

LEVEL 3 AND HIGHER ENVIRONMENTAL INCIDENTS IN 2019

No	Incident date	Incident level	Operation/site	Description	Remedial action taken	Current status
SA PGM operations						
1	13 November 2019	3	Marikana	On 13 November 2019 the Rowland corner dam discharged into a tributary of the Klein Blesbokspruit for some 36 hours. This unplanned discharge incident impacted clean surface water and ground water. The incident was reported to the relevant regulatory authority.	<p>Subsequent detailed root cause analysis identified the following deficiency:</p> <ul style="list-style-type: none"> • Inadequate flexibility to transfer the water to other operations <p>Actions:</p> <ul style="list-style-type: none"> • The plant feeding the Rowland corner dam was stopped to reduce the water volumes to the corner dam • An alternative option or water user has been identified 	The possibility to transfer water from Rowland shaft (that currently reports to the Rowland corner dam) to return water dam (RWD) 5 is under investigation.
2	11 December 2019	3	Rustenburg	During an environmental inspection, Naude dam at Thembelani 1 shaft, was found overflowing into the natural environment. The overflow occurred for approximately three days, and the volume was estimated to be some 5,000m ³ . Water samples for water quality analysis were taken.	<p>Subsequent detailed root cause analysis identified deficiencies:</p> <ul style="list-style-type: none"> • Heavy rainfall • Accumulation of upstream flows (first flush) • Klipfontein diversion was not closed • Dam wall at the Naude dam is damaged <p>Actions:</p> <ul style="list-style-type: none"> • Proceed with the Section 21(c) and river crossing stabilisation project • Identify and implement proper measures to ensure the effective operation of the Klipfonteinspruit diversion around the Naudé Dam • Remove litter not falling under the Agreenco Environmental Projects (Pty) Ltd's scope of work from the watercourses • Implement adequate measures to effectively divert the Klipfonteinspruit around the Naudé dam after all authorisations are in place. Due to the time it could take to obtain the necessary authorisations, Department of Water and Sanitation (DWS) should be requested to give a 'directive' to implement measures in the interim, awaiting the authorisations 	A process to repair the Naude dam is underway.

LEVEL 3 AND HIGHER ENVIRONMENTAL INCIDENTS IN 2019 CONTINUED

No	Incident date	Incident level	Operation/site	Description	Remedial action taken	Current status
SA gold operations						
3	31 January 2019	3	Beatrix	Elevated cyanide levels released from the plant at Beatrix 4 shaft to the penstock, return water dam and evaporation dam adjacent to the tailings storage facility (TSF) causing livestock and bird mortalities. Tailings with elevated cyanide values were pumped undetected to the TSF for approximately four days.	<p>Subsequent detailed root cause analysis identified deficiencies:</p> <ul style="list-style-type: none"> • Interlocked Weak Acid Dissociable (WAD) cyanide analyser did not trip the residue pumps when cyanide levels exceeded 70 parts per million (ppm) • No audible alarm in control room indicating that the WAD cyanide analyser was malfunctioning <p>Actions:</p> <ul style="list-style-type: none"> • Immediately stopped pumping tailings containing high cyanide levels to the TSF • Re-set the WAD cyanide analyser • Reinforced procedural requirements, through training interventions, when high cyanide levels are detected by employees • The plant was decommissioned in April 2019 and therefore no tailings are pumped to the TSF 	Closed on 2 February 2019
4	24 April 2019	3	Beatrix	<p>The RWD 2 at Beatrix overflowed as a result of excessive rain (176mm over six days, compared to the April long term average of 49mm) The diluted process water flowed into natural pans.</p> <p>It was a short-term spill with an estimated duration of four days, 78,000m³ of diluted water spilled, with low salinity levels and free cyanide values below detection limits. No environmental impact was observed.</p>	<p>Subsequent detailed root cause analysis identified deficiencies:</p> <ul style="list-style-type: none"> • Excessive rainfall event • RWDs not designed to contain this volume of water <p>Actions:</p> <ul style="list-style-type: none"> • Completed installation of gravity line from RWD to evaporation dams • Commenced installation of the new penstock from the TSF to the evaporation dams 	Closed on 28 April 2019
5	14 June 2019	3	Kloof	<p>Leeudoorn TSF tailings pipeline failed, causing 1,500m³ of tailings to spill onto the soil and then into the storm water canal that leads to Loopspruit. No tailings material entered the water course, only supernatant water with elevated salinity and metal concentrations, but cyanide values were below detection limits.</p> <p>It was a short-term spill of only three hours. No negative environmental impact was observed.</p>	<p>Subsequent detailed root cause analysis identified deficiencies:</p> <ul style="list-style-type: none"> • Plastic liner of newly installed pipeline failed • Incorrect installation practice <p>Actions:</p> <ul style="list-style-type: none"> • Correctly replaced the failed pipe • Cleaned up the spilled tailings • Increased security patrols on the pipeline during the night for early detection of spillages 	Closed on 8 July 2019