solo Balapan-Kadipiro double-track railway construction project, precisely at KM 106 + 475 to KM 106 + 275. Making buffers with a zone radius of 20 meters, 50 meters and 100 meters. In the high zone, the radius distance is close and has a high risk of house damage, in the medium zone, the radius distance is medium and has a moderate risk of house damage, and in the low zone, the radius distance is far and has a low risk of house damage.

This final project shows buildings that overlap with other radius zones. This is because it uses the multi ring buffer method so that there are areas that overlap each other. The area of the building at risk of being affected within a radius of 100 meters is 20802 m² with a total of 313 buildings, including within a radius of 20 meters of 1360 m² as many as 14 buildings, and within a radius of 50 meters 7445 m² as many as 107 buildings. The building area data can be used as one of the reference data in the compensation or repair process if there is damage to the house building caused by the spunpile pile driving activity on the railway construction project..

Keywords: vibration, infrastructure, railway, damage to house buildings, spunpile pile driving.