

# QNJAC Guidance

## Traffic Management in Quarries



**Coalpro**, the trade association for UK coal producers, has produced a comprehensive guidance document on traffic management in quarries. View it at:

[http://www.coalpro.co.uk/docs/CoalPro%20Traffic%20Management\\_A.pdf](http://www.coalpro.co.uk/docs/CoalPro%20Traffic%20Management_A.pdf)



QNJAC recognises that this guidance is aimed at the opencast coal industry. However, the principles it contains are applicable to any size and type of quarrying operation.

The photographs in the document are inevitably of large mining plant and equipment and this must be borne in mind.

This information sheet has been developed by Coalpro and endorsed by QNJAC to help quarry operators, contractors, managers and others make health and safety improvements in the quarry industry. This guidance represents good practice which may go further than the minimum you need to do to comply with the law.



### **REMEMBER**

Quarry vehicles have been involved in numerous incidents  
Manage quarry vehicles and vehicle movements effectively





**Surface Mining**  
**Traffic Management**

July 2012



**The Confederation of UK Coal Producers (CoalPro) is the trade organisation representing most of the deep and surface coal producers. Production of coal in the UK is by far the most efficient in Europe. The coal industry employs over 9,000 people directly and many more in related activities (supplies, plant maintenance, services etc).**

The members of CoalPro are clear in their responsibilities to both the industry and the community at large. To ensure that these responsibilities are met, CoalPro members:

**Will seek too:**

- Continue their valuable contribution to UK energy requirements through the production of secure and competitively priced coal.
- Develop viable and well managed businesses to benefit employees and share holders with the promotion of the highest operating and environmental standards.

**Will commit to:**

- Promote training, health, safety and research and development of all aspects of the business. Areas will include, amongst other matters energy efficiency, clean burn technology, environmental standards and restoration techniques.
- Promote the highest practicable standards of operation to lessen the impact on the environment and amenities, including liaison with local community groups.
- Adhere to full statutory environmental controls and support the continued development and reinforcement of such controls.
- Adopt an environment code which will be regularly reviewed and updated.

Issue 1.0 of the Guidelines for Surface Mining Traffic Management reflects our commitment to keeping CoalPro members and the industry up to date with Health and Safety developments, new legislation, guidance and best practice. The Guidelines are intended for information, general guidance and as an aide-memoir for senior and operational managers within the industry. Minor changes and revised guidance will be published as required in the future and as such we welcome and encourage any comments on this Guidance. We acknowledge that improvements can always be made, and whilst the Guidelines do not constitute advice, or indicate any specific course of action.

**Acknowledgements**

CoalPro acknowledges the time, effort, experience and expertise of all those who contributed to this document. Particular mention must go to:

- Jason Davies – Miller Argent
- Keith Dunbar – UK Coal
- Jeff Fowler – Banks Group
- Philip Jarman – Celtic Energy
- David Patterson – Scottish Resource Group

**Disclaimer**

The contents of this document are intended for information and general guidance only. Detailed professional advice should be obtained before taking or refraining any action in relation to the contents of this guidance document.

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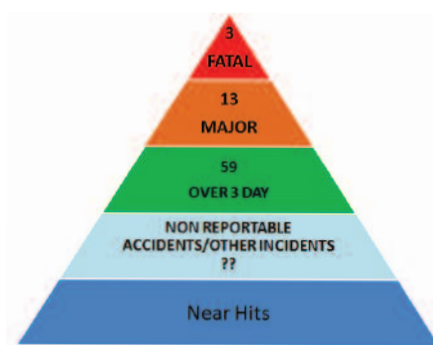
## References

# Introduction

CoalPro is committed to promoting the best working practices to ensure the health, safety and welfare of all employees and contractors throughout the coal industry in the UK.

Every year, a significant number of people are killed by accidents involving vehicles in the general workplace, and many more people are injured. Workplace incidents also result in consequential damage and costs to the business. Guidance is available from the HSE and other industry bodies covering general workplaces but Surface Mining is a specialist activity involving some of the largest items of plant in the UK.

This Traffic Management Guidance has been produced by CoalPro to help those involved in surface mining operations to control the risk of accidents involving plant and ancillary vehicles. It is designed to identify some of the safety problems for common vehicle operations on site. Better planning, training and awareness, and the appropriate use of vehicles, can avoid most of these incidents.



It is not envisaged that this guidance will cover all traffic management issues on a site and companies should complete their own risk assessment and take competent advice when implementing traffic management systems.

CoalPro RIDDOR reportable injuries were reviewed over the period April 2004 to the end of March 2011. Of the 306 reportable injuries some 25% (75) related to transport and mobile plant incidents.

## Legal Duties

Health and Safety law requires that risks at work are controlled as far as is 'reasonably practicable'. For a control to be reasonably practicable, the cost must be sensible in proportion to the safety gain (reasonable) and it must be physically possible (practicable). Ultimately, only a court can decide whether what you did was reasonably practicable. It should also be recognised that some legislation is absolute and is not qualified by 'so far as is reasonably practicable'.

