

**How to use:** Work through each section with your safety and fleet management team.

Tick each item once confirmed.

Items marked **MANDATORY** are required for Level 9 compliance under the MHSA and MOSH CPS Blueprint.

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### 1 Fleet & Site Risk Assessment — Complete before system selection

- All vehicles on site documented with make, model, year, and OEM electronic architecture. **MANDATORY**
- High-risk zones identified through incident history, near-miss reports, and site layout review. **MANDATORY**
- Blind spot maps produced for each primary haul truck model on site. **MANDATORY**  
*↳ Haul trucks with stopping distances >50m and blind spots >15m require Level 9 as priority.*
- Pedestrian traffic zones and intersection points with vehicle routes have been mapped. **MANDATORY**
- Night-shift and reduced-visibility risk scenarios have been assessed.
- Underground confined spaces and decline tunnels assessed separately for CAS requirements.  
*↳ Underground operations require 360-degree detection — standard surface CAS is not sufficient.*
- Risk matrix completed assigning each vehicle class a protection level (L7 / L8 / L9). **MANDATORY**

### 2 System Selection & Design — Vehicle-only systems leave pedestrians unprotected

- Primary haul trucks and excavators assigned Level 9 automated intervention. **MANDATORY**
- Secondary fleet vehicles (graders, water trucks, service vehicles) assigned minimum Level 8. **MANDATORY**
- Temporary vehicles, contractors, and visitors assigned Level 7 Visitor Units.
- PTU Pedestrian Detection Tags included for all site personnel — 100% of workers. **MANDATORY**  
*↳ Vehicle-only CAS leaves pedestrians undetected. PTU tags are non-negotiable for MHSA compliance.*
- MI Machine Controller Interface specified for legacy vehicles without OEM CAN bus support. **MANDATORY**
- Underground operations include HaloGuard 360° system and HaloTag cap lamps for all personnel.  
*↳ Required for underground operations under MHSA Section 11.*
- TrackPro fleet management platform included for real-time monitoring and compliance reporting.
- System design achieves 100% fleet coverage with no unprotected vehicle categories. **MANDATORY**

### 3 ISO 21815 & Regulatory Compliance — South African and international certification requirements

- Supplier holds ISO 21815 certification for CAS communication and MCI integration protocols. **MANDATORY**
- Systems are ICASA approved for legal operation on South African frequencies. **MANDATORY**  
*↳ ICASA approval is a legal requirement for all wireless devices operating in South Africa.*
- Chief Inspector of Explosives compliance confirmed for operation in explosive zones. **MANDATORY**
- EMI / EMC compliance certification obtained for all installed units. **MANDATORY**
- MOSH CPS Blueprint alignment confirmed with supplier documentation. **MANDATORY**
- EMESRT framework requirements reviewed and addressed in system design. **MANDATORY**

- IP certification (minimum IP66) confirmed for dust and water ingress protection. **MANDATORY**  
*↳ Mining environments require minimum IP66 for hardware reliability.*
- ISERT certification confirmed for safety, reliability, and performance requirements. **MANDATORY**
- MTEEx certification confirmed for operation in hazardous/explosive atmospheres.  
*↳ Required for underground and blasting-adjacent operations.*
- TRL 4 or higher technology readiness level confirmed for LDV systems.
- Mine Health and Safety Act (Act 29 of 1996) compliance review completed. **MANDATORY**
- MSHA Section 16.7 personnel tracking compliance addressed.

#### 4 Installation & Commissioning — *Protect highest-risk equipment first*

- Phase 1: Primary haul trucks and excavators equipped and commissioned. **MANDATORY**  
*↳ Target: within 30 days of contract. Each machine: 4–8 hours installation time.*
- Phase 2: Secondary fleet (graders, LDVs, water trucks) equipped and commissioned. **MANDATORY**
- Phase 3: Light vehicles, visitor units, and contractor vehicles covered.
- All PTU pedestrian tags distributed and activated for site personnel. **MANDATORY**
- MI Machine Controller Interface correctly wired to braking and throttle systems on all Level 9 vehicles. **MANDATORY**  
*↳ Verify with loaded and unloaded brake test before sign-off.*
- TrackPro control room integration and alert routing configured.
- Detection ranges verified against manufacturer specifications for each vehicle class. **MANDATORY**
- Installation sign-off documentation completed and filed for each machine. **MANDATORY**

#### 5 Testing & Validation — *Test loaded/empty, day/night, wet/dry*

- Detection range tests conducted for each unit — vehicle-to-vehicle and vehicle-to-pedestrian. **MANDATORY**
- Warning escalation sequence tested: visual alert → audio alert → Level 9 intervention. **MANDATORY**
- Automated braking intervention test completed on all Level 9 vehicles (loaded and unloaded). **MANDATORY**  
*↳ Test at operational speed. Document stopping distance results.*
- Night-time and reduced-visibility detection tests completed. **MANDATORY**
- Wet-weather detection performance verified.
- Pedestrian PTU tag detection verified at all configured detection zones. **MANDATORY**
- TrackPro violation logging and alert notifications tested end-to-end.
- Baseline performance metrics documented before full deployment. **MANDATORY**  
*↳ Required as compliance evidence for DMRE and audits.*
- Independent commissioning verification completed by Mine Safe Global technician. **MANDATORY**

#### 6 Operator Training & Adoption — *Systems cannot protect workers if operators don't understand them*

- All machine operators trained on CAS alert sequences and correct response procedures. **MANDATORY**
- Operators understand Level 9 will intervene automatically — not a system fault. **MANDATORY**  
*↳ Operator confusion about automated intervention causes dangerous manual overrides.*
- Pedestrians trained on PTU tag use, charging, and response when machine alert activates. **MANDATORY**
- Supervisors trained on TrackPro dashboard, violation reporting, and alert escalation.
- Training records documented for all personnel per MSHA requirements. **MANDATORY**

- Refresher training schedule established — minimum quarterly.
- Contractor induction includes CAS/PTU tag procedures before site access. **MANDATORY**

**7 Ongoing Maintenance & Compliance** — *Continued MHSA and ISO 21815 compliance*

- Scheduled maintenance programme in place — minimum 6-monthly inspections per unit. **MANDATORY**
- Pre-shift CAS functionality check included in operator pre-start checklist. **MANDATORY**
- PTU pedestrian tag battery charging and replacement protocol established. **MANDATORY**
- TrackPro data reviewed weekly for high-alert zones and near-miss patterns.
- Level 9 Compliance Audit scheduled with Mine Safe Global — recommended annually. **MANDATORY**
- Firmware/software update process established with Mine Safe Global support team.
- Incident and near-miss records linked to CAS event logs in TrackPro. **MANDATORY**  
*↳ Required for DMRE inspection readiness.*
- Mine Safe Global technical support confirmed: +27 87 711 2080 / info@minesafeglobal.com **MANDATORY**

**✓ Compliance Sign-Off**

Role	Name	Signature	Date
Section 16.2 Manager			
Safety Officer			
Fleet Manager			
Mine Safe Global Representative			

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