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**Kaius Resources**

**Principal Hazard Management Plan - Traffic**

Reference: PHMP-001

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# Purpose

This Plan outlines the procedures for managing principal hazards associated with movement and interaction of vehicles and plant at the Saint Elmo project. It addresses the requirements of the Multicom Safety & Health Management System which has been established to manage risk to an acceptable level and in accordance with all relevant legislation

The plan achieves these objectives by ensuring that all known principal hazards related to movement and interaction of vehicles and plant on site have been identified and analysed. It also documents the methods of managing and treating this principal hazard at the Multicom Resources.

# Scope

The Principal Hazard Management Plan is a hazard at a mine with the potential to cause multiple fatalities, and that this plan shall:

1. Identify, analyse and assess risk associated with principal hazards, and
2. Include standard operating procedures and other measures to control risk.

This Plan applies to all personnel employed at Multicom Resources in any capacity, and forms part of the Safety and Health Management System. It should be read in conjunction with the site emergency and response plan as well as the mine traffic rules standard operating procedure.

The Plan has as a basis a facilitated ‘whole mine’ risk review involving a cross section of mine workers.

# Responsibilities

The Site Senior Executive (SSE) will ensure sufficient resources are available to implement the risk controls and manage risks. All employees are responsible for being the eyes and ears of the mining operation and for initiating the appropriate TARP actions in response to the triggers detailed in this Plan.

Applying the content of this plan is crucial to achieving the Plan’s objective. To ensure the effectiveness of the plan, all mine workers at the Saint Elmo shall understand their respective positions and inherent responsibilities in the positions.

**Site Senior Executive (SSE)**

The overall accountability for the implementation, communication, operation and auditing of the Principal Hazard Management Plan resides with the Site Senior Executive (SSE). The obligations and/or requirements of the SSE are provided by Sections 39, of the MQSHA.

This plan does not remove or diminish any responsibility from any person under the Mining and Quarrying Safety and Health Act 1999 and Regulations 2017.

**Supervisor**

The Supervisor is required to:

* During the daily inspection of the surface mine activities, identify potential interaction of vehicles and plant.
* Rectify identified hazards or take necessary action in order to prevent exposure to the hazard(s).
* Withdraw personnel and restrict access to areas of unacceptable risk.
* Ensure all work undertaken within their area of responsibility is conducted in accordance with the requirements of this plan.
* Monitor compliance with this plan.
* Convey identified hazards and changes to the oncoming Supervisor and to the crews at the pre-start prior to them commencing work or as deemed necessary during operations, and
* Complete an inspection report each shift and display a copy of this report in a prominent location, accessible to all personnel.

**Other Persons**

All other persons have responsibilities and obligations under the Mining and Quarrying Safety and Health Act 1999 and the Mining and Quarrying Safety and Health Regulations 2017, and they shall comply with the requirements of this procedure.

# Definitions and Abbreviations

|  |  |
| --- | --- |
| BOM | Bureau of Meteorology |
| MQSHA | Mining and Quarrying Safety and Health Act (1999) |
| MQSHR | Mining and Quarrying Safety and Health Regulation (2017) |
| Competent Person | A person who has the necessary training, skills and capability to carry out the task |
| Supervisor | Appointed mine worker |
| Principal Hazard | Identified hazard at a mine with the potential to cause multiple fatalities. |
| PHMP | Principal Hazard Management Plan |
| SOP | Standard Operating Procedure |
| SSE | Site Senior Executive |
| TARP | Trigger Action Response Plan |

# Key Hazards

Principal hazard events associated with movement and interaction of vehicles, identified by way of risk assessment are as follows:

**Vehicle Operation and Movement**

* Poor road conditions
* Poor road design
* Less than adequate signage
* Un-authorised operations of vehicles and mobile equipment
* Operator unfamiliar with site roads/layout
* Communications
* Vehicle congestion on active mining circuits
* Loss of control from limited traction
* Loss of control due to fatigue
* Mechanical failure
* Operator becoming distracted, and
* Vehicle passing another vehicle.

# Process

Effective management of principal hazards associated with the movement and interaction of vehicles and plant shall be achieved by determining both pre-set trigger levels and corresponding actions via a TARP system. The implementation of SOP provides a framework to achieve this objective.

The Trigger Action Response Plan outlines the trigger points and/or events which necessitate specific actions to be taken. These can be found in Appendix 1.

The ongoing application and effectiveness of this Plan shall be monitored via the following procedures:

* Conduct inspections of the active mining areas and access roads to and from identifying conditions, interaction and suitability, SOP 17 Check and examine work areas.
* Review road layout and design in accordance to STD-013 Road Design and Construction.
* SOP 028 Mine Traffic Rules
* SOP 029 Radio Communication
* MOP 42 Fatigue
* SOP 26 Hot Seating

# Training

Training in the Multicom Resources, Principal Hazard Management Plan (PHMP) shall be provided for all mine workers.

The training and material will provide an overview of obligations and responsibilities associated with the PHMP as well as the need to comply with all components of the plan and supporting procedures and documentation.

