

8.2 Defining the Blast Exclusion Zone

- A scale sentry plan of both the LEZ and BEZ will be made available, as part of the blast pack, prior to loading commencement.
- On the first day of charging a shot, an LEZ for the shot shall be obtained by the Blast Supervisor from the Drill & Blast Engineer and be clearly displayed on the sleeping shots board in the OCE office.
- Prior to placing sentries, the Blast Co-ordinator shall inspect the exclusion zone, determine sentry positions and sweepers required to secure the exclusion zone and mark these clearly on the scale sentry plan with the naming convention "Position 1" (or 2, 3 etc.). Consideration will be given to wind direction and speed, with regard to dust or fume generation, when selecting sentry positions. This information is available from onsite weather stations (as per WRAC December 2015 – recommendation 25 point 2)
- Blast Sweepers will be used to assist the blast sentry's during a clearance but are not needed to fulfill a final sentry position. The sweeper maybe asked to assist with further duties after the blast to check for hazards including flyrock, dust and fume.
- The Blast Co-ordinator as part of this inspection shall leave a numbered flag at the sentry location so that the sentry can find the correct sentry position when required.
- The Blast Co-ordinator shall also mark on the plan the location of any mobile equipment and fixed installations e.g. loading units, pumps, lighting plants, crib huts etc.
- The Shotfirer in Charge shall consult with the Blast Supervisor and / or the Blast Co-ordinator about the risk of flyrock and dust / fume from the shot and determine if the standard exclusion zones for the LEZ or BEZ shall be increased and if so, indicate this on the plan.
- The Shotfirers firing position shall be marked on the BEZ.
- When defining the minimum BEZ for personnel of 500m, and a minimum BEZ for machinery, infrastructure and equipment of 250m will be used. If a piece of equipment is within the 250m exclusion zone and is deemed safe by the supervising stakeholders a risk assessment is not required. If either stakeholder is not comfortable with the proximity of the piece of equipment, or the BEZ for personnel needs to be less then 500m then a written risk assessment will be conducted and signed off by a production Superintendent or delegate.
- The completed sentry plan must be approved (signed) by the Shotfirer in Charge prior to the Blast Co-ordinator issuing sentries their duties.

Document Reference - MAC-PRD-PRO-031

9.2 Step-by-Step Duties	
1.	Note: Sentries can be any competent person who has completed the sentry duty familiarisation and assessment.
2.	Sentries shall report to the Blast Coordinator approximately 60 minutes prior to the blast to receive instructions.
3.	The Blast Coordinator shall inform all sentries of their final position as per the sentry plan and any areas they must clear of personnel and equipment the sentry must acknowledge they understand their duties and sign off on the sentry plan. This will be completed as a group, so that all sentries are aware of the position of others.
4.	Each sentry shall check the function of their two-way radio. If channel 5 is not available, the sentry shall notify the Blast Coordinator that they will be contactable on Channel 1 only.
5.	Sentries shall clear all personnel from the blast exclusion zone on the way to taking up their sentry position. There is to be no personnel remaining inside sentry positions except as approved by Superintendent Production Drill & Blast by a signed risk assessment.
6.	Sentries are to locate themselves at their allocated numbered flag marked by the Blast Coordinator and park their vehicle in a clear, visible position. The sentry will then block access to all traffic into the blast exclusion zone.
7.	Blast Sweepers will be used to assist the blast sentry's during a clearance but are not needed to fulfill a final sentry position. The sweeper maybe asked to assist with further duties after the blast to check for hazards including flyrock, dust and fume.
8.	Once the Blast Coordinator is happy that the area has been cleared, they will then start to call "Blast Coordinator to (Sentries Name) The sentry shall respond "This is (Name), in position (Flag Number) and my area is secure"
9.	When the Coordinator has called all sentries, the film person and had final approval to fire, they will then hand over the two-way to the shotfirer in charge
10.	Sentries will be on Channel 5 (Drill & Blast) until the remote blast boxes are powered up (If firing electronically), they will then be instructed via radio to switch to Channel 1 (MAC Norths main channel).
11.	All sentries will hold their position until the Shotfirer in Charge announces over the two-way radio "The all clear is now given to allow access to all areas".
	Sentries are required to immediately call the Shotfirer in Charge if their position is breached.

i Document Reference - MAC-PRD-PRO-030

13.3 Extraneous Electricity

i. Electrical Storms

The current lightning monitoring system used at Mt Arthur Coal is the Vaisala TWX300 and is based in the dispatch (modular) office. It produces automatic warnings, over the two-way radio system, as the storm encroaches on a 30km zone.

