

AUDIT ON PREVENTATIVE MEASURES AGAINST HIGH RISKS AND LEGAL COMPLIANCE

COMPONENT: TRACKLESS MOBILE MACHINES (TMM's)

MINE: _____

SCORE: 1 = Compliance
0 = Non-Compliance

INSPECTOR: _____

DATE: _____

ITEM	SCORE	REMARKS
<p>1. SAFE USE</p> <ul style="list-style-type: none">• Is the use of the TMM and accompanying equipment within its design capacity as described in a standard.		
<p>2. BRAKES</p> <ul style="list-style-type: none">• Is a service braking system provided on TMM's which require brakes.• Is the parking brake adequate to prevent inadvertent movement of the TMM.• Is the emergency brake adequate to prevent the TMM from running out of control.• Is the system fail to safe when a combined system is used.• Are brake specifications considered in the use and testing of brakes.		
<p>3. PROTECTION OF OPERATOR AND PASSENGER</p> <ul style="list-style-type: none">• Are persons protected from falling objects when necessary.• Is roll over protection provided where necessary.• Is roll over and falling object protection designed according to acceptable standards.• Are seat belts provided and the use enforced when an operator cab is provided.		

<p>4. INADVERTENT MOVEMENT</p> <p>Are devices and procedures in place to prevent the TMM from:</p> <ul style="list-style-type: none"> • Inadvertently moving (chocks, stop-blocks etc.) inadvertently running out of control or being set in motion by an unauthorised person (lock-out). 		
<p>5. SAFE BOARDING / ALIGHTING</p> <p>Are TMM's designed and procedures provided to ensure safe:</p> <ul style="list-style-type: none"> • Boarding and alighting. • Access into and exit from machines. 		
<p>6. DESIGN AND OPERATION OF TOW-BARS AND COUPLING DEVICES</p> <ul style="list-style-type: none"> • Is the design of tow-bars and coupling devices adequate (inadvertent de-coupling prevented). • Are procedures provided for safe coupling, towing/pushing and de-coupling of equipment by TMM's. • Is the combined braking effort of towing vehicle and towed vehicle calculated and adequate for the total mass. 		
<p>7. LIGHTS FITTED TO TMM's</p> <p>Is the following criteria considered in the procedure for lights on TMM's:</p> <ul style="list-style-type: none"> • Light intensity, type, numbers, size, spread and range of light beam. • The distinction between front-, rear- and side lights including colour coding. • Positioning of lights to indicate width of TMM's. • Installation and adjustment of lights. • The use of reflectors. • Glare, reflection and diffusion of lights. • Procedure in case of a luminaire or lamp failure. • Cleaning and maintenance of lights or lamps. • The use of adjustable lights that would illuminate places critical to safe operations. 		

<ul style="list-style-type: none"> • Measurements and inspection of lighting equipment. (Is a minimum standard set). 		
<p>8. OPERATORS VISION</p> <p>Are constraints to the operator's vision identified and noted on plans and operating procedures adapted accordingly?</p>		
<p>9. REMOTE CONTROLLED TMM's</p> <p>Are the following conditions considered in a procedure for remote controlled TMM's?</p> <ul style="list-style-type: none"> • Identification of remote controllers and allocation to specific TMM's. • Ensurance that only one remote controller per TMM is in use. • Secure storage of remote controllers not in use. • Warning signs indicating the use of remote controllers on TMM's. • Use of a TMM only within the operator's sight (including sight via a camera and video screen). • Safe operator and pedestrian position. • Change over from remote to manual control. 		
<p>10. MAINTENANCE</p> <p>Are the following aspects considered in the maintenance programme for TMM's and the workers which may be involved trained accordingly?</p> <ul style="list-style-type: none"> • Scheduling of maintenance, inspections and over inspections. • The use of pre-use checklists to identify components critical for the safe operation of the type of TMM and keeping of such records for at least 3 months. • The conditions under which TMM's should not be used e.g. "Go", "Go but" or "No Go" options. • Procedures for changing wheels. • Procedures for changing, inflating and repairing of tyres. • Procedures for any repairs that could endanger persons. To ensure safe maintenance, are manufacturer's repair manuals consulted. 		

<ul style="list-style-type: none"> • The adequate support of a TMM or any of its components which may inadvertently fall on persons. • Battery changing procedures on battery powered TMM's where applicable. • Control and safety systems to be maintained for battery charging bays. • Constructed of non-flammable material impervious floors. • Provided with adequate fire extinguishers. • Spillage of electrolyte minimised. • Provided with water for emergency use (shower etc.) • No smoking signs. • Ventilated sufficiently. • Explosion protected equipment used or ventilation interlocked. • Are other items such as rigging, welding, exposure to toxic liquids or fumes, dust, fire fighting, fuel handling, roadways, emergency preparedness and the use of hazardous substances associated with operation and maintenance addressed in maintenance procedures. • Is there a distinction between maintenance work in established workbays, or workshops and controlled environment in the field or at the face 		
<p>11. HEALTH AND SAFETY DEVICES</p> <p>Are health and safety devices applicable to each type of TMM specified and described?</p> <p>Do health and safety devices at least include the following:</p> <ul style="list-style-type: none"> • Safety devices to negate unexpected incapacitation of the operator / driver. • Vibration control device. • The design, control and maintenance of noise control devices to which the operator/driver and persons in the immediate environment are exposed to. • Provision of effective devices to warn persons working on travelling in close proximity of the TMM when the vision of the operator/driver is restricted in any direction of travel. 		

