

Light Vehicle Heavy Vehicle Controls workshop

This session

Share some principles and standards that have been :-

- a) Established by Queensland Resources Council
- b) Observed at Mines

OCE role in developing and reviewing SHMS Reg 108(1)

- (1) The site senior executive must ensure at least 1 open-cut examiner is involved in developing, reviewing and auditing the part of the mine's SHMS relating to the mining activities in and around the mine excavation.
- (2) Subsection (1) does not require the examiner to be involved in a matter that is not within the examiner's competency.

OCE must be involved in Developing , Reviewing & Auditing the Vehicle Interaction PHMP

LV HV Interactions is generally risk rated as a Principal Hazard and requires under a plan Act 63 (1) must

- (a) **identify, analyse and assess risk** associated with principal hazards; and
 - (b) **include standard operating procedures and other measures to control risk.**
- (2) The site senior executive must give a copy of the principal hazard management plan to a person that employs persons at the coal mine whose work is affected by the plan's requirements.

Act 64 Review of PHMP's and SOP's

- (1) This section applies if—
 - (a) a safety and health management system has been developed for a new coal mine; or
 - (b) it is proposed to change a safety and health management system at an existing coal mine.
- (2) The site senior executive must review the principal hazard management plans and standard operating procedures **in consultation with coal mine workers affected by the plans and operating procedures.**
- (3) The review under subsection (2) must take place—
 - (a) for a new coal mine—as soon as practicable after the start of coal mining operations;
 - or (b) for a change at an existing coal mine—before the change happens.

Recent Example HV/ LV Interaction

Whilst conducting a survey of the pit workings, the surveyor driving a Toyota landcruiser utility was driving on the wrong side of the road against the flow of traffic in an active overburden haul circuit.

Whilst negotiating a blind corner the Surveyor narrowly avoided a head on collision with a loaded Rear Dump Haul Truck traveling uphill between 0-8 kph.

Where are we seeing the problems ?

Workshops

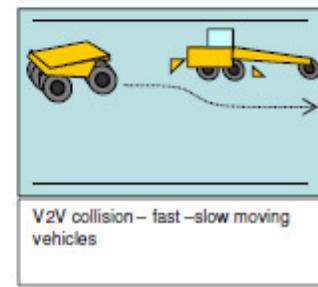
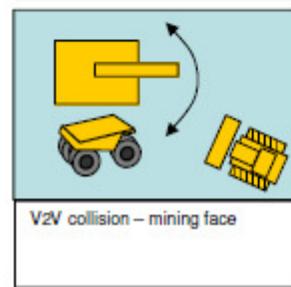
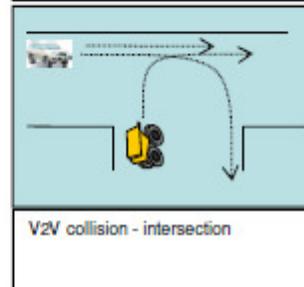
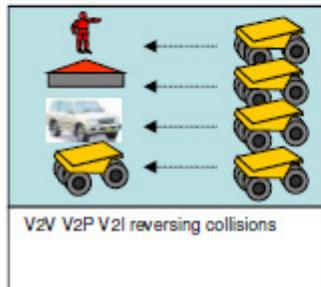
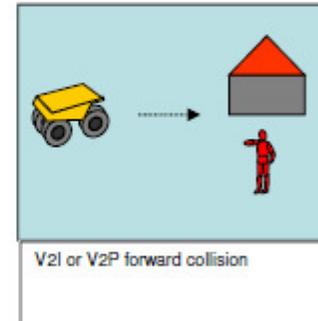
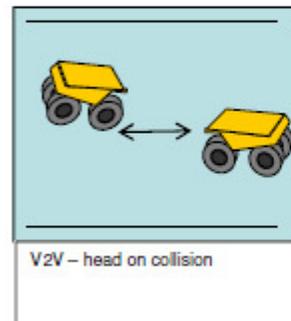
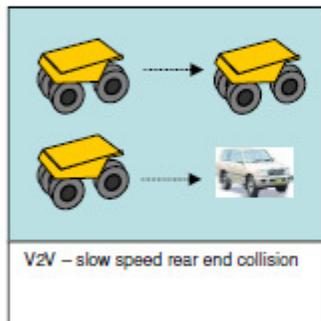
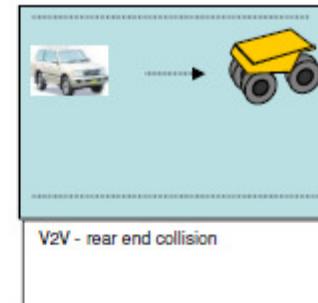
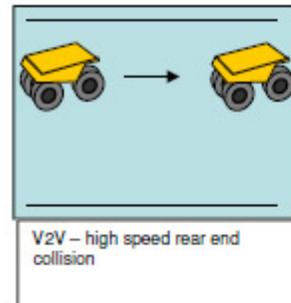
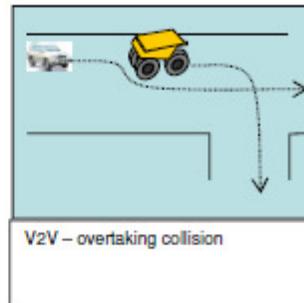
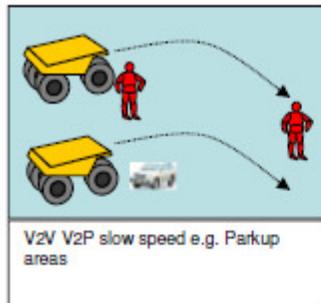
Circuits

