# Surface and underground operations with site deliveries audit Site: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Date conducted:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| 1 Quarry benches and sand pits |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 1.1 | Quarry benches are of sufficient width to provide safe conditions for all vehicles, equipment and persons travelling in the area. |  |  |
| 1.2 | The safe travelling width between any bench face and edge of the bench is adequately demarcated. |  |  |
| 1.3 | Bench surfaces are designed so as to enable the safe operation of mobile equipment. |  |  |
| 1.4 | An adequate maintenance programme has been established for material spillage clean up on benches. |  |  |
| 1.5 | Signage and/or other devices to warn of any hazard and prevent incidents are used on benches. |  |  |
| 1.6 | Sand mining operations are conducted taking into consideration the characteristics of the material mined from which the maximum height of a working face is determined. |  |  |
| 1.7 | Each working sand face is advanced over as great a length as practicable and is sloped at the end of each working day. |  |  |
| 1.8 | Each sand bench or series of benches is of sufficient length and breadth to provide safe working conditions. |  |  |
| 1.9 | Mine personnel are trained and made aware of keeping clear of the sand pit face and vehicle traverse area during loading operations. |  |  |

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| 2 Loading mined material |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 2.1 | There is a standard procedure for loading operations. |  |  |
| 2.2 | The standard procedure defines the safe clearances and operating rules where multiple machines are moving in close proximity with each other. |  |  |
| 2.3 | The standard procedure specifies that the driver of the vehicle being loaded must not enter or leave the cabin of the vehicle during loading operations. |  |  |
| 2.4 | The standard procedure prohibits the traversing of a bucket or implement over any truck or other vehicle cabin during the loading operation. |  |  |
| 2.5 | The standard procedure identifies the hazards of undermining the tracks of an excavator during loading operations. |  |  |
| 2.6 | The standard procedure requires the provision of a safe bench access and egress when excavator top loading operations take place. |  |  |
| 2.7 | Mine personnel are made aware of keeping clear of the quarry face and the loading unit working area during loading operations. |  |  |

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| 3 Tipping mined material |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 3.1 | Traffic control measures have been devised and implemented at the tipping area. |  |  |
| 3.2 | Effective route marking, for use during either/both day and night, is provided to indicate the safe approach to, and exit from the tipping point. |  |  |
| 3.3 | Turning, reversing and tipping areas are of sufficient size to permit manoeuvring by the largest equipment that is intended to be used. |  |  |
| 3.4 | Where dumping is carried out over an edge (dump or bin), an effective back stop has been provided, or a spotter is used. |  |  |

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| 4 Stockpile or ROM pad operations |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 4.1 | Signage requiring radio call up is located at all access points to the ROM pad. |  |  |
| 4.2 | Adequate precautions are taken with respect to a collapse or slump of a stockpile when material is being removed from the base of that stockpile. |  |  |
| 4.3 | There is a procedure and an authorisation process required for the use of earthmoving equipment on a surge stockpile. |  |  |
| 4.4 | There is a procedure and an authorisation process required for employees walking or climbing on a surge stockpile. |  |  |

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| 5 Specific situations |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 5.1 | Procedures have been developed and implemented which document the safe methods of work to be followed for mobile crane lifting operations. |  |  |
| 5.2 | Mobile equipment used for ground clearing of areas where trees are present is fitted with adequate safety equipment to protect the operator from falling limbs and trees. |  |  |
| 5.3 | Standard procedures have been developed and implemented which document the safe methods of work to be followed for scraper operations. |  |  |
| 5.4 | Standard procedures have been developed and implemented which document the safe methods of work to be followed for autonomous vehicle operations. |  |  |
| 5.5 | All workplaces on the surface are illuminated at night. |  |  |
| 5.6 | Adequate precautions are taken when entering an unilluminated area of the mine. |  |  |
| 5.7 | Standard procedures have been developed and implemented which document the safe methods of work to be followed for remotely controlled mobile equipment operations. |  |  |
| 5.8 | Where there is a risk of coarse material impacting the cabin of mobile loading equipment provision has been made for guarding. |  |  |
| 5.9 | Standard procedures have been developed and implemented which document the safe methods of work to be followed for the retrieval of mobile equipment. |  |  |
| 5.10 | The equipment used for the retrieval process has been designed and selected for that purpose. |  |  |

