###### National Assembly

###### Question Number: 2787

**2787. Mr C D Matsepe (DA) to ask the Minister of Transport:**

Whether, with regard to the calverts that allow water from the Edenvale area to flow under the N3 highway in Gauteng, any assessment has been done since the flood in November 2016 to determine if their diameters are sufficient to allow water to flow freely under the highway without causing the water to dam up and flood the area; if not, why not; if so, (a) what are the findings of the assessment and (b) what (i) are the current diameters of the above calverts and (ii) should they be and (iii) would the cost be of increasing the calverts under the N3 highway? NW3095E

**Reply**

During the late afternoon of 9 November 2016 flash flooding resulted in sections of the national road network in Gauteng being flooded. SANRAL initiated an investigation by a Specialist Engineering Company for the meteorological, hydrological and hydraulic assessment of the R24/N12, Linksfield and Gillooly’s interchanges to understand the underlying causes of the flooding. A final report was tabled on 12 September 2017 by the investigating Specialist.

The report reflects on the event of 9 November 2016 and explored reasons for the flooding which occurred at specifically three sites (see Figure 1):

* R24/N12 interchange
* Linksfield Road interchange
* Gillooly’s Interchange



Figure 1 – Three main problem areas investigated

It was established that an exceptional rainstorm of 1:200 intensity occurred on 9 November 2016.

From the conducted hydrological and hydraulic analyses the following can be concluded:

* Storm water drainage is a complex phenomenon as the magnitude changes with time and it is a dynamic process where it could be affected by specific conditions up- or downstream.
* The Linksfield interchange flooding can be attributed to the excessive high rainfall resulting in peak floods exceeding the hydraulic capacity of the drainage systems. A blockage at one of the culvert inlets further exacerbated the problem resulting in water overtopping the embankments and spilling onto the N3. The flow phenomenon was interesting and unexpected. In cases where debris however blocks a hydraulic structure flooding can occur.

The median barrier in the case of the N3 flooding probably prevented further loss of life as it prohibited water from crossing the N3 which would have washed vehicles into the Little Jukskei River. It further resulted in the N3 north bound being accessible during the event and providing an escape route.

* The R24/N12 culvert system is inadequate to handle the recommended design flood (1:80). The inlet configuration, changes in catchment area and proximity of the commercial developments all played a role in the problems experienced at this site.
* Various scenarios have been analysed to find a workable solution for conveyance of the floods downstream. The suggested solution would be to provide an additional four 3 X 1.8m culverts underneath the R24/N12 and create a retention/stilling pond upstream, linking the existing channel to the new culvert system. The existing structure underneath the N12 consists of two 1.2 x 3.1m culverts. The situation here is that if the capacity of the culverts under the N12 is increased the houses on the northern side of the N12 is flooded. A rough estimate of the cost of these works is R30 to R40 million.
* Increasing of the capacity of stormwater conduits and the inlets at the Gillooly’s interchange is required to drain water from the freeway. The existing pipe system is made of 600mm diameter pipes and it is proposed to supplement them with a 900mm pipe. This needs to be jacked and a rough estimate of the cost is R4 to R5 million.

The recommendations of this report need to be further detailed and the proposed improvements need to be further developed, including detailed designs before it can be implemented. These improvements should be able to handle a 1:80 year rainstorm.