- Seeing less at dump and face !

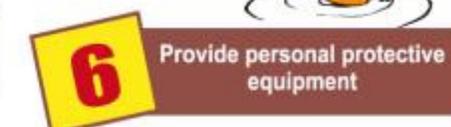
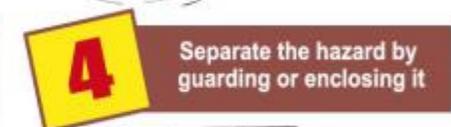
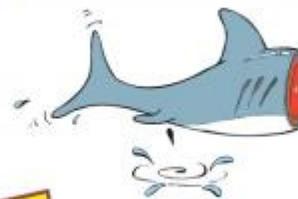
Haul roads – intersections

Entry / exits - go lines & crib huts

Useful - Tool in considering types of collisions



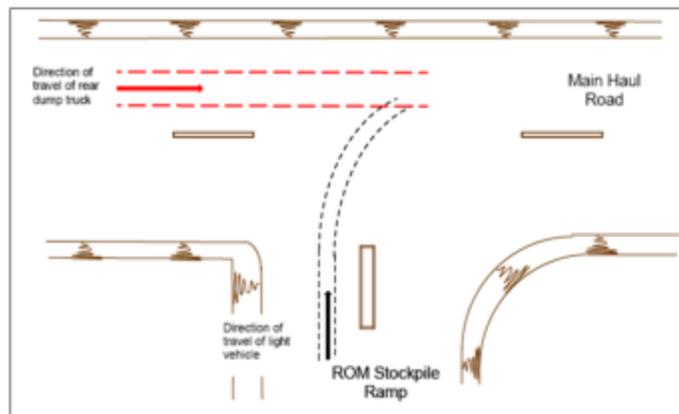
Hierarchy of Controls



Proximity Devices

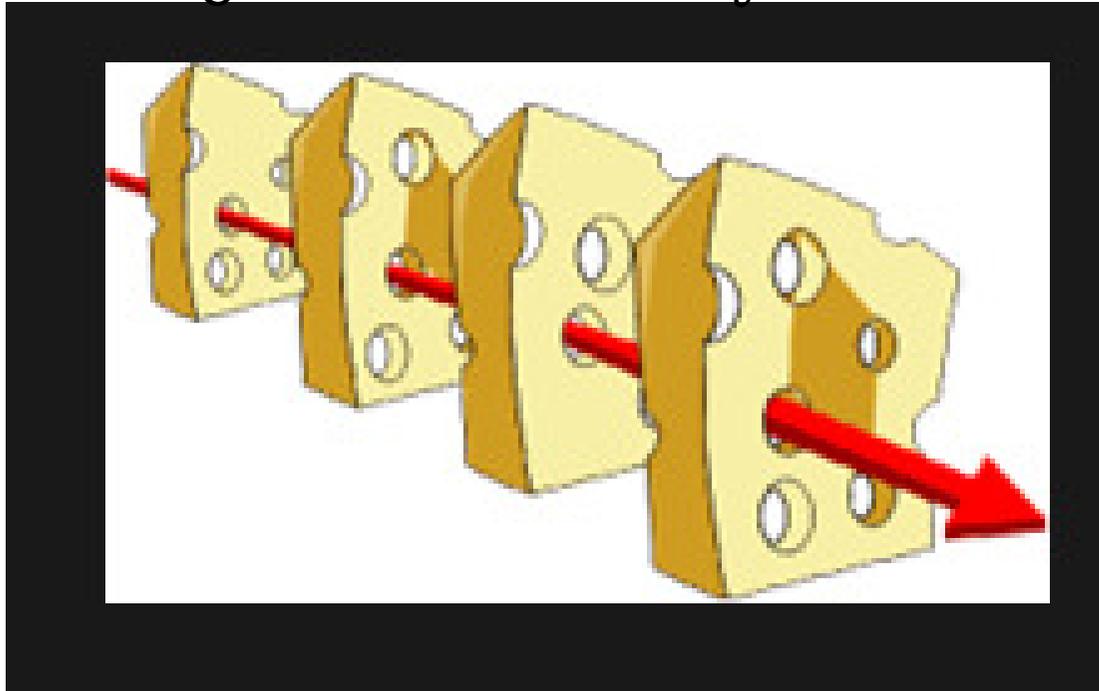


Ravensworth Fatality- Could proximity device warned the light vehicle or the truck operator as a last defence?



Proximity Devices – Swiss Cheese

Organisational
Task & Environment
Individual & team decision
actions
Absent or failed Defence



QRC Principles

| Principle |
|---|
| 1. Hard barriers should be used , to the extent that it is reasonably practicable (based on standard risk management practice), to reduce the risk of vehicle contact incidents. This includes: |
| a. The provision of separate roads for light and heavy vehicles . |
| b. Centre dividers where inbound and outbound access occurs simultaneously. |
| c. All haul road corners at which there is a risk to oncoming traffic from the loss of control of a heavy vehicle should have a centre divider. |
| 2. Sites should utilise observation points and technology to allow, where practicable, for the observation of Heavy Vehicle Risk Area's (HVRA's) without the need to physically enter them. |
| 3. Reduce the number and nature of light vehicle licences permitting access to HVRA's. |
| 4. Increase the level of skill and knowledge required for light vehicle licenses which allow entry to HVRA's including for example: |
| a. The completion of specialised training as a licensing requirement for entry into a HVRA'; and. |