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| 6 Site deliveries (including solid or liquid consumables and plant and equipment) |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 6.1 | Vehicle operators are protected from the hazards associated with the loading and unloading of materials, supplies and equipment. |  |  |
| 6.2 | At areas where the transport driver is required to leave the vehicle to load or unload materials, the ground surface where the vehicle parks is level and even. |  |  |
| 6.3 | In sloped areas, vehicle restraint humps or other effective devices are provided to control any unintended movement when the driver is outside of the vehicle, or where the centre of gravity of the vehicle is altered during the loading/unloading operation. |  |  |
| 6.4 | Standard procedures are developed where mobile equipment is weighed at a weighbridge. |  |  |
| 6.5 | Standard procedures are developed for the checking of loads plus the loading, securing, release and unloading of loads. |  |  |
| 6.6 | Loading and unloading operations are carried out in an area away from passing traffic, pedestrian areas and other people not involved in the loading/unloading activity. |  |  |
| 6.7 | There is provision for quarantining any vehicle that has arrived with an unstable load in a safe area. |  |  |
| 6.8 | Procedures are in place to prevent unexpected movements of vehicles during loading, unloading operations and coupling and uncoupling between vehicles and trailers. |  |  |
| 6.9 | Procedures are in place to ensure trucks are not driven away while still being (un)loaded. |  |  |
| 6.10 | Procedures are developed and utilised where mobile equipment is loaded onto, or unloaded from a flat bed or low loader trailer. |  |  |
| 6.11 | Loading/unloading ramps that are fixed structures are equipped with the appropriate safety devices. |  |  |
| 6.12 | Ramps that are attached to mobile equipment are of sound engineering design and equipped with the required safety devices. |  |  |
| 6.13 | Procedures are developed where bulk and hazardous materials such as acids, cyanide, fuels and lime are being transferred from or into mobile equipment. |  |  |
| 6.14 | The facilities for loading and unloading of hazardous materials are suitably protected against accidental vehicle contact. |  |  |
| 6.15 | Engineering controls are in place to prevent fall potential to operators where climbing to from elevated position is required (i.e. top of tanker). |  |  |
| 6.16 | At all transfer points of bulk and hazardous materials, spillage containment controls are provided. |  |  |
| 6.17 | A safety shower, with an operational usage alarm, is provided at locations where hazardous materials are being transferred. |  |  |

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| 7 Underground operations |
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| **Point** | **Standard** | **Standard met** | **Comments** |
| 7.1 | A method is established to inform underground vehicle operators of the availability of primary ventilation prior to entry underground. |  |  |
| 7.2 | An underground warning system and procedures are established for vehicles and pedestrians when there is an interruption to the primary ventilation. |  |  |
| 7.3 | Portal entry lighting is provided. |  |  |
| 7.4 | Flammable materials or explosives are not stored within 50 metres of any portal entry to the mine. |  |  |
| 7.5 | Call up procedures are utilised when vehicles are entering the portal and operating in restricted roadway systems underground. |  |  |
| 7.6 | Permanent or fixed installation lights are provided in applicable working locations. |  |  |
| 7.7 | Flicker lights, reflective barriers and/or signs are placed at a suitable distance from any haulage area when under repair or with subject to a temporary obstruction. |  |  |
| 7.8 | Vehicles are parked safely when left unattended. |  |  |
| 7.9 | A procedure has been developed for the recovery of mobile equipment broken down in the underground decline. |  |  |
| 7.10 | A procedure has been developed for mobile equipment which is on fire to be parked off the underground decline. |  |  |
| 7.11 | Edge protection bunds or devices are provided where traffic has access to stope entry points or other vertical openings. |  |  |
| 7.12 | Falling object protective structures (FOPS) are fitted to all trackless underground mining equipment that is fitted with operator controls on the machine, including drills, trucks, loaders, bulldozers and excavators and all service units which are operated in stopes and in the mining of development headings. |  |  |

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