The importance of adhering to this procedure shall be continually reinforced during training sessions and knowledge will be verified using competency-based assessments.

The PHMP shall be communicated every 12 months as a component of refresher training to ensure an ongoing understanding of the Principal Hazards.

Where significant changes occur to the PHMP, then these will be incorporated into the training and communication package and communicated to all affected persons via their employers.

The PHMP shall be communicated to all mine workers via site inductions and site induction refresher trainings.

All persons who employ persons at the mine whose work is affected by this plan shall be provided with a copy of the PHMP.

# Quality Control and Quality Assurance

Unless otherwise triggered via a significant incident, procedure change, legislative change or other event, this plan, associated SOPs and risk assessments shall be reviewed at least once every three years.

The PHMP shall be audited during compliance audits and when any external safety audits are held.

Reviews shall include previous audit findings and results of any previous non-conformances.

Audits and reviews shall focus on continuous improvement in the areas of risk management, hazard awareness, behaviour, health and overall mine site safety standards.

# References

## Attachments

Appendix 01 – Traffic TARP

**APPENDIX A: TRAFFIC - TRIGGER ACTION RESPONSE PLAN**

| **TARP Conditions** | **GREEN**  **Normal**  **Vehicle Movements – no restrictions** | **AMBER**  **Vehicle Movements Partially Restricted – access only authorised by Supervisor** | **RED**  **Vehicle Movements Highly Restricted – access only authorised by Supervisor** |
| --- | --- | --- | --- |
| Wet Weather | Weather conditions fine | Trigger: Intermittent rain or seasonal storms.  Mine workers shall:   * Reduce speed to suit road conditions. * Not operate Heavy Vehicles on Haul Roads unless authorised by the Supervisor. * Light Vehicles shall engage 4WD.   Supervisor shall:   * Communicate to all mine workers about the Amber status and Change Mine Entrance Signage. * Supervisor to include status change in the Supervisor Report. * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts. * Ensure all Pumps and Lighting Plants are in a safe position or organise for the equipment to be moved to a safe area, and * Familiarise and refer to “Extreme Weather” TARP. | Trigger: Continued rain affecting the road surface.  Mine workers shall:   * Not operate any mobile equipment. * Supervisor shall: * Communicate to all mine workers about the RED status, ceasing site vehicle movements, and change Mine Entrance Signage. * Arrange for affected mine roads to be cordoned off or barricaded and signage erected. * Supervisor to include status change in the Supervisor Report. * Check bureau of meteorology (BOM) site for weather conditions and forecasts. * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts. * Notify SSE of the RED status, and * Implement “Extreme Weather” TARP. |
| Dust (Visibility) | Dust not affecting visibility | Trigger: Dust partially affecting visibility (more than two times usual vehicle stopping distance) approximately 170m.  Mine workers shall:   * Notify water truck operator to arrange dust suppression. * Notify other road users, and Supervisor of the dust hazard. * Operate to road and visibility conditions, and * Monitor conditions.   Water Truck Operator shall:   * Respond to operators or Supervisors requests, and * Apply water as per SOP-037 Maintaining and Watering Mine Roads.   Supervisor shall:   * Arrange water truck to water the affected road (where required). * Communicate to all mine workers about the Amber status. * Supervisor to include status change in the Supervisor Report, and * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts. | Trigger: Dust affecting visibility of all traffic (cannot see oncoming traffic).  Mine workers shall:   * Not operate any mobile equipment.   Supervisor shall:   * Communicate to all mine workers about the RED status, ceasing site vehicle movements in affected areas. * Determine when affected mine roads are safe to be returned to Amber Status. * Arrange for affected mine roads to be cordoned off or barricaded and signage erected. * Supervisor to include status change in the Supervisor Report. * Hand over details of road conditions to oncoming Supervisor and Supervisor for inclusion in pre-starts, and * Notify SSE of the RED status. |
| Rain/Fog (Visibility) | Rain/fog not affecting visibility | Trigger: Rain/fog partially affecting visibility (more than two times usual vehicle stopping distance) approximately 170m.  Mine workers shall:   * Notify Supervisor or SUPERVISOR, and * Operate to road and visibility conditions.   SUPERVISOR/Supervisor shall:   * Communicate to all mine workers about the Amber status. * Determine when conditions are back to GREEN. * Supervisor to include status change in the Supervisor Report, and * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts. | Trigger: Rain/fog fully affecting visibility (cannot see oncoming traffic).  Mine workers shall:   * Notify other road users and Supervisor when visibility is impeded, and * Cease operating equipment, park in safe location.   Supervisor shall:   * Communicate to all mine workers about the RED status, ceasing site vehicle movements in affected parts of the mine. * Supervisor to include status change in the Supervisor Report, and * Check bureau of meteorology (BOM) site for weather conditions and forecasts. * Determine when conditions are back to AMBER. * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts, and * Notify SSE of the RED status. |
| Lighting (Visibility) | Clear visibility | Trigger: Visibility reduced to 200m from area and vehicle lights.   * Supervisor inspection, and * Lighting plant in place. | Trigger: Visibility under 150m from area and vehicle lights.   * Inadequate lighting * No lighting plants available, and * Operator not confident to operate machine when lighting is inadequate. |