| b. Introducing a system whereby regularity of access and familiarity with mining operations , mining hazards and circuits is a precondition of maintaining a license. |
| 5. Further preconditions for entry into HVRA's should, where reasonably practicable, include: |
| a. Requirements for equipment to be highly visible. |
| b. Proximity detection systems to be fitted to heavy and light vehicles. |
| 6. Where proximity detection systems are employed they should be integrated with other hazard controls and not applied as a stand-alone measure. |
| 7. Intersections should have high visibility and be constructed: |
| a. So that visibility of and to other traffic is as high as practicable |
| b. At, or as close as nearly practicable to right angles or |
| c. In a round-about configuration – where such a configuration does not create additional risk for heavy vehicles. |
| 8. Unattended vehicles must, as far as is reasonably practicable, be parked in designated bunded or demarcated areas away from heavy vehicle traffic/operations, with separate park-up areas for light and heavy vehicles. |
| 9. Where positive communication cannot be established the default position for vehicles must be to not proceed until positive communication is established. |
| 10. Positive communication must be a precondition for overtaking and indicators must not be used as the only communication signal for overtaking. |
| 11. Systems which cause heavy vehicle to be immobilised before the driver exits the vehicle should be fitted to all heavy vehicles. |
| 12. Reversing alarms must be fitted on all heavy vehicles. |

