



VULCAN MINE

Standard Operating Procedure Maintain and Water Haul Roads



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1. PURPOSE

The purpose of this procedure is to describe the requirements and to ensure hazards and risk associated with maintaining and watering mine roads are managed at the Vulcan Mine.

2. SCOPE

This procedure is applicable to all persons at the Vulcan Mine including employees, contractors, service providers and visitors.

The controls within this procedure are mandatory.

3. DEFINITIONS

Authorised Person	A person who has the required competencies and who has been appointed by the Site Senior Executive to carry out a designated scope of duties.
CMSHA	Queensland Coal Mining Safety and Health Act (1999).
CMSHR	Queensland Coal Mining Safety and Health Regulation (2017).
Competent Person	Competence for a task at a coal mine is the demonstrated skill and knowledge required to carry out the task to a standard necessary for the safety and health of persons
JHA	Job Hazard Analysis.
OCE	Open Cut Examiner.
SHMS	Safety and Health Management System.
SOP	Standard Operating Procedure.
SSE	Site Senior Executive.
Take 5	Personal Risk Assessment.

4. PROCEDURE

4.1. Road Maintenance

Road profiles shall be maintained at or near to the original design profile.

The need for road maintenance may be determined from a range of sources including inspections undertaken by Supervisors, the OCE or SSE, hazards reports and other feedback from operators.



4.2. Maintenance Requirements

The maintenance requirements are as follows:

- Scarify soft spots;
- Remove wet spots and backfill;
- Ensure any areas slumped or settled are rectified;
- Maintain good drainage;
- Top up the running surface material and scarify as required to bring coarse material to the surface when the surface slicks up;
- Scarify the surface before placing crushed material;
- Remove any truck spillage material from the safety berms when grading to prevent contamination to the surface running material;
- Spillage and grader windrows must not be left against safety berm and drains to maintain the required running surface width and drainage as per VUL-MOP-128-Design and Construction of Mine Roads;
- Ensure extra protection, e.g., tyres on corners that are not 'protected' by a safety berm;
- Maintain the cross fall and superelevation profile;
- Adequate water is to be applied during any maintenance grading;
- Regularly scarify areas showing signs of laminations;
- Drainage systems and safety berms to be constructed at the same time as the haul road;
- When grading any roadway or ramp being used by trucks, ensure safety berms are sized and/or gaps are left to allow trucks to cross the grader rill without tyre damage occurring;
- Use grader rills / windrows of material to reduce over width roads and ramps to the correct width;
- Priority for road maintenance should be given to active circuits.

Major maintenance work should be conducted during non-active periods if possible, however roads requiring major, immediate attention will require maintenance to be carried out with the appropriate controls in place. Planning for major maintenance work should be done in conjunction with supervisors and OCE to ensure the correct risk management controls are in place. These include but are not limited to: Signage, bunding, communication, coordination of work groups etc.

4.3. Water Truck Operation

4.3.1. Filling up at Standpipes

When filling up at standpipes, water truck operators must:

- Park the water truck fundamentally stable, with the tank opening directly below the standpipe discharge point;
- Avoid overfilling the water tank; and
- Be aware of the increased risk of slips, trips and falls due to wet conditions.

4.3.2. Watering Process

When watering operations are carried out, the water truck operator shall:

- Ensure positive communications to the work area to advise of the intention to water;
- Cautiously apply water at the base and crest of ramps or points where trucks are either retarding/slowing or accelerating;
- Commence watering at a suitably safe location (using 'line of sight') in the circuit;
- Not commence watering on corners, ramps or other locations where visibility is limited;
- Avoid over-watering roads;
- Use an approved method of spraying, i.e., continuous spray, strip spray or spot spray;
- Ensure spraying suppresses dust whilst maintaining traction;
- Avoid entering congested, complex, and high traffic flow areas unless absolutely required;
- Maintain a dry line along all running surfaces on active circuits;
- Turn the sprays off when passing light vehicles to ensure over spray does not result in loss of vision and control for the driver of the other vehicle; and



- Leave the water cart full for emergency response when parking up.

The continuous spray, strip spray sequence is:

First pass:

- (1) left side spray;
- (2) right side in opposite direction;

Second Pass:

- (3) right side spray; and
- (4) left side in opposite direction while ensuring a dry line is maintained.

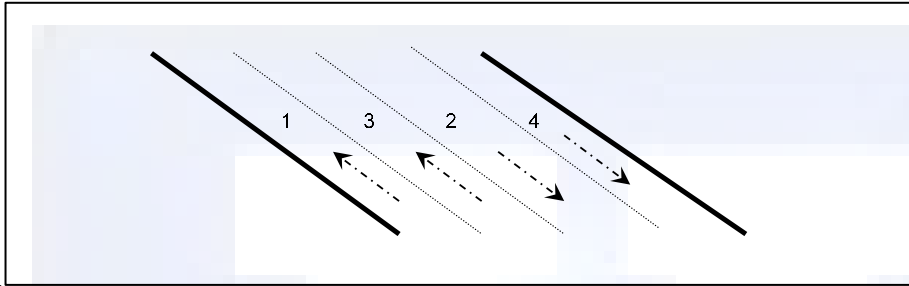


Figure 1: Continuous Spray and Strip Spray Sequence

If continuous strip spraying has the potential to cause an overwatered surface than spot spraying may be required. If spot spraying method is used, it must still be done in the same spray sequence as referenced above.

The use of the same spray sequence for both methods is intended to create predictability for road uses and aid in the process of driving to conditions.

