

Cluster analyses integrated in a network rehabilitation model



Client: WMD (N.V. Waterbedrijf Drenthe)

Country: The Netherlands

Period: 2020

Case

Dutch water supply company WMD uses the network rehabilitation model TransparantNL, supplied by Spatial Insight. Typically, a network rehabilitation model predicts the moment a main section reaches its end-of-life, the moment it should be replaced. But when making calculations on pipe level, leakages may be assigned to a main section according the registration system. Because smaller sections of the network are evaluated, bigger regions with a high failure frequency can be missed. WMD asked Spatial Insight to embed a method to evaluate the results at a higher level by grouping the mains and thus, value the leaks at the right level.

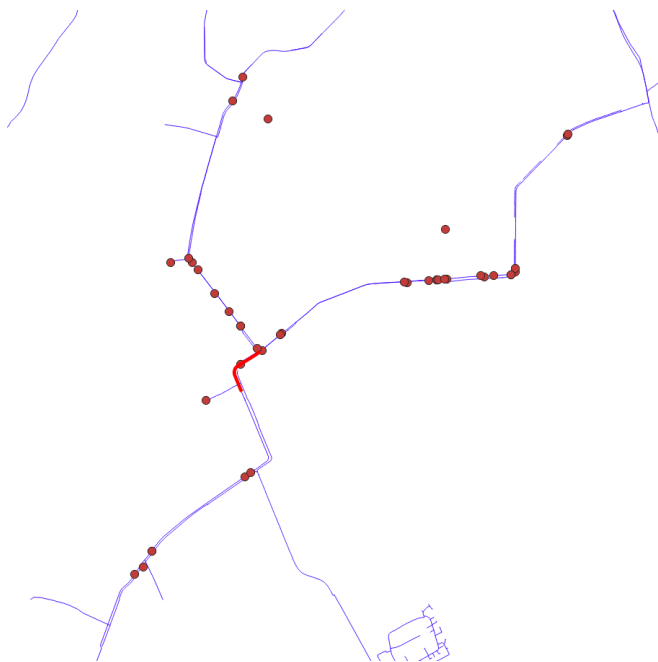


Figure 1. Information on pipe level.

Approach and solution

To solve this problem, we combined the cluster analyses with the TransparantNL model. In the cluster analyses mains sections that are likely to show the same failure behavior are grouped into clusters. These clusters are created at a local level and comprise mains with comparable characteristics such as material or installation in the same project. When the results of the network rehabilitation models are evaluated at a cluster level, a more concise and 'predictive' value for future performance issues is assigned to the leakages. As the pipes in these clusters deserve.

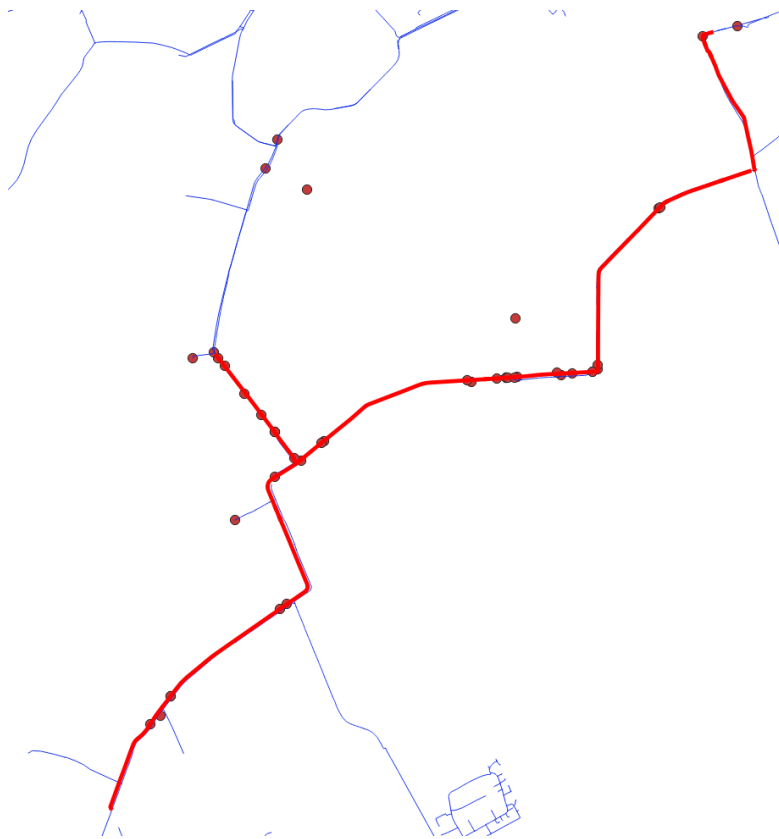


Figure 2. Information at cluster level

Contribution to the organisation's strategy

WMD's policy is to reduce the number of leakages as quickly as possible for a fixed, limited budget. The application of a modified rehabilitation model including the cluster analyses allows WMD to identify groups of pipes that are most likely to leak on short notice. By replacing them WMD is reducing the number of leakages effectively and efficiently.

More information

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