<p>12. Are the following aspects considered with the authorization of TMM operators/drivers?</p> <ul style="list-style-type: none"> • Procedures and criteria to recruit/select, educate, train and appoint competent persons to operate or drive TMM's. • Awareness education and training in terms of the interaction with TMM's, for persons working or travelling in close proximity to the machine, in compliance with section 10(3) of the Mine Health and Safety Act, 1996. • Keeping of records relating to persons referred to in the two above clauses. • Procedures for the written appointment/licencing of competent persons to operate/drive TMM's under prevailing site specific conditions. • Record of written acknowledgement and acceptance of such appointment and permission (licence) to drive / to operate a specific type of TMM. • A system that will ensure that TMM's are only operated / driven by competent, licenced persons. 		
<p>13. DESIGN OF EXCAVATIONS AND ROADWAYS</p> <p>Are the following aspects considered with the design of excavations and roadways?</p> <ul style="list-style-type: none"> • Calculations relating to power, brakes, deceleration, holding, skidding, surface friction, incline angle and number of persons potentially exposed to possible hazards. • Safe height, width and turning circle clearances. • Identification and marking of dangerous areas, obstructions or restricted clearance. 		
<p>14. INCLINED APPLICATIONS</p> <p>Are the following aspects considered where TMM's are used at inclined applications?</p> <ul style="list-style-type: none"> • The devices and procedures in place to render safe the TMM's used on any inclined application. <p>Devices: - Adequate service brakes. - Emergency brakes. - Other safety devices.</p> <p>Procedure: - Testing of braking systems. - Procedure with brake failure. - Procedure for stopping selecting gears etc.</p>		

<ul style="list-style-type: none"> • The devices and procedures in place to render safe any incline where TMM's are used. <p>Devices: - Roadsigns. - Use of kamps etc. - Emergency run off areas. - Sand traps.</p> <p>Procedure: - Steer towards run-off. - Lower bucket etc.</p>		
<p>15. OPERATING RULES</p> <p>Are the following aspects considered with the operating of TMM's?</p> <ul style="list-style-type: none"> • Safe start-up, operation, parking and shutdown procedures. • Traffic rules and road signs, including amongst others speed, authority to move, right of way and restricted entry with regard to dangerous areas, obstructions or restricted clearances where persons are exposed to significant risks. • General safety rules relating to the interaction between pedestrians, cyclists and TMM's. • Any other operational procedures, rules and methods related to TMM's affecting the health and safety of persons. • The methods to be used for the safe loading, transport and unloading of persons, equipment, material, mineral and explosives on or from TMM's. <p>Are the following aspects addressed with the transport of persons:</p> <ul style="list-style-type: none"> • Adequate seating and design. • Clearance adequate to roof / hanging wall. • Person responsible for loading. • Materials (light articles) to be transported with persons. 		
<p>16. RAISING/LOWERING, SUSPENSION AND TRANSPORTATION OF PERSONS</p> <p>Rules for the use of TMM's for the raising, lowering, transportation or suspension of persons including equipment used where persons may be exposed to significant risk and in emergency situations.</p>		

<p>Are the following addressed where persons are raised:</p> <ul style="list-style-type: none"> • Adequate design of equipment. • Protection against overwinding. • Signaling systems. • Stabilising of the cage. • Use of safety harnesses. • Accidental lowering of persons. • Safeguarding against travelling in raised position. • Special inspection of equipment by competent person. 		
<p>17. ILLUMINATION OF TRANSPORT ENVIRONMENT</p> <p>Are the following aspects considered when providing illumination for the general area where transport of persons, material, mineral or explosives takes place?</p> <ul style="list-style-type: none"> • Positioning and placing of lights. • Intensity and dispersion of light. (Is a minimum levels set). • Reflectivity of the surrounding area. • Steps to be taken in case of illumination failure. 		
<p>18. VISIBILITY OF TMM's AND PERSONS</p> <p>Does the procedure regarding the visibility of TMM's and persons at least include the following?</p> <ul style="list-style-type: none"> • The placing of signs to warn against the presence of parked, stationary and broken down TMM's that are poorly visible. <ul style="list-style-type: none"> - Is a minimum standrad set (tri-angles). - Is a safe distance established. • The visibility and safety of pedestrians, cyclists or other workers exposed to significant risk associated with restricted clearance. • The visibility of persons travelling or working in the proximity of TMM's and the standards thereof. <ul style="list-style-type: none"> - Is the minimum reflective clothing to be worn described. - Is the circumstances under which it must be 		

<p>worn described.</p> <ul style="list-style-type: none"> • Timeous warning systems where people are required to work in haulages where TMM's are operated/driven. <ul style="list-style-type: none"> - Is the standard of signs or other warning system to be used described. • Dust control so as not to impair visibility or affect the health and safety of persons. 		
<p>19. WARNING DEVICES AND SIGNALS</p> <p>Is there a proper risk assessment done on noise, visibility and other risks before the following aspects were considered?</p> <ul style="list-style-type: none"> • The types of warning devices and signals such as pre-start and tramming devices. • Visual and audible signals including the codes of signals for communication. 		
<p>20. PERSONAL PROTECTIVE EQUIPMENT</p> <p>Procedure on issue, use and control of personal protective equipment pertaining to TMM's.</p>		