The main pieces of legislation that have been referred to for this CoalPro Guidance are: -

- The Quarry Regulations 1999
- Provision and Use of Work Equipment Regulations (PUWER) 1998
- Management of Health and Safety at Work Regulations 1999
- Workplace (Health, Safety and Welfare) Regulations 1992

The Workplace (Health, Safety and Welfare) Regulations 1992 the Quarries Regulations

1999 place various duties on employers and those in control of workplaces, including the organisation of traffic routes. The first step in preventing transport accidents is to carry a comprehensive risk assessment of all activities involving vehicles. Site vehicles and traffic account for many significant hazards in a surface mine. These hazards must be assessed to ascertain who is exposed to these hazards, whether existing controls are adequate or can be improved. There are 5 simple steps to follow when carrying out risk assessment of transport hazards at work:

- Identify the risks posed by transport activities
- Identify who might be harmed
- Evaluate the risks
- Record the assessment
- Review and update the assessment regularly or when a change or incident takes place.

### **Responsibilities**

It is the responsibility of the Quarry Operator to ensure that procedures are in place which cover all aspects of the management and control of traffic within the quarry and that all persons are given relevant information and instruction on the hazards and control measures associated with traffic management, and thereby eliminate the risk of fatalities, injuries and incidents arising from the operation of mobile plant, ancillary vehicles and other general transport.

The Quarry Operator should ensure that all mobile plant and ancillary vehicles used on quarries are safe and suitable for use under the working conditions in which they are employed.

All mobile plant and ancillary vehicles should comply with any relevant statutory requirements and should be properly operated and maintained in accordance with the manufacturer's operating recommendations and all relevant Quarry Operator's requirements.

The Quarry Operator should undertake a risk assessment identifying the hazards associated with traffic within that workplace. From that risk assessment traffic management rules, including the vehicle rules as required by the Quarries Regulations 1999 should be developed. Management, employees and safety representatives should be involved in undertaking this risk assessment. The risk assessment and Traffic Management Rules should be monitored and reviewed on a regular basis.

# Safe Workplaces

## Site Design/Pre Planning Design

The initial design and planning of any workplace, in consultation with all relevant bodies is vitally important to all future operations.

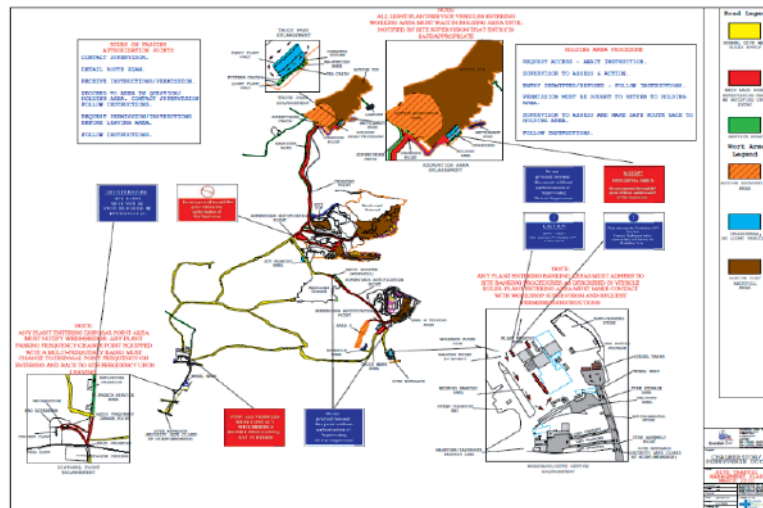
Discussions should involve relevant internal/external planning, technical specialists and internal operational staff. Your health and safety team should play an important part during this consultation. This consultation should take place prior to submission of planning permissions to ensure that a well thought out feasible submission is presented to the relevant local authority.

Particular attention should be paid to the following site areas:-

- Access to the site and security controls.
- Traffic routes, parking areas, delivery points
- Distribution Point
  - Coal Processing areas
  - Weighbridge location
  - Sheeting and Tipping areas
- Site offices and amenity areas
- Workshop layouts and designs
- Environmental control issues and requirements.
- Operational Designs for
  - Haul Roads
  - Plant Parking areas
  - Tips and Excavations
  - Lagoon Systems
  - Coal Stocking,
  - Sheeting Areas, Tip
- Stand –offs
  - Utilities
  - Water ways
  - Transport infrastructure
  - Public roads and footpaths

## Traffic Management Plan

In the Surface Mining Industry vehicle dangers present the greatest risks to personnel and equipment. Good and effective traffic management will help to reduce the risks. A site specific traffic management plan should be produced and approved by the Site Manager. The plan should identify traffic routes and traffic flow, access points, parking areas and other traffic control areas. The plan should be communicated to all site employees, contractors and visitors as required. This plan should be available to everyone and should be updated to reflect any changes within the operation.



An example of a typical Road Management Plan

## Site Access and Parking Areas

Access to the site must be controlled to ensure that unauthorised persons cannot progress to a location where they may be at risk from the site operations. This could be in the form of signage, automated barrier controls or personnel controlled areas – such as security or a weighbridge operator.



When designing car parks the following should be considered:

- Sufficient parking spaces to allow for employees, staff, site visitors and contractors.
- Traffic routes e.g. one way systems.
- Reverse parking policy.
- Suitable traffic calming measures.
- Pedestrian routes.
- Lighting and disabled access

## Contractors and Visiting Drivers

Careful consideration must be given to Contractors and Visiting Drivers who are required to access the site. These may maintenance personnel, plant operators, delivery drivers and HGV operators. Their needs should be assessed and where applicable these persons should be inducted accordingly to ensure that they are aware of the local rules and procedures and what is expected of them. For example small vehicles, such as plant maintenