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Grosvenor Mine **Trigger Action Response Plan** **Title** GRO-5833-TARP-Longwall Strata Control
Name GRO-5833-TARP-Longwall Strata Control

Longwall Strata Control

ZONE:	NORMAL	LEVEL 1 TRIGGER	LEVEL 2 TRIGGER	LEVEL 3 TRIGGER
Maingate	**Roof** • No active deterioration and guttering / Fretting (<150mm deep) • Structures stable and supported • Minimal roof deformation. **Pillar Side Rib** • ≤0.3m bulging/spalling of the rib • Minor cracking (<20mm) in shotcrete for a distance <10m **Block Side Rib** • ≤0.5m bulging/spalling of the rib for a distance <5m **Floor** • No floor heave evident **Tell Tales** • ≤10mm change in 24 hours • ≤30mm additional movement since stable conditions **Maingate End Roof Supports** • No more than one gate end support without active set on • Anti-topple in place and functioning at gate ends	**Roof** • Active deterioration and guttering (<150mm deep) extending more than 5m outbye of face • Structures showing evidence of fresh deterioration **Pillar Side Rib** • >0.3m but ≤0.5m bulging/spalling of the rib, confined by rib mesh/liner. • Minor cracking (<20mm) in shotcrete for a distance >10m **Block Side Rib** • ≤0.5m bulging/spalling of the rib for a distance >5m **Floor** • Minimal floor heave evident **Tell Tales** • >10mm change in 24 hours • >30mm but ≤50mm additional movement since stable conditions **Maingate End Roof Supports** • Multiple gate end roof supports without active set • Anti-topple not in place or functioning at gate ends	**Roof** • Active deterioration and guttering (>150mm deep) extending for a distance >10m • Notable Bagging of roof greater than 10m in advance of face **Pillar Side Rib** • >0.5m bulging/spalling of rib (e.g. buckling of shotcrete) • Moderate/Major cracks (>20mm) appearing in shotcrete for a distance >10m **Block Side Rib** • >0.5m but ≤1.0m bulging/spalling of the rib for a distance >5m **Floor** • Consistent floor heave evident with the potential to cause operational delay. **Tell Tales** • >10mm change in 6 hours >50mm but ≤100mm additional movement since stable conditions	**Roof** • Goaf overrun of main gate support • Fall of supported roof **Pillar Side Rib** • Bulging/spalling of rib restricting access to face **Block Side Rib** • >1.0m bulging/spalling of the rib for a distance >5m **Floor** • Floor heave preventing normal operation. **Tell Tales** • >5mm per hour for ≥6 hours or • >100mm additional movement since stable conditions and **General** • Conditions continue to deteriorate >24 hours post Code Orange response
Tailgate	**Roof** • No active deterioration and guttering / Fretting (<150mm deep) • Minimal loading on secondary / passive support • Minimal roof deformation **Ribs** • ≤0.5m bulging/spalling of rib for a distance ≤5m • Minor cracking (≤20mm) in shotcrete for a distance ≤10m **Floor** • ≤0.3m isolated floor heave **Tell Tales** • <10mm change in 24 hours • ≤30mm additional movement since stable conditions **Tailgate End Roof Supports** • No more than one gate end roof support without active set on	**Roof** • Active deterioration and guttering (<150mm deep) extending for a distance >10m • Structures showing evidence of fresh deterioration • Minor loading on secondary / passive support **Ribs** • ≤ 0.5m bulging/spalling of the rib for a distance >5m • Minor cracking (≤20mm) in shotcrete for a distance >10m **Floor** • Floor heave >0.3m but ≤0.5m for a distance >10m **Tell Tales** • >10mm change in 24 hours • >30mm but ≤50mm additional movement since stable conditions	**Roof** • Active deterioration and guttering (>150mm deep) extending for a distance >10m • Notable bagging for a distance >10m **Ribs** • >0.5m but ≤1m bulging/spalling of rib for a distance >5m • Moderate/Major cracks (>20mm) appearing in shotcrete for a distance >10m **Floor** • Floor heave >0.5m for a distance >10m **Tell Tales** • >10mm change in 6 hours • >50mm but ≤100mm additional movement since stable conditions	**Roof** • Goaf overrun of tailgate support • Fall of supported roof **Ribs** • Bulging/spalling of rib restricting access to face • Shotcrete failing or bulging >1m for a distance >10m **Floor** • Floor heave preventing normal operation. **Tell Tales** • >5mm per hour for ≥ 6 hours or • >100mm additional movement since stable conditions and **General** • Conditions continue to deteriorate >24 hours post Code Orange response