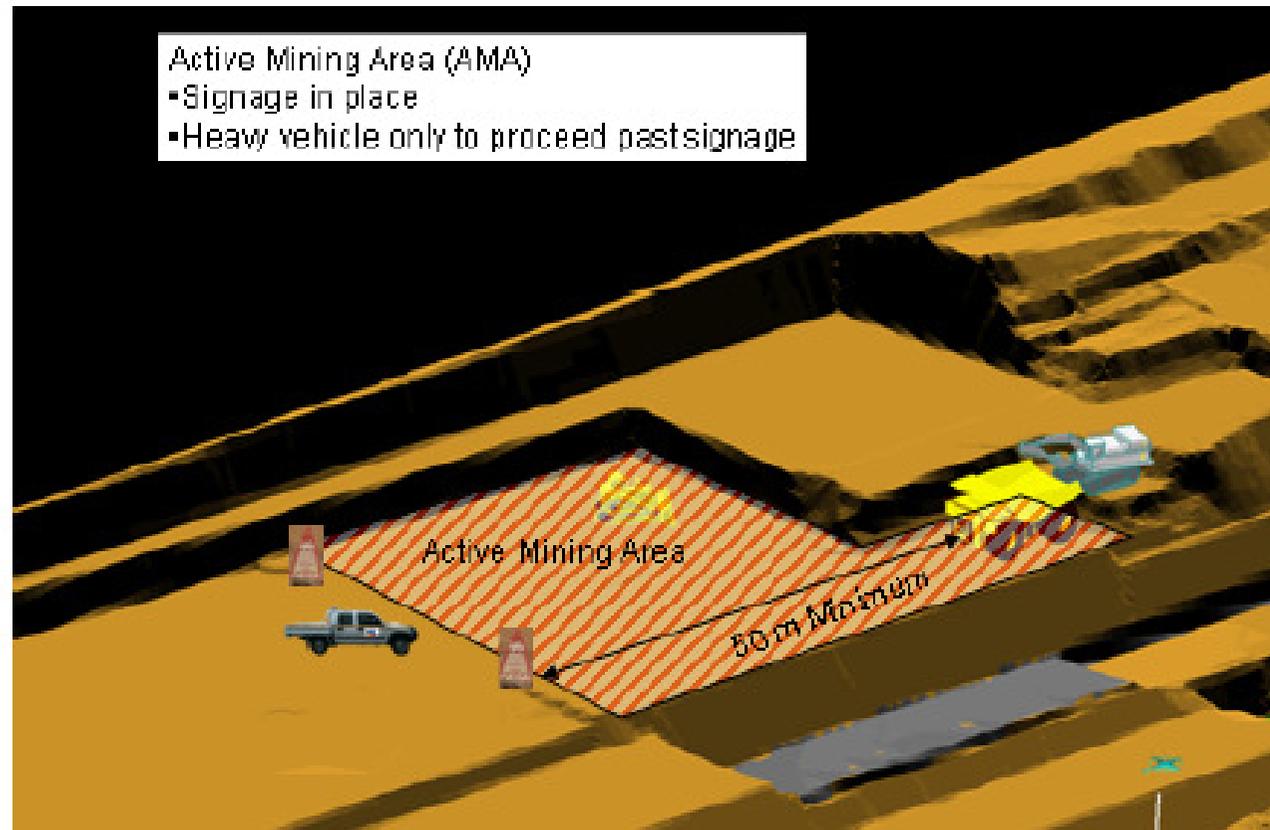
Use of Look outs



Observations at Mine sites

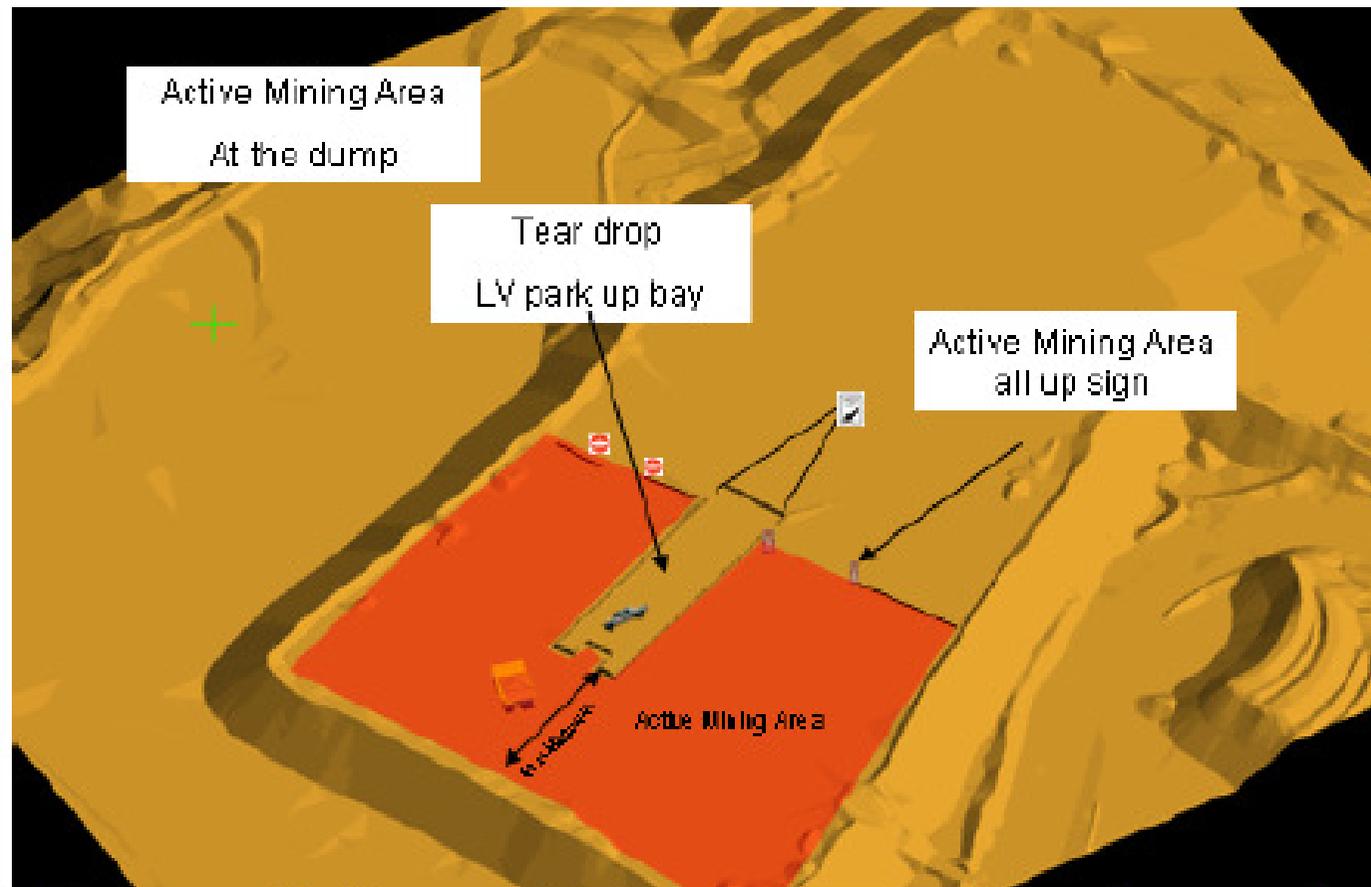
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|--|
| <p>High Risk Zone - processes Cones - showing HRZ's, Managed by OCE's and equipment operators Any light vehicles entering area result in Circuit stopping</p> |
| <p>One Light Vehicle on the circuit at a time - If more than 1 light vehicle the circuit will stop safely or ask the vehicle stop at the entrance</p> |
| <p>Traffic Management Plans- circuits Overall current traffic plan for site</p> |
| <p>Road signage for complicated pits eg Bench level skids or main roads named</p> |
| <p>Designated Two way responders - two per circuit</p> |
| <p>Consideration of 2 two ways - two speakers (one for circuit, one for site)</p> |
| <p>Elimination of Portable hand held devices / mobilephones eg policy & detectors</p> |
| <p>Planning process to eliminate open faces</p> |
| <p>Strong 50 M rule for Pos comms</p> |
| <p>Intersection Audits</p> |
| <p>Simple, Effective, Accessible and Used Design and Construction Standard</p> |
| <p>Green or moving light on front of trucks</p> |
| <p>Eliminate unnecessary roads / physically blocked off</p> |
| <p>Speed or gear signage on circuits- dependent upon conditions</p> |
| <p>Adequate Call up signs</p> |
| <p>Stop signs in preference to give way signs</p> |
| <p>TARP for Road conditions & signage</p> |
| <p>Coefficient of Friction measurement & TARP</p> |

High risk Zones or AMA's



a) In-pit Active Mining Area (minimum 50m stand-off)

AMA Dump



b) Dump Active Mining Area (teardrop design preferable where dump size permits)

Procedural Example...AMA

Restricted area

An 'Active Mining Area' is an area of high intensity heavy mobile equipment movement and is classified as a restricted access area to avoid interaction with light vehicle and pedestrian traffic. The Active Mining Area will be marked with signs and a 50m minimum separation distance must be maintained at all times from the primary dig unit or dump dozer within the Active Mining Area.

A demarcated boundary with signage must be in place at the access points.

Signage

Approval for a light vehicle or pedestrians to enter an Active Mining Area must be obtained from the supervisor or operator of the primary dig unit or dump dozer working in the area, and all mobile equipment in the Active Mining Area must de-energise before access is granted. De-energise means lowering implements to the ground and then:

Approval to entry

- dropping excitation for electric shovels;
- de-powering hydraulic pumps for hydraulic excavators and shovels;

- de-energising motion and setting the park brake for LeTourneau Loaders;
- shutting down the engine for all other diesel powered equipment.

