

ENVIRONMENTAL INCIDENTS 2017

No	INCIDENT DATE	INCIDENT LEVEL	OPERATION/SITE	DESCRIPTION	REMEDIAL ACTION TAKEN	CURRENT STATUS
SA REGION						
Gold operations						
1	7 January 2017	3	Kloof	Return water from the KP2 return water dams overflowed into a water channel leading to Loopspruit.	Regularly monitor return water dam levels and ensure maximum return to the plant. Increase return pump capacity to the plant.	Completed
2	9 January 2017	3	Driefontein	Spill from TSF4 return water dam into the channel flowing to the Wonderfonteinspruit.	Automate the pump to preferably prioritise RWD water. Maximise return water use by reducing all other top-up sources to the plants such as mine water. Implemented and managed continuously.	Completed
3	17 January 2017	3	Kloof	Due to heavy rainfall, return water dam's filled to the brim. No pumping facility from return water dam 6 to return water dam 1, hence return water dam overflowed into the environment.	Install submersible pump to pump water from return water dams 6 to 1. Return pumping from dam 1 to the lant prioritised.	Completed
4	22 February 2017	3	Kloof	After more rain an initial low volume of excess water overflowed from KP2 return water dam into the Leeuspruit. The spill however continued for almost 13 days and was therefore reclassified as a level 3 incident.	Dam level monitoring integrated into SCADA. Maintain maximum return capacity to the plant.	Completed
5	22-February-2017	3	Kloof	After more rain excess water overflowed from KP1 return water dam's into Leeuspruit.	Dam level monitoring integrated into SCADA. Maintain maximum return capacity to the plant.	Completed
6	28 February 2017	3	Driefontein	Spill from TSF 4 return water dam into the channel flowing to the Wonderfonteinspruit.	Maximise return water use by reducing all other top-up sources to the plants such as mine water.	Completed
7	6 April 2017	3	Driefontein	Eight cow carcasses were discovered in the vicinity of the TSF 1 on the southern side.	Water samples were taken and sent for analysis. One of the carcasses was sent to Onderstepoort for analysis into the cause of mortality. The results of the autopsy was inconclusive, hence the cause of death could not be established. A consultative process to remove all cattle from mine premises has started.	Completed

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8	19 September 2017	3	Cooke	Unknown persons sabotaged the 300mm dam HDPE Porges pit slurry line. Approximately 60 puncture holes over 800m length of pipe. This resulted in a significant slurry spill.	Porges pit line isolated, and blank flange installed and the HDPE line repaired. Implemented 24 hour security patrol in the area: armoured vehicle and armed personnel – done. Cover HDPE pipeline with 1.5m protection berm.	Unresolved. The area adjacent to the Porges pit pipeline has been cleared. Delay in accessing the tributary area due to illegal mining activities.
9	29 September 2017	3	Kloof	Mine water from the various sources is discharged into storm water canals that discharge water into the Leeuspruit (Reoccurring incident).	To investigate the sources of water, preventative measures will follow.	Unresolved. It is a complex issue. Investigation conducted and action plans developed but not all implemented. To be completed in Q1 2018.
PGM operations						
10	11 April 2017	3	Kroondal	The K150 return water dam overflowed during the morning of 11 April 2017 as a result of cleaning of solution trenches, the opening of K150 Tailings dam Penstock and the K1 Plant being on maintenance, not consuming any water.	Marikana line was stopped. The Penstock on the K150 tailings dam was closed. K2 Plant to pump continuously for process use. Communication between K1 and K2 Plant to be improved during breakdowns and maintenance.	Completed
11	26 April 2017	3	Kroondal	On the morning of the 26 April 2017 at 04h32 it was reported that the K150 return water dam was at 100% and overflowing.	“Awareness training for Plant and Tailings personnel to prevent vandalism on locks put in place to prevent unauthorised pumping at dams. Plants must communicate to Environmental Department on any maintenance that is scheduled and the duration thereof.	Completed
12	10 July 2017	3	Kroondal	On the morning of the 10th July 2017 at 07h30 it was reported that the K150 return water dam was at 100% and overflowing. The water discharged from the dam spilled into the Kroondal tributary.	Regular inspection to verify the condition of infrastructure and dam levels. Plants must communicate any maintenance that is scheduled and the period thereof. Maintain the K 150 return water dam level at 80 – 90% to prevent spills.	Completed

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1	Ongoing, pre-2017	4	East Boulder (tailings storage facility embankment)	Ongoing ground and surface water impacts resulting from residue nitrogen flushing from the waste rock during meteorological events and reporting to groundwater as a non-point source and eventually reporting to surface water.	The waste rock lining system is completely installed, eliminating the source of any new nitrogen. However, it will take multiple years for the groundwater system to reach baseline nitrogen levels through natural flushing.	Unresolved
2	Ongoing, pre-2017	4	Stillwater (Waste rock storage area)	Ongoing ground and surface water impacts resulting from residue nitrogen flushing from the waste rock during meteorological events and reporting to groundwater as a non-point source and eventually reporting to surface water.	The waste rock lining system is completely installed eliminating the source of any new nitrogen. However, it will take multiple years for the groundwater system to reach baseline nitrogen levels through natural flushing.	Unresolved
3	Ongoing, pre-2017	3	Stillwater (Hertzler TSF)	Ongoing ground water impacts resulting from a leak in the tailings storage facility lining system.	Pump-back Well; Collection Trench; Insitu Denitrification.	Unresolved. Source of liner leak currently unidentified. Will continue to operate the seepage collection system
4	13 August 2017	3	Stillwater (West-side Pond 3)	Treated mine water overflowed the west-side Pond 3 following a lightning strike and subsequent issues with the control system. As the power was restored and the pumps restarted, the control system did not sequence the starting of the pumps in Pond 3. Approximately 1.50 lbs of nitrogen released.	Revised standard operating procedures; increased monitoring and system oversight.	Completed
5	1 September 2017	3	Benbow – Stillwater (Waste Rock storage area)	Investigation ongoing; detected residual nitrogen in foundation drain and monitoring well downgradient of lined waste rock storage area.	Ongoing – drained residual water from storage area; installed collection systems.	Unresolved. Will likely take multiple months for groundwater nitrogen concentrations to reach baseline conditions following corrective action.
6	29 November 2017	3	Benbow decline – Stillwater (Water treatment plant)	During the early morning hours of 29 November 2017, the lined feed pond for Benbow Water Treatment Plant #2 (biological treatment) overflowed. The overflow event was caused by a power bump, which faulted out the operating equipment in the treatment plant. Approximately 2.3 pounds of nitrogen was released.	Supporting personnel now perform daily checks of WTP #2, a minimum of two times per day. Warning lights installed at the portal pad and WTP #2 to indicate a power bump and/or failure of the feed pump.	Completed