Title: **Stability assessment of a masonry arch**

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In Arnhem (NL) rainfall in the northern part of the city is being transported by a main sewer called Moerriool. This sewer was built approximately 150 years ago, and consists of concrete slabs with a masonry arch. During inspection of the sewer, alarming damages were found. The masonry structure suffered severe subsidence, cracking, deformation and material deterioration.

A complete renovation was likely to be very costly, therefore remedial works needed prioritizing. No archives were available, all basic information needed to be gathered on site. In addition, various tests have been undertaken to find the propelling mechanisms, in order to be able to assess the stability of the structure and finally to list appropriate measures.

Geometrical and physical non-linear Diana-models were used to assess the stability of the arch under various circumstances, for instance due to variance in soil stiffness, wall thickness and material degradation.

The feasibility of 3 measures has been studied in more detail. Based on the results, the renovation plan was made and gave start to the works.

Figure 1: Diana-results, combined with a picture and laser scan