

Earthquake Risk Transfer for South Africa

Overview

While major earthquakes are uncommon in South Africa in general, the earthquake occurred in a mining belt where earthquakes are relatively common. The CGS had described a 2005 earthquake with a magnitude of 5.3 on the Richter scale in the same area as Orkney as the largest mining-related earthquake in South Africa. The earthquake occurred on 9 March 2005 at DRDGOLD's Hartebeesfontein mine in Stilfontein, killing miners underground and resulting in the closure of the mine. An investigation by the mining regulator following the incident found that it was caused by mining and further seismic events would occur while mining continued. The report on the investigation recommended improvements in seismic monitoring among other things, and some of the recommendations had been implemented before the 2014 earthquake. The USGS recorded a 4.9 moment magnitude earthquake on 15 June 2014 in the same area, which earth sciences believe may have been a foreshock.



Figure 103. 20 earthquakes > M4.3 rocked South Africa in 2018. One of the documented EPAs is mentioned here. EPA alerts can remarkably extend the earthquake insurance penetration rate, and of course, when EPAs followed by an earthquake, insurance loss drastically increases.



EPA Effect on South Africa Probable Maximum Loss

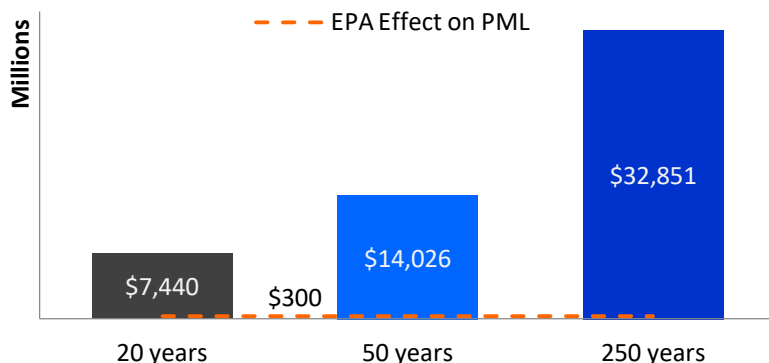


Figure 104. PML - Mean return period in years. EPAs that are not supported by First Notice increases the insurance loss. South Africa earthquake Average Annual Loss is \$601.24 million (South Africa Disaster & Risk Profile, 2014).

South Africa Documented EPAs

				Average Annual Loss
EPA Issued Date	Earthquake	Mag	Status	AAL (Million)
Oct 22, 2018 ⁵⁰	Oct 27, 2018 ⁵¹	4.3	Hit	\$601

Table 12. Documented EPA(s) issued for South Africa.

South Africa recent major earthquakes

Place	Date	Mag
Near Port Shepstone, KwaZulu-Natal	31-Oct-2019	4.3
Near Orange Farm, Gauteng	22-Aug-2014	3.8
Near Orkney, North West	5-Aug-2014	5.5
Near Orkney, North West	15-Jun-2014	4.9
~25 km south of Bela-Bela, Limpopo	2-Dec-2013	4.8

⁵⁰ http://acircularworld.com/d/south-africa/earthquake_prediction_2018-10-22-200000

⁵¹

<https://earthquake.usgs.gov/earthquakes/eventpage/us1000hhwe/executive>



University of Johannesburg, Johannesburg, Gauteng	11-Nov-2013	4.0
Barberton, Mpumalanga	7-Jul-2013	4.7
Thabazimbi, Limpopo	22-Jun-2013	3.9
Near Mbabane	28-May-2013	4.0
Stilfontein, North West	9-Mar-2005	5.3