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	• Anti-topple in place and functioning at both gate ends	**Tailgate End Roof Supports** • Multiple gate end roof supports without active set 1. Anti-topple not in place or functioning at gate ends		
Longwall Face	**Geology** • Minor geological structure ≤0.5m displacement **Goaf Break-off Line** • At the rear edge of the roof support canopy **Tip to Face** • All roof support flippers operating correctly. • Tip to face does not exceed 1m for greater than 5 consecutive roof supports and maintaining contact advance **Horizon Control** • +/- ≤100mm deviation from flight plan over 5 consecutive roof supports • Pan angles change over previous shear ≤2 degrees **Cavities / Delamination** • Delamination ≤0.5m for no more than 5 consecutive run of face roof supports • Cavities >0.5m but not sustaining the cavity for 5 consecutive shears **Leg Pressures** • Hi-Set isolated on ≤5 roof supports across the face • No roof supports yielding outside of the shearer operating window (ahead of the lead drum)	**Geology** • Presence of Faults/Structures with displacement of ≥0.5m but <1.5m • Intrusion in face **Goaf Break-off Line** • Advancing forward of the rear edge of the roof support canopy **Tip to Face** • Single roof support flippers damaged / not operating correctly. • Tip to face exceeds 1m but not 1.5m for greater than 5 consecutive roof supports • Contact advance is not maintained **Horizon Control** • +/- >100mm and ≤200mm deviation from flight plan over 5 consecutive roof supports • Pan angles change over previous shear from >2 and ≤3 degrees **Cavities / Delamination** • Cavities >0.5m and sustaining the cavity for 5 consecutive shears • Delamination ≤0.5m for more than 5 consecutive run of face roof supports **Leg Pressures** • Hi-Set isolated on >5 to ≤10 roof supports • Less than 10 consecutive roof supports yielding outside of the shearer operating window (10 roof supports ahead of the lead drum)	**Geology** • Fault with >1.5m displacement • Igneous Intrusion in face causing difficulty cutting **Goaf Break-off Line** • Advancing forward of the roof support hydraulic legs **Tip to Face** • 2 or more x adjacent flippers damaged / not operating correctly • >1.5m ≤2m canopy tip to face and cavities propagating to top of seam **Cavities / Delamination** • Cavities propagating to top of seam **Horizon Control** • +/- >200mm deviation from flight plan over 5 consecutive roof supports • Pan angles change over previous shear from >3 degrees **Leg Pressures** • Hi-Set isolated on >10 roof supports • Greater than 10 consecutive roof supports yielding outside of the shearer operating window (10 roof supports ahead of the lead drum)	**Horizon Control** • Loss of horizon preventing normal operation **Tip to Face** • >2m from canopy tip to face with cavities propagating above top of seam **Cavities / Delamination** • Face cavity migrating into gateroad or; • Failure of strata preventing normal operation
PERSON	**NORMAL**	**LEVEL 1 RESPONSE**	**LEVEL 2 RESPONSE**	**LEVEL 3 RESPONSE**
Operators And Trades	• Normal production to Longwall as per permit to mine, operating procedures and weekly plan • Communicate any changes in conditions to ERZ Controller • Maingate operators monitoring Active Set pressures across the face	As per Code Green plus: • Inform ERZ Controller of escalation in conditions • Modify chock advance sequence to match conditions (Maintain LAS function where ever possible) • Keep canopies level in open cavities, turn Active Set off in affected areas. Reactivate once conditions allow • Extend flippers as required to assist in the control of roof and face conditions. • Investigate and document via trade report any individual flippers that are not operating correctly so Co-ordinators can plan to be rectified	As per Code Yellow plus: • Production to occur in line with action plan. • Reduce cut height to maximum 4.2m in areas affected by level 2 cavities, in case of worsening conditions leading to consolidation activities	As per Code Orange plus: • Park shearer in safe location and STOP production • Close face up where possible • Inform ERZ Controller, and await instruction from ERZ Controller

