

BASELINE WRAC

| Ref no. | Business Area | Process / Activity | Hazard / Risk Source Classification | Hazard / Risk Source Description | Description of Unwanted Event | Functional Ownership | Current Controls | Likelihood of the Event (given current controls) | Consequence (should the event happen) | | | | | | | Max Risk Rank | Major Risk (Y, N) | Priority Unwanted Event (Y, N) | Possible Improvements or Additional Controls |
|---------|---------------|--------------------|-------------------------------------|----------------------------------|--|----------------------|---|--|---------------------------------------|--------|--------|--------|---------|--------|--------|---------------|-------------------|--------------------------------|---|
| | | | | | | | | | (S) | (H) | (E) | (C) | (L & R) | (M) | (R) | | | | |
| 1 | MA1 3 plant | Storage | Explosives | Detonators-All Types | Accidental Detonation (Heat, Friction, Ignition, Static (lightning)) | Mining | SOP (and contraband box), No vegetation within 15m, Insulated container. Lined with wood as per CIE requirements | 2: Unlikely | 3: Mod | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 9 (M) | No | No | |
| | MA1 3 plant | Storage | Explosives | Detonators-All Types | Insufficient ventilation causes respiratory illness/ injury related to respiratory | Mining | Ventilation (enough ventilation - design) | 1: Rare | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 3 (L) | | No | |
| | MA1 3 plant | Storage | Explosives | Detonators-All Types | Accidental Detonation due to adverse weather conditions (Heat, Friction, Ignition, Static (lightning)) | Mining | Magazine weather proffed to withstand local conditions | 1: Rare | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 10 (M) | | Yes | Magazine has lightning conductors that prevent lightning strikes. |
| | MA1 3 plant | Storage | Explosives | Detonators-All Types | Accidental Detonation due to adverse weather conditions - electrical storms (Heat, Friction, Ignition, Static (lightning)) | Mining | Weather monitoring and warning communication (Electrical storms) | 1: Rare | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 10 (M) | | Yes | The lightning conductor serves as a preventative measure. Weather monitoring may not be necessary. |
| | MA1 3 plant | Storage | Explosives | Detonators-All Types | Accidental Detonation due to adverse weather conditions - electrical storms (Heat, Friction, Ignition, Static (lightning)) | Mining | Lightning protecion (lightning conductors and catenary wires- here required by regulation or risk assessment the air terminal network shall be installed to local standard. In the absence of a local standard a 20m rolling sphere shall be applied. Earthing according to the standard applied (regional) | 1: Rare | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 10 (M) | | Yes | Explosives magazines not to be accessed during thunder. |
| | MA1 3 plant | Storage | Explosives | Detonators-All Types | Accidental Detonation due to hot work | Mining | 1. Hot work permit (Class 1 Magazine) (- Magazine to be emptied of all explosives prior to any work being undertaken. - Removed explosives to be secured at all times - All work to be conducted under the direct supervision of an authorised person (Magazine keeper / Blaster/Shotfirer). - Magazine lining to be removed in area affected by hot work. - Authorised person shall confirm all temperatures are at ambient prior to re-installation of magazine lining and restocking of magazine.) | 1: Rare | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 10 (M) | | Yes | Explosive act prevents hot work within 15m of magazine. If hot work to be done, explosives will be removed. |

