VULCAN MINE

Trigger Action Response Plan

Highwall Miner Geotechnical – Stage 1

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VUL-TAR-011-HWM Geotechnical	Highwall Mining Manager	06/03/2025	

	Normal State	Level 1 Response	Level 2 Response	Level 3 Response
Triggers	• Drive alignment within 100mm of that specified in PTM • Cutting height within 100mm of that specified in PTM • Less than 100mm of roof fall material observed on top of HWM equipment during retraction • No reports of rib or floor instability in active or completed Drives • No reported excessive levels of water-make in active or completed Drives	• **Trigger 1a** - cutterhead deviates 100mm to 1m off centre-line over 3 x consecutive push beam advances (i.e., 18m of face advance) • **Trigger 1b** - cutterhead set up 100 to 300mm off centre-line • **Trigger 1c** - cutterhead cutting greater than 100mm above recommended cut height over 3 x consecutive push beam advances (i.e., 18m of face advance) • **Trigger 1d** – 100 to 300mm of broken roof fall material observed on top of HWM equipment during retraction • **Trigger 1e** - rectangular slabs of intact roof fall material up to 300mm thick observed on top of HWM equipment during retraction • **Trigger 1f** - cutterhead or push rams bogged in floor • **Trigger 1g** - increased water-make in active Drive • **Trigger 1h** - ±5˚ change in seam dip over 10m indicating possible fault • **Trigger 1i** - progressive increase in cutter amps indicating possible fault	• **Trigger 2a** - cutterhead deviates greater than 1m off centre-line over 3 x consecutive push beam advances (i.e., 18m of face advance) • **Trigger 2b** - cutterhead set up greater than 300mm off centre-line • **Trigger 2c** - cutterhead cutting greater than 300mm above recommended cut height over 3 x consecutive push beam advances (i.e., 18m of face advance) • **Trigger 2d** - greater than 300mm of broken roof fall material observed on top of HWM equipment during retraction • **Trigger 2e** - rectangular shaped slabs of intact roof fall material over 300mm thick observed on top of HWM equipment during retraction • **Trigger 2f** - sudden influx of water in active Drive • **Trigger 2g** - ±5˚ change in seam dip over 5m indicating possible fault • **Trigger 2h** - sudden increase in cutter amps indicating probable fault	• **Trigger 3a** - visual or audible signs of roof or pillar failure in completed HWM pillars • **Trigger 3b** - expulsion of coal dust from completed Drives • **Trigger 3c** - failure of highwall in HWM operational area • **Trigger 3d** – Active drive intersects existing drives

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Minimum Level of Authority to Change up Trigger Levels	• Every coal mine worker	• Every coal mine worker	• Every coal mine worker	• N/A
Minimum Level of Authority to Change Down Trigger Levels	• N/A	• HWM Supervisor	• HWM Production Manager in consultation with UG Geotechnical Engineer and OCE	• Operations Manager in consultation with HWM Production Manager, UG Geotechnical Engineer, OCE, Principal Mining Engineer and SSE
HWM Mining Crew	• Continue to operate as per PTM • Fill in Entry Log Sheet	• Continue production as per PTM and notify HWM Supervisor immediately • Note Drive no., TARP distance into Drive and time of Yellow trigger on Entry Log Sheet • Operate as directed by the HWM Supervisor	• Stop all work and notify HWM Supervisor immediately • Note Drive no., TARP distance into Drive and time of Orange trigger on Entry Log Sheet	• Stop work, withdraw personnel to an area of safety • Notify HWM Supervisor immediately • Note location and time of Red trigger on Entry Log Sheet
HWM Supervisor	• Continue to operate and monitor as per PTM • Participate in weekly review meeting • Email Entry Logs and Geotechnical Report Sheets to Tech Services Dept. and UG Geotechnical Engineer	• Inspect active mining area and Entry Log Sheet to determine if a Yellow trigger has been activated and complete Geotechnical Report Sheet If Yellow trigger confirmed: • Communicate to relevant coal mine workers change in TARP level • Review Geotechnical Report Sheets for trending to determine if other actions are appropriate (e.g. correct alignment of cutterhead, correct cutting horizon etc.) • Record Yellow Trigger and actions taken on Production Report	• Inspect active mining area and Entry Log Sheet to determine if Orange trigger has been activated and complete Geotechnical Report Sheet If Orange trigger confirmed: • **If a 2a to 2e trigger has been reported**, instruct HWM Mining Crew to withdraw equipment from Drive, skip two Drives and commence mining next Drive-in sequence as specified in PTM • **If a 2f to 2h trigger has been reported**, instruct HWM Mining Crew to withdraw equipment from Drive and commence mining next Drive-in sequence as specified in PTM	• Ensure immediate removal of personnel to an area of safety • Where safe to do so, ensure all mobile equipment is removed to an area of safety • Notify OCE and HWM Production Manager verbally immediately of Red Trigger and actions taken • Await further instruction from HWM Production Manager or Operations Manager regarding action plan • Participate in Risk Assessment for either proposed continuation of highwall mining or proposed recovery works