If there is an approaching electrical storm; the Blast Supervisor and / or OCE will maintain contact with dispatch, lightning tracking system monitor. The distances used by the system are correlated to internal CD3 dump as its centre point. The lightning tracking system used is configured in a “traffic light” warning system based on real time information:

- **Green** – No Lightning detected within a 30km radius.
- **Amber** – Lightning detected between 30km and 16km radius.
- **Red** – Lightning detected within 16km radius.

The system has been established to send a text message to the Supervisors when lightning activity is detected at a distance of 60km. The alert / voice alarm system does not activate until the 30 km distance. This will allow for pre-emptive action, if required, by the Supervisor.

The following procedure shall be used to control activities in the event of such electrical activity:

MAC-PRD-PRO-059 Actions in the Event of an Electrical Storm – Shotfirers

i Document Reference - MAC-PRD-MTP-001

8.2 Impending Electrical Storm – Actions			
a.	Note: Using the “traffic light” colour system, the following actions will be undertaken at each stage:		
b.	GREEN	No Lightning detected	Operations are to continue as normal
	AMBER	Lightning detected within a 30km to 16km radius	<p>The Shotfirers Blast Supervisor or Open Cut Examiners once aware of an impending electrical storm shall consider the following actions to ensure the blast area and “danger zone” (the area that will be affected if lightning strikes a loaded shot) remain safe by one of the following methods:</p> <ul style="list-style-type: none"> • If the blast is tied up and the area is secured (sentries in place) detonate the blast using normal procedures if it is deemed safe to do so. • If the electrical storm approaches during the process of tying up a shot, then, if time permits, consideration should be given to disconnecting the control row prior to evacuating. • If the blast area is being loaded and time permits consideration will be given to retrieving all explosive units from the surface and returning to the explosive transport vehicle. • Where holes have been primed in advance of the loading unit, and time permits, these units will be recovered, disconnected and returned to the explosive transport vehicle. • Begin sending sentries to their allocated positions as per the lightning exclusion zone (LEZ) map. <ul style="list-style-type: none"> - Personnel = 250m, equipment = 125m (if possible). - Personnel = 500m, equipment = 250m (if possible) for non-electric blasts that have been tied in or partially tied in. • Notify the OCE and adjacent work teams that there may be a need

		to evacuate the area and where the sentries have been assigned.
RED	Lightning detected within 16km radius	<ul style="list-style-type: none"> • Evacuate the blast area and “danger zone” of all personnel and place sentries in the locations nominated by Shotfirers, Blast Coordinator, Blast Supervisor or Open Cut Examiners. • All personnel in the pit will follow the Shotfirers or Open Cut Examiners directions to stop work and/or evacuate the pit as directed. • In the event of an electrical storm approaching quickly, all vehicles carrying explosives or dangerous goods shall be parked up and secured in a safe location with the main isolation switch turned off. This includes MMUs and Shotfirers vehicles carrying initiating explosives. • Work being conducted at the magazines shall be suspended. The doors of the magazines shall be locked, and all personnel removed from the magazine compound. • All personnel are to move to a safe location, as directed by the Shotfirer in Charge or OCE. The safest location being inside the cab of the equipment as they are protected by the surrounding metal structure in the event of a strike. • Hardwired communication systems should be avoided if possible and handheld two-ways, cordless phones and mobiles used instead.

8.3 Lightning Tracker System Returned to AMBER – Actions		
a.	AMBER	<p>Lightning detected within a 30km to 16km radius</p> <p>Once the lightning tracking system has returned to AMBER the Shotfirers, Blast Supervisor or Open Cut Examiners will assess the path of the electrical storm and shall consider preparations to return to the blast area and continue normal operations. Following this assessment, a blast supervisor or OCE with consultation from the shotfirer in charge (where required) may maintain a red condition for blast sentries until fully satisfied the electrical storm has passed.</p>
	GREEN	<p>No Lightning detected</p> <p>Once the electrical storm has passed and the lightning tracking system is in a GREEN stage the Shotfirer in Charge or Open Cut Examiners will give the “all clear” before the sentries are removed and normal operations can resume.</p> <p>All instances of the withdrawal of personnel or machinery should be noted in the appropriate reports:</p> <ul style="list-style-type: none"> • Shotfirers – Shotfirers Daily Report • Open Cut Examiners Shift Inspection Report.

REMEMBER
IF YOU CAN HEAR IT – THINK ABOUT CLEARING IT

i Document Reference - MAC-PRD-PRO-059