Full width watering:

- Is not allowed on defined roads, ramps, corners or intersections; and
- Is only allowed on tip heads, at the excavated floor, and ROM.

Exceptions to the above can only occur under the authorisation of Supervision / OCE.

Dump trucks shall operate one set of tyres on dry lines for maximum traction to reduce the likelihood of loss of control.

Note: Tanks of water trucks shall contain baffles that will help to stabilise the load. However sharp cornering, turning or heavy braking especially on ramps may cause water spillage and loss of traction, making the water truck unstable and hard to control.

4.3.3. Planning Watering & Dust Control

Regular road watering shall be carried out in order to minimise risk to road users from dust causing respiratory issues, poor visibility and to maintain road surface compaction.

If a mine road is affected by underwatering, controls are to be implemented as per trigger actions outlined in Dust (Visibility) in VUL-TAR-004- Weather

Prior to commencing road watering operations, the water truck operator is to:

- Assess the work area to identify any risks associated with the work to be carried out paying particular attention to the previous watering event;
- The water cart operator shall account for environmental factors (i.e. weather, time of day, shift, amount of traffic, proximity of circuit to public infrastructure, etc.) when determining the amount of water to apply;



- When performing road maintenance, the water cart operator is to water roads in consultation with the grader operator;
- Watering instructions shall be followed unless advised otherwise by the OCE or supervisor.

Non circuit areas need to be factored in to the watercart operators shift watering plan. Planning needs to factor in when some areas surge in usage and possible additional resources needed. An example of this is around the workshop and industrial areas which become heavily used and potentially dusty at end of shift. Spotter might be required in certain areas and so therefore activities need to be coordinated with supervision or the OCE.

4.3.4. Over Watering of the Roads

If mobile plant operators identify that haul roads sections have been over watered creating a hazard to traffic, then the operators are to notify the circuit, and steps taken to rectify the hazard. Report the event to the Supervisor / OCE who is to assess response required.

Until rectified, the affected section of mine road is to be controlled as per requirements of Wet Weather outlined VUL-TAR-004- Weather TARP. This may include all heavy vehicle haulage ceasing operations on the affected section of mine road until rectified, depending on severity and required trigger response.

4.3.5. Road Users / All Circuit Users

Road users shall inspect the circuit and haul roads to identify any areas requiring maintenance and/or potential overwatering / underwatering, e.g. glazed sections, bull dust, at commencement and during the shift and communicate to the relevant circuit, road maintenance operators and if required the Supervisor.

4.4. Grading Mine Roads and Work Areas

The grader operator will conduct a work area inspection of the circuit with the flow of traffic noting the areas that need attention before commencing work.

Where road maintenance activities occur on an active road with centre berms, graders shall not grade in a direction against the flow of traffic, unless the road is inactive to the production circuit (e.g. crib breaks, breakdown, down days, road works).

Should a grader operator need to work against the flow of traffic, they must not do this unless they have notified the circuit of this intention and received positive radio responses from the operators in the circuit.

The following controls shall be considered:

- Operators of this equipment shall notify, by two-way radio, that road maintenance is taking place in this area and any associated hazards (e.g. half road closed, etc.);
- Access to the area is restricted as required;
- Ensure the rill height is adequately maintained;
- Ensure clear vision for 50 metres, i.e. not to grade around corners against traffic flow;
- Ensure the task is completed. Where this is not possible, all created hazards are removed or barriers and signage are in place and communicated;
- Flashing light shall be activated on graders at all times; and
- When required, ensure water carts and graders work together when maintaining roads.
- Graders and water carts operating in active restricted production areas:
 - When entering active production areas, water carts and graders shall use positive communications to obtain permission from the primary item of equipment to enter the area;
 - If graders and water carts are required to work within 50 metres of work areas, graders should undertake these operations where possible when the circuit is on a crib break;
 - Positive communication will be used to inform other operators in that restricted work area.



5. ROLES AND RESPONSIBILITIES

SSE	Shall review and approve this procedure.
HST Superintendent	Shall ensure that all provisions of this procedure are implemented, and that compliance is achieved.
Managers/ Superintendents	Shall be responsible for their area of operations and the implementation and application of this procedure; Provide adequate training, information, structure and supervision to ensure that this procedure is implemented; Carry-out a periodic review of activities to ensure the appropriate application and understanding of this procedure; and Ensure immediate and appropriate steps are taken to investigate and rectify any risks to health and safety arising from these activities.
Supervisors	Ensure all CMWs are familiar with, have access to and comply with the requirements set out in this procedure.
All CMWs (including visitors and contactor)	Shall comply with the requirements of this procedure.

6. REFERENCES

- Coal Mining Safety and Health Act 1999 (Qld)
- Coal Mining Safety and Health Regulation 2017 (Qld)
- DNRME Safety Alert 102 [Articulated water truck rolls over](#)
- DNRME Safety Bulletin 94 [Excessive watering of haul-roads](#)
- DNRME Safety Bulletin 112 [Mine road safety](#)
- DNRME Significant Incident 76 [Fatality involving water truck](#)

7. REVIEW

This document shall be reviewed at a minimum every two years, or as follows:

- when there is a change of method and/or technology and/or legal or other requirement that may affect the accuracy of this document;
- when operational changes occur that effect the currency of the document;
- when there has been a significant event to which this document was relevant; and
- as a result of relevant audit findings.

8. DOCUMENT CONTROL

Version	Date	Description	Document Controller
01	29/05/2020	Initial Draft	Rachael Dacker
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