		• Physical check of roof support leg pressures to confirm set/yield status • Commence corrective action to recover horizon control as required • Timber to be made available at gate end roof supports and rectify anti-topple system if possible. • Rectify gate end roof supports without Active Set • Reset any supports as advised by the maingate operator • Perform wedge cuts to correct creep		
ERZ Controller	• Ensure normal production as per permit to mine, operating procedures and weekly plan • Audit and review Operational Standards	As per Code Green plus: • Inspect the condition and confirm TARP status and escalation from Green to Yellow • Develop plan for corrective action with crew if relevant • Notify CRO and Undermanager and confirm compliance to the TARP, corrective actions, and communicate to oncoming ERZ Controller regarding status • Implement and monitor corrective action plan	As per Code Yellow plus: • Develop action plan in consultation with crew, Undermanager, Longwall Coordinator, and relevant disciplines. • Notify CRO and confirm compliance to the TARP, corrective actions, and communicate to oncoming ERZ Controller regarding status • Increase frequency of inspections and monitoring • Liaise with Undermanager to mobilise ground consolidation personnel	As per Code Orange plus: • Ensure shearer is parked in safe location and STOP production • Ensure face is closed up where possible • Inspect the condition and confirm TARP status and escalation from Orange to RED to CRO and Undermanager • Redeploy personnel as appropriate • Follow directions as provided by SMRT
Mine Geologist	• Between Geologist and Geotechnical Engineer map face three times per week. • Face section to be distributed to all Grosvenor users via email distribution list	As per Code Green plus: • Additional mapping as required by Geotechnical Engineer • Map area and report back to Geotechnical Engineer. • Additional mapping report to be distributed to all Grosvenor users via email distribution list	As per Code Yellow plus: • Inspect area as soon as practicable • Report recommendations to the UMM	As per Code Orange plus: • Mapping to be conducted as per the frequency set by SMRT • Map area as soon as practical and report back to SMRT
Geotechnical Engineer	• Between Geologist and Geotechnical Engineer map face three times per week. • Face section to be distributed to all Grosvenor users via email distribution list • Review ERZ Controller stat reports	As per Code Green plus: • Set mapping frequency in consultation with Geologist	As per Code Yellow plus: • Inspect area as soon as practicable • Report recommendations to the UMM	As per Code Orange plus: • Report recommendations to SMRT • Assist with development of recovery plan
Undermanager	• Ensure required monitoring frequency as set is being completed	As per Code Green plus: • Record status on TARP board • Acknowledge action plan as communicated by ERZ Controller and assist with resource deployment as required • Ensure required monitoring frequency as set is being completed • TARP trigger to be included in Undermanagers end of shift report • Communicate to oncoming Undermanager	As per Code Yellow plus: • Inspect face on shift and confirm TARP status • Notify LW Coordinator and relevant disciplines and update them on TARP status and corrective action plan • Contact ground consolidation personnel to mobilise into LW panel and report to LW ERZ Controller	As per Code Orange plus: • Contact Underground Mine Manager, LW Superintendent and Geotechnical Engineer and update regarding TARP status and conditions • Participate in the SMRT to advise on response plan
CRO	• 2 hourly update report • Monitor, acknowledge and communicate alarms	As per Code Green plus: • Record on control room log book • Notify oncoming CRO of TARP status	As per Code Yellow plus: • Notify staff as per the Process Disruption Escalation Procedure	As per Code Orange
Longwall Superintendent/ Coordinators	• Longwall Coordinator to review Shift Production and ERZ Controller statutory reports • Trade coordinators to review shiftly trade report and take corrective action as required	As per Code Green plus: • Inspect the Longwall face as soon as practical and confirm TARP status • Arrange assistance for the corrective action plan	As per Code Yellow plus: • Hold team briefing and provide instruction to the oncoming crew • Communicate corrective action plan to Operations Manager	As per Code Orange plus: • Participate in SMRT meetings

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		• Review and monitor effectiveness of the corrective action plan. • Communicate impacts of correction plan on other stakeholders • Trade coordinators to assist with corrective action plan as required • Longwall Coordinator to liaise with relevant stakeholders regarding required assistance	• Confirm ground consolidation personnel have been mobilised	
Operation Manager	• Provide support as required	As per Code Green plus: • Consider TARPS for mine planning commitment meeting	As per Code Yellow plus: • Review planned stoppages based on current conditions and communicate changes to relevant stakeholders	As per Code Orange plus: • Participate in SMRT
Mine Manager	• Review ERZ Controller statutory reports	As per Code Green	As per Code Yellow	As per Code Orange plus: • Initiate SMRT to issue management plan for corrective action • Inspect area as soon as practical
TARP Level Authority	**Authority To Change Up Levels** • ERZ Controller/Undermanager	**Authority To Change Up Levels** • ERZ Controller/Undermanager • LW Superintendent **Authority To Change Down Levels** • ERZ Controller in consultation with Undermanager	**Authority To Change Up Levels** • ERZ Controller/Undermanager • LW Superintendent **Authority To Change Down Levels** • ERZ Controller in consultation with Undermanager, Longwall Superintendent, and Geotechnical Engineer	**Authority To Change Down Levels** • UMM in consultation with the SMRT

Acknowledgement

Position	Name	Signature	Date
Underground Mine Manager	Wouter Niehaus	[redacted]	1/4/2020
Manager (department)	Rob Nowell		1/4/2020.
SHE Manager	Kate Bachmann		2.4.2020
EEM or MEM (if applicable)			

Authorisation

Position	Name	Signature	Date
Site Senior Executive (SSE)	Trent Griffiths	[redacted]	3/4/2020