| Two-Way Radio Communication Impeded | Two-way radio communications fully operational | Trigger: Two-way radio communications impeded due to black spots.  Mine workers shall:   * Report any black spots in two-way radio communication to the Supervisor.   Supervisor shall:   * Seek feedback from operators regarding potential black- spot. * Stop circuit operations and advise personnel of black spot. * Investigate and rectify black spot if possible and change the two way to another frequency. * Monitor two-way radio communication. * Report any black spots in two-way radio communication to the Superintendent. * Hand over details of two-way radio communication to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to GREEN. | Trigger: Two-way radio communications not operational.  Mine workers shall:   * Not operate any mobile equipment if two-way radio communications are not operational.   Supervisor shall:   * Communicate to all mine workers the RED status, ceasing site vehicle movements in affected areas. * Supervisor to include status change in the Supervisor Report. * Determine when conditions are back to AMBER. * Hand over details of the outage to the oncoming Supervisor for inclusion in pre-starts, and * Notify SSE of the RED status. |
| Road Surface condition’s | Road surface in good condition | Trigger: Deterioration of road surface not expected to affect vehicle control.  Mine workers shall:   * Arrange for grader/dozer to carry out road repairs. * Notify Supervisor of changed road conditions if repairs cannot be completed, and * Operate to the road conditions.   Supervisor shall:   * If repairs cannot be completed immediately communicate to all mine workers, the Amber Status and erect localized signage if required. * If required, arrange for road works to commence on the affected road, and * Hand over details of road surface conditions to oncoming Supervisor for inclusion in pre-starts. | Trigger: Significant road surface deterioration expected to affect vehicle control (large potholes, significant corrugations, boggy conditions).  Mine workers shall:   * Do not operate mobile equipment on that area of the mine.   Supervisor shall:   * Communicate to all mine workers about the RED status, ceasing site vehicle movements in affected areas. * Arrange for the affected road to be cordoned off or barricaded and signage erected as required. * Arrange for road works to commence on the affected road when weather permits. * Notify SSE of the RED status if status is unlikely to change. * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to AMBER. |
| Road Blockage | No blockage (including grader clean-up) | Trigger: Mine road partially blocked e.g. breakdown, minor road works.  Mine workers shall:   * Notify other road users, Supervisor of any partial road blockage.   Supervisor shall:   * Communicate to all mine workers about the Amber Status and erect localised signage if required. * Arrange for blockage to be cleared. * Hand over details of the road blockages to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to GREEN. | Trigger: Road fully blocked e.g. full road construction.  Mine workers shall:   * Notify other road users, Supervisor of any road blockage.   Supervisor shall:   * Communicate to all mine workers about the RED status, ceasing site vehicle movements in affected areas. * Arrange for the affected road to be cordoned off or barricaded and signage erected as required. * Arrange for blockage removal on the affected road. * Notify SSE of the RED status if status is unlikely to change. * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to AMBER. |
| Road Watering | Road surface not slippery | Trigger: Watering of mine roads.  Mine workers shall:   * Notify other road users if road is slippery, and * Reduce speed to suit road conditions. | Trigger: Over watering of mine roads creating slippery surface.  Mine workers shall:   * Notify other road users, and Supervisor in the affected area, and * Reduce speed to suit road conditions.   Supervisor shall:   * Communicate to all mine workers about the RED status, and to monitor affected areas. * Communicate to water truck operator to cease watering the road or reassess water spray application. * Arrange for road works to commence on the affected road if required. * Notify Superintendent of the RED status. * Hand over details of road conditions to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to GREEN. |
| Out Of Specification Road Design and Construction.  Refer to STD-013 Road Design and Construction. | Road surface to be 3.5 times the width of the largest vehicle travelling on the road and ramp gradient shall not exceed 10%. | Trigger: Road width under 3.5 times the width of the largest vehicle travelling on the road or the ramp gradient greater than 10%.  Mine workers shall:   * Apply risk management processors (Take 5). * Comply with controls in JSEA in place to manage road changes, and * Comply with correct signage in place to manage traffic interaction.   Supervisor shall:   * Ensure a JSEA is in place with controls to manage the risk. * Communicate to all mine workers about the Amber Status and erect localised signage if required. * Where practicable arrange for the ramp regrade or road widening. * Hand over details of the road and ramp to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to GREEN. | Trigger: Road width under 2 times the width of the largest vehicle travelling on the road or the ramp gradient is greater than 12%.  Mine workers shall:   * Not operate heavy equipment unless authorised by the Supervisor.   Supervisor shall:   * Conduct a Risk Assessment to determine if the risk is acceptable. * Communicate to all mine workers about the RED Status and erect localised signage if required. * Where practicable arrange for the ramp regrade or road widening. * Hand over details of the road or ramp to oncoming Supervisor for inclusion in pre-starts, and * Determine when conditions are back to AMBER. |