Equipment stops if Light vehicle enters

No heavy mobile equipment must enter an Active Mining Area while a light vehicle or pedestrian are in that Active Mining Area.

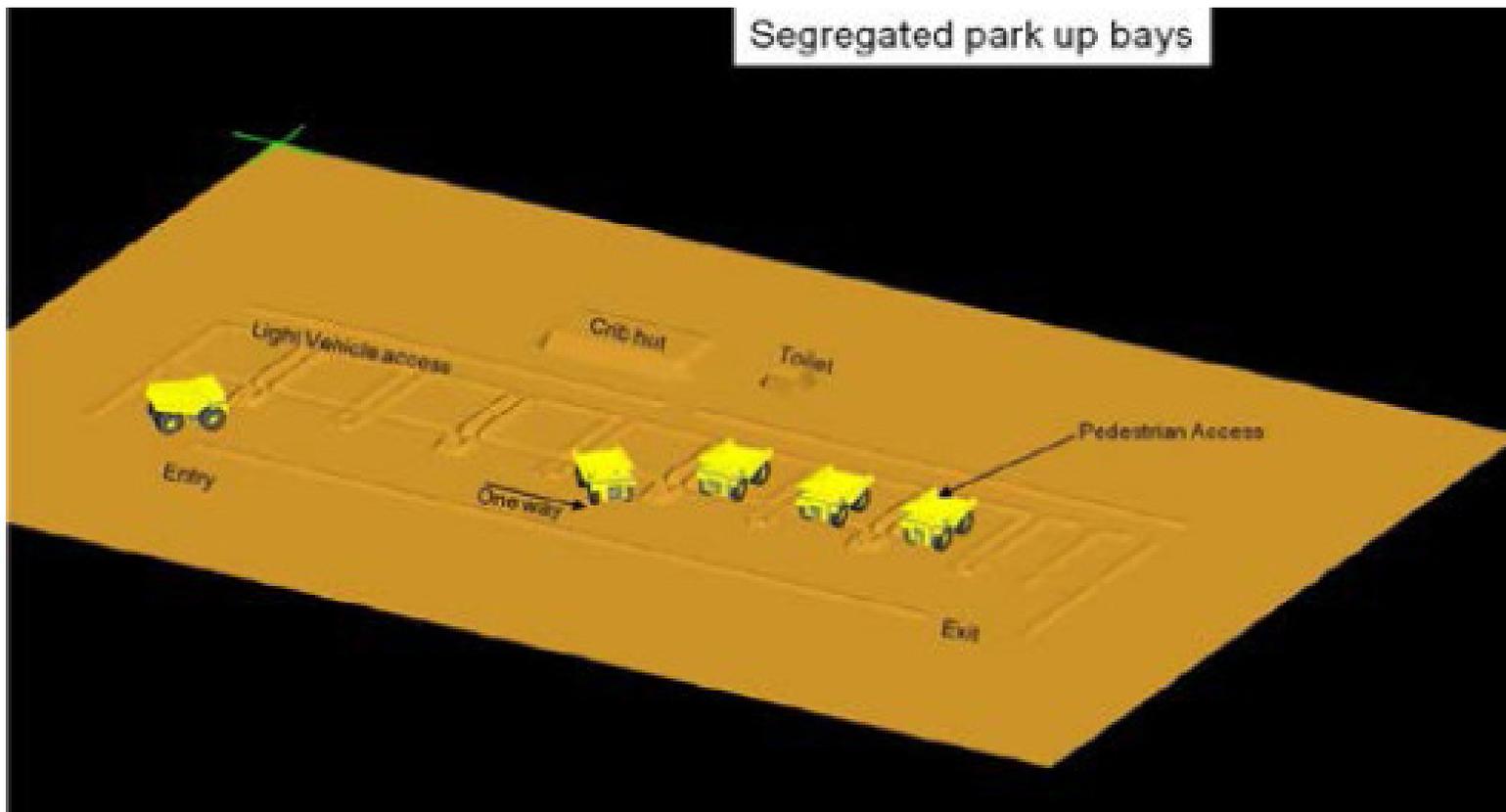
If a light vehicle or pedestrian enters without approval, all operations must cease and the matter must be reported to the supervisor immediately.

Once the light vehicle or pedestrian have left the Active Mining Area, they must confirm via positive communication with the operator of the primary dig unit or dump dozer in that Active Mining Area who may then declare that operations have resumed.

If the Active Mining Area is unattended then light vehicles or pedestrians wishing to enter the Active Mining Area must take reasonable steps to ensure that mobile equipment in the Active Mining Area is unmanned and shut down prior to entry.