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		• Email Entry Log Sheet and Geotechnical Report Sheet to HWM production Manager, and UG Geotechnical Engineer.	• Verbally notify OCE and HWM Production Manager immediately of Orange Trigger and actions taken	• Develop, review and implement a recommencement of mining or recovery plan as required
Open Cut Examiner (OCE)	• Normal work area statutory inspections and reporting procedures	• Normal work area statutory inspections and reporting procedures	• Normal work area statutory inspections and reporting procedures	• Ensure immediate removal of personnel • Where safe to do so, ensure mobile equipment is removed to an area of safety • Restrict access to highwall mining operational area with appropriate signage • Confirm with HWM Supervisor that the HWM Production Manager has been verbally notified of Red trigger and actions taken • Inform Health and Safety Manager and/or SSE of Red Trigger • Investigate other processes working in the area that could be affected by or affect the existing hazardous conditions • Participate in Risk Assessment for either proposed continuation of highwall mining or proposed recovery works • Develop, review and implement a recommencement of mining or recovery plan as required
HWM Production Manager	• Normal work area inspections and reporting procedures • Facilitate weekly review meeting and in meeting,	• Discuss Yellow TARP trigger with HWM Supervisor prior to end of shift and determine whether other actions are required	• Discuss Orange TARP trigger with HWM Supervisor as soon as practical and determine whether any other actions are required	• Inform Operations Manager, Technical Services Manager/Principal Mining Engineer and verbally with email confirmation

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	report on stability of HWM Drives • Ensure geotechnical database and as-built mine plan are maintained and updated on at least a weekly basis	• Within 24 hours, email triggered HWM Shift Log to UG Geotechnical Engineer • Within 24 hours, liaise with UG Geotechnical Engineer to determine whether any other actions are required	• As soon as practical, email triggered HWM Shift Log to UG Geotechnical Engineer • Prior to end of shift, discuss Orange TARP trigger and actions required with Geotechnical Engineer • Within 24 hours, inform Operations Manager verbally of Orange Trigger • Ensure the UG Geotechnical Engineer completes a geotechnical assessment within the next 48 hours	• Coordinate Risk Assessment for entry into HWM operational area for investigation of Red Trigger • Develop, review and implement a recommencement of mining or recovery plan as required
Mine Site Tech Services	• Geotech acceptance of Highwall once open cut finished mining • Map condition of pillars and highwall during mining on a weekly basis (all TARP Levels) • Review HWM Shift Logs • Maintain geotechnical database (including reported TARP triggers, mapped and inferred geological structures and mapped highwall conditions) (all TARP Levels) • Ensure as-built mine plan is maintained by survey (all TARP Levels)	• As per Green plus: • Email highwall mapping, geotechnical database and as-built mine plan to UG Geotechnical Engineer for review	• As per Green plus: • Email highwall mapping, geotechnical database and as-built mine plan to UG Geotechnical Engineer for review	• Confirm Exclusion Zone distances are appropriate for hard barriers • Discuss actions with relevant Technical Services team • Ensure recommended control measures are implemented in mine planning process • Participate in Risk Assessment for either proposed continuation of highwall mining or proposed recovery works • Participate in Recovery / Re-entry Plan and review PTM
UG Geotechnical Engineer	• Participate in weekly HWM meeting	• Liaise with HWM Production Manager, and review highwall mapping, geotechnical database, as-built mine plan, HWM Shift Log	• Liaise with Tech Services and HWM Production Manager, and review highwall mapping, geotechnical database, as-built mine plan, HWM Shift Log	• Participate in Risk Assessment for either proposed continuation of highwall mining or proposed recovery works

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		• Determine whether other actions are required as part of the weekly review meeting and email findings and recommendations to HWM Production Manager	• Determine what actions are required, including an assessment of whether (i) it is appropriate to continue to mine as per the current PTM, (ii) re-enter the affected Drive or (iii) a new PTM is required • Within 48 hours, email findings and recommendations to OCE, HWM Production Manager and Operations Manager	• Develop, review and implement a recommencement of mining or recovery plan as required
Operations Manager	• No action required at this level	• No action required at this level	• Review production and geotechnical information from HWM area • Discuss action plan with HWM Production Manager • Notify SSE and Technical Services Manager of conditions verbally and with email confirmation	• Ensure SLT are notified • Coordinate Risk Assessment for either proposed continuation of highwall mining or proposed recovery works • Approve Recovery/Re-entry Plan where required
Site Senior Executive	• No action required at this level	• No action required at this level	• Discuss actions with Operations Manager	• Conduct reporting notifications as per Incident Reporting and Investigation procedure • Approve Recovery/Re-entry Plan where required