| | | | | | | | Consequence (should the event happen) | | | | | | | | | | | | | |
|-------------|---------|------------|---------------------------------|--|--------|---|---------------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|----|--|---|--|--|
| MA1 3 plant | Storage | Explosives | Detonators-All Types | Accidental Detonation, fire at magazine | Mining | Emergency response plan Emergency response plan testing | 1: Rare | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 10 (M) | | Yes | | | |
| | Storage | Explosives | Detonators-All Types | Unauthorised Access | Mining | SABS Rated Safe door & Key control. Double locks on container. No entry signage. | 2: Unlikely | 2: Min | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 5 (L) | No | No | | | |
| | Storage | Explosives | Detonators-All Types | Unsupervised Access | Mining | Personnel trained and competency assessed. | 2: Unlikely | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 14 (S) | | Yes | Only authorized personnel can access the magazine. Geofence in use to determine who has been to the magazines for monitoring. | | |
| | Storage | Explosives | Detonators-All Types | Unsupervised Access | Mining | Register of Authorised Persons (having unsupervised access) | 2: Unlikely | 4: High | 1: Ins | 1: Ins | 1: Ins | 2: Min | 1: Ins | 2: Min | 14 (S) | | Yes | Magazine keys are kept in safe and only accessed by authorized personnel. | | |
| | Storage | Explosives | Detonators-All Types | Damage to Container | Mining | SABS Rated Safe door & Key control. Double locks on container. No entry signage. | 2: Unlikely | 2: Min | 2: Min | | 1: Ins | 2: Min | 1: Ins | 5 (L) | No | No | Boom Gate to be installed at the magazine entrance and exit road | | | |
| | Storage | Explosives | Detonators-All Types | Theft | Mining | Magazine master has the keys in his possession 24/7. SABS Rated Safe door & Key control. Double locks on container. No entry signage. | 2: Unlikely | 2: Min | | | 1: Ins | 2: Min | 2: Min | 1: Ins | 5 (L) | No | No | | | |
| | Storage | Explosives | Detonators-All Types | Over Stocking of Material | Mining | NEQ specification permit. Register. | 1: Rare | 1: Ins | 1: Ins | | 1: Ins | 2: Min | 2: Min | 1: Ins | 3 (L) | No | No | order placed for 150 cases only | | |
| | Storage | Explosives | Detonators-All Types | Contraband Items | Mining | Contraband box installed | 2: Unlikely | 2: Min | 2: Min | | 1: Ins | 2: Min | 2: Min | 1: Ins | 5 (L) | No | No | | | |
| | Storage | Explosives | Detonators-All Types | Poor Stock Control | Mining | Magazine register. Trained Magazine Master and monthly stock take. | 1: Rare | 2: Min | 1: Ins | | 1: Ins | 2: Min | 2: Min | 1: Ins | 3 (L) | No | No | | | |
| | Storage | Explosives | Detonators-All Types | Unfit for purpose explosives, unplanned detonation | Mining | Register of approved explosives suppliers and related products and services | 1: Rare | 2: Min | 1: Ins | | 1: Ins | 2: Min | 2: Min | 1: Ins | 3 (L) | | No | | | |
| | Storage | Explosives | Detonators-All Types | Unfit for purpose explosives, unplanned detonation | Mining | New products or technologies are subject to level 1 risk assessment (WRAC) prior to inclusion in the register. | 1: Rare | 2: Min | 1: Ins | | 1: Ins | 2: Min | 2: Min | 1: Ins | 3 (L) | | No | | | |
| | Storage | Explosives | Burning of used explosive boxes | Unplanned Detonation | Mining | Separation of detonators prior to burning. Designated burning area. | 1: Rare | 2: Min | 1: Ins | | 1: Ins | 2: Min | 2: Min | 1: Ins | 3 (L) | | No | | | |
| | Storage | Explosives | Detonators-All Types | Unplanned Detonation | Mining | Separation of mobile equipment and impact sensitive explosives by minimum defined distance. | 3: Possible | 4: High | 1: Ins | | 1: Ins | 2: Min | 2: Min | 1: Ins | 18 (S) | | Yes | Explosives act provides 15m distance from mobile equipment to any other equipment. | | |

| | | | | | | | Consequence (should the event happen) | | | | | | | | | | |
|--|--|------------------------------|--------------------------|---------------------------------|--|--------|--|-------------|---------|--------|--------|--------|--------|--------|--------|-----|---|
| | | Storage | Explosives | Detonators-All Types | Unplanned Detonation | Mining | Control/management of ignition sources around explosives 1. All persons with access are trained in requirements to control sources of ignition 2. All incidents related to ignition sources are reported and investigated (isometric) 3. Maintenance on storage facility and explosive equipment are decontaminated | 2: Unlikely | 4: High | 1: Ins | 1: Ins | 2: Min | 2: Min | 1: Ins | 14 (S) | Yes | No contraband item is allowed in the magazines. |
| | | Storage | Explosives | Detonators-All Types | Unplanned Detonation | Mining | limit Net Explosive Quantity (NEQ) and segregate incompatible explosives in storage and transport.Planned inspection and maintenance of explosive conveyance checks | 2: Unlikely | 4: High | | 1: Ins | 1: Ins | | | 14 (S) | Yes | Magazine license stipulates the stacking height and quantities that must be loaded in magazine. |
| | | Storage | Explosives | Detonators-All Types | Unplanned Detonation from nearby environment and surrounding activities | Mining | 1. Explosive storage comply to legeslative requirements 2. Safe distance design and construction (surrounding activities and traffic management) 3. Traffic Management Plan | 2: Unlikely | 2: Min | | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |
| | | Storage | Explosives | Detonators-All Types | Unplanned Detonation from nearby environment and surrounding activities | Mining | 1. Signage 2. Limit to maximum storgae 3. Maintenance and emmergency/ response equipment | 2: Unlikely | 2: Min | | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |
| | | Storage | Explosives | Detonators-All Types | Unplanned Detonation from nearby environment and surrounding activities | Mining | Segregation of products as per legeslative compatibility group | 2: Unlikely | 2: Min | | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |
| | | Storage | Explosives | Detonators-All Types | Unplanned Detonation from nearby environment and surrounding activities | Mining | 1. Stock rotation process to prevent out of date stock 2. Out of date stock only stored until it can be appropriately disposed. 3. Appropriate disposal of waste procedure | 2: Unlikely | 2: Min | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |
| | | Storage | Explosives | Detonators-All Types | Polution (Land, Air, Water) | Mining | Container sealed as per requirement, Floor is cemented, High viscosity, packaged in boxes. | 2: Unlikely | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 2 (L) | No | |
| | | Storage | Climatic/ Natural Events | Detonators-All Types | Heavy rain damages boxes | Mining | Drainage pipes. | 2: Unlikely | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 2 (L) | No | |
| | | Storage | Ergonomics | Detonators-All Types | Injury due to falling box | Mining | PPE, SOP, PTO, Stacking height, Explosive act | 3: Possible | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 8 (M) | No | |
| | | Storage | Ergonomics | Detonators-All Types | Lifting related injury | Mining | PPE, SOP, PTO, Stacking height, Explosive act | 3: Possible | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 8 (M) | No | |
| | | Explosive authorized vehicle | Mechanical (Mobile) | Vehicle | Collision (machine, People) | Mining | Boom gate, AVL, Traffic management plan | 2: Unlikely | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |
| | | Explosive authorized vehicle | Mechanical (Mobile) | Vehicle | unplanned detonation in explosives conveyance vehicle | Mining | Conforms to requirements for vehicles carrying calss 1 explosives | 2: Unlikely | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |
| | | Emergency Event | Other | Major Event/ Emergency Disaster | Failure to handle Major Event/ Disaster that can result loss in life/ production | Mining | 1. Alarm system/ Communication 2. Emergency drills 3. Training of personnel on safety 4. TRP | 3: Possible | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 8 (M) | No | |
| | | Emergency Event | Other | Major Event/ Emergency Disaster | incidents involving explosives | Mining | Emergency response plan Emergency response plan testing | 3: Possible | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 8 (M) | No | |
| | | Storage | Mechanical (Mobile) | Mobile equipment | Mobile Equipment interactions/Injury to person/ damage to equipment | Mining | TS 102 001 Surface Traffic Management Technical Standard | 2: Unlikely | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | No | |

| | | | | | | | | Consequence (should the event happen) | | | | | | | | | | |
|--|--|-----------------------|-------|-------|---|--------|--|---------------------------------------|--------|--------|--------|--------|--------|--------|-------|--|----|--|
| | | Storage | Fire | Fire | Fire around storage facility | Mining | TS 402 001 Fire Prevention Technical Standard (As reference) | 2: Unlikely | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | | No | |
| | | Storage | Fire | Fire | Fire Fighting equipment | Mining | TS 402 001 Fire Prevention Technical Standard (As reference) | 2: Unlikely | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 5 (L) | | No | |
| | | Storage | Fire | Fire | Hot work permits for maintenance on explosive contaminated equipment | Mining | TS 402 001 Fire Prevention Technical Standard (As reference) | 1: Rare | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1 (L) | | No | Fire extinguishers are available at the magazine in case of a fire. Personnel are trained in fire fighting. |
| | | Contractor Management | Other | Other | Contractor Injury and/or failure to follow correct procedures | Mining | Contractor Management policy (Namdeb/ group policy) | 3: Possible | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 8 (M) | | No | No hot work allowed within the fenced area of the magazine. Explosives to be removed from magazine if such work is needed. |
| | | Legal | Other | Other | Conform to legal requirements - Mine Infrastructure (surface) plan for explosive storages | Mining | Surface plan | 1: Rare | 2: Min | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 1: Ins | 3 (L) | | No | |