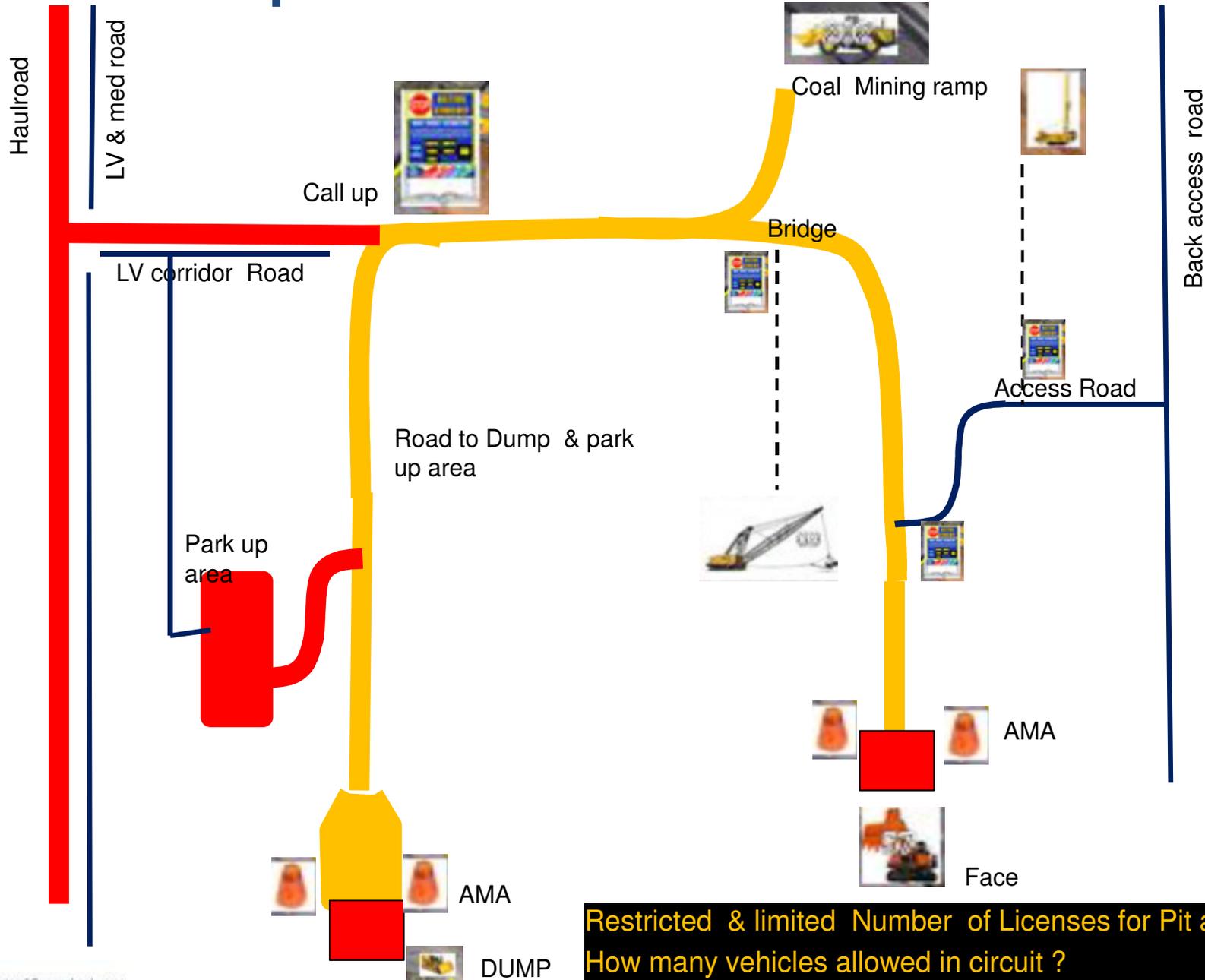
Situation if equipment is unmanned

Controls around .. Park up areas



Consideration of whether any LV vehicles enter this Truck bay or use of a separate maintenance bay with entry processes with physical barriers in addition to administrative controls ?

