

DRILL AND BLAST MANAGEMENT

PURPOSE AND SCOPE

The intent of this document is to eliminate or minimise the risks of fatalities, injuries and incidents arising from drill and blast activities on Gamuda Australia (GA) projects / workplaces.

CRITICAL CONTROLS

- Drill and Blasting works to be risk assessed and recorded against the Project Risk Assessment.
- Drill rigs must have pre-use acceptance inspection and certification prior to arriving on site.
- Air receivers on drill rigs must be inspected by relevant authorities and have a current inspection certificate.
- Rigs and compressors must be set up on even ground and fundamentally stabilised.
- Excavation permits are in place.
- Dust suppression techniques to be employed while drilling.
- Barricading and sign posting shall be displayed around the drill rigs.
- Explosives and blasting agents are safely handled, stored, and used.
- A Blasting Management Plan is prepared by an appropriately qualified and licensed personnel.
- All employees are qualified and licensed for the drill and blast operations.
- Blast permits (notification period) and notice boards are established and maintained
- Emergency procedures are contingency plans are developed and implemented.
- A SWMS must be in place for drill and blasting activities.

Note: The above controls are to be read in conjunction with the Regulations, Standards and Codes listed below.

DRILLING OPERATIONS

- Contractors involved in drilling activities shall provide their operations manuals and associated safe working procedures to Gamuda for review prior to the commencement of works.
- Rigs must be appropriate for the task. Evidence of Drill Rig conformance to the PileSafe green sticker program is highly recommended. Certificates of inspections are required for air receivers and copies supplied to the project prior to arrival.
- Drilling precautions shall be carried out as detailed in the relevant legislation in the jurisdiction of operation.
- Rotating equipment hazards are to be risk assessed and suitable guarding must be in place where a risk of injury through contact with a hazardous part exists.
- Approved "sock" type whip checks must be used on all high-pressure hose connections.
- Dust monitoring shall be carried out where risk assessment identifies the requirement or where specified within Environmental Protection Licenses.

BLASTING OPERATIONS

- The Blasting Contractor must ensure that any magazine in which more than 250 kilograms of explosive or blasting agent is stored is constructed with accordance with AS 2188 and is licensed as required by relevant legislation in the jurisdiction of operation. A copy of the license shall be provided to a GA nominated person.
- A person is appointed to record all explosives and blasting agents that are taken in and out of the magazine. The appointment shall be recorded, and evidence of that appointment obtained by GA.
- Magazine location and storage requirements are met.
- Explosives and blasting agents in the magazine are safely stored.
- The keys to the magazine are kept in the Shot Firers possession.
- All magazine requirements are complied with as detailed relevant legislation in the jurisdiction of operation.
- Details of blast plans, patterns and calculations be submitted to GA nominated person for review prior to commencement of works.
- Users of explosives or blasting agents are qualified and competent in accordance with the Australian Standards and licensing authority. A copy of the Shot firers qualification is to be submitted to GA prior to mobilisation.
- The handling and transport of explosives and blasting agents provide adequate safety for that purpose. Dangerous goods licensing (transport and storage) are met. Accountability inspection schedule for Dangerous Goods manifest.
- Safe Work Procedures are provided for, fly rock, stemming, restricted areas, radio, misfires, clearance signals, blast guards, extreme weather conditions and "sleeping shots" including signage and barricading etc.
- Blast notification to Civil Aviation Safety Authority (where required)
- Proper warnings have been given to all adjacent areas from which any person might approach and be at risk from explosion.
- All persons who are in places where they might be injured by the blasting have been removed from the area. Remove personnel from blast area in thunderstorms and lower all drill rig masts
- All means of entry to the place of blasting are securely guarded against entry by any person or firing warning notices are erected if necessary.
- Remove personnel from blast area in thunderstorms and lower all drill rig masts.
- Carry out all blasting in day light hours only.

EXPLOSIVE STORAGE

The storage of explosives will be managed in accordance with the license conditions and industry best practice and be closely monitored by GA. The following best practices will be adhered to:

- Storage containers will be locked at all times except when the area is manned and there is a valid reason for a container to be unlocked.
- Only authorised and competent persons will be allowed in any explosive compound at any time.

INTEGRATED MANAGEMENT SYSTEM

CRITICAL RISK STANDARD

DRILL AND BLAST MANAGEMENT



- Access keys for explosive compounds and containers will be issued to the Shot firer only and will be handed back prior to leaving site for break or termination.
- Weekly inspections of all explosive storage areas will be carried out and recorded.
- Housekeeping will be of the highest standard with waste material being removed on a regular (daily) basis.
- Separate containers shall be provided for transporting explosives, blasting agents, fuses, and detonating accessories.
- A weekly inventory of all explosive's stocks shall be carried out at all storage locations and all materials accounted for during the inventory. Any discrepancies will be reported to Gamuda immediately.

REGULATIONS, STANDARDS AND CODES

- Dangerous Goods (Explosives) Regulations 2011 [VIC]
- Dangerous Goods (General) Regulations 1998 [TAS]
- Dangerous Goods Regulations 1985 [NT]
- Dangerous Goods Safety (Explosives) Regulations 2007 [WA]
- Explosives Regulation 2017 [QLD]
- Explosives Regulation 2013 [NSW]
- Explosives Regulation 2003 [QLD]
- Explosives Regulations 2012 [TAS]
- Explosives Regulations 2011 [SA]
- AS 2187: Explosives - Storage, transport, and use
- AS 2187.2-2006 Explosives - Storage and use - Use of explosives
- AS 4326 The Storage and Handling of Oxidising Agents

FORMS AND CHECKLISTS

- **GA-FRM-HSE-104** Project Risk Assessment
- **GA-FRM-HSE-101** Safe Work Method Statement (SWMS) template
- **GA-FRM-HSE-132** Permit to Excavate