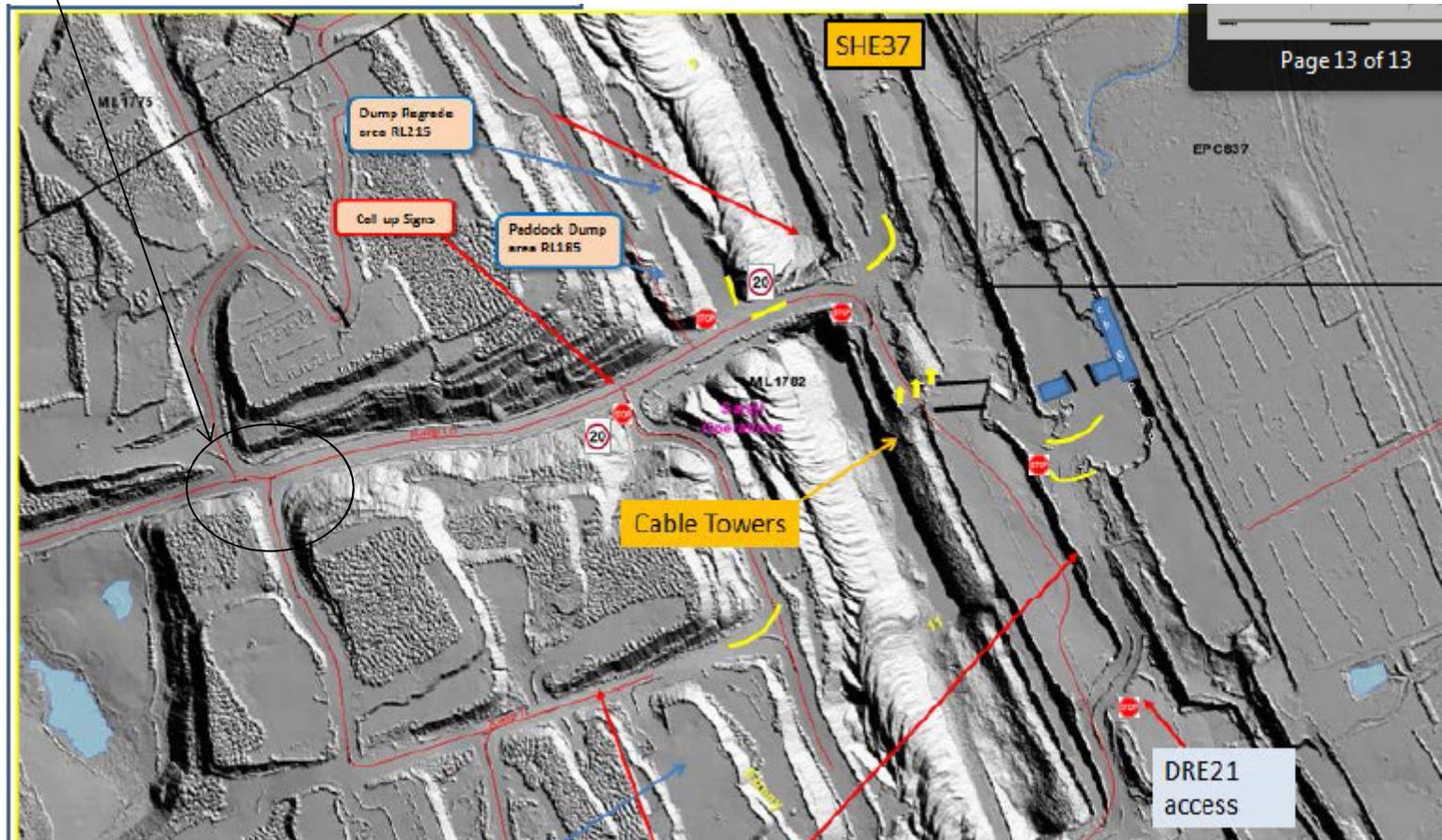
Concept for a Pit



Restricted & limited Number of Licenses for Pit areas ?
 How many vehicles allowed in circuit ?

Traffic Control Plans – complex circuits ...

Is this acceptable - how could it be controlled ?



Use of aerial photos or survey model

- Speed signage , stop signs

Traffic Control Plan - example of requirements

Once completed and authorised, the CTMP should be prominently displayed in relevant locations.

The minimum details to be displayed on all CTMPs are to include:

- Details of the specific area shown;
- Work face location(s) with relevant plant etc. depicted;
- Traffic routes and directional flows;
- Any particular hazards identified on the circuit (e.g. Cable Towers etc.);
- Any critical risk control measures for the task/circuit;
- Locations of critical signage (e.g. Give Way, STOP, circuit signs etc.);
- Relevant park-up and crib locations for the task/circuit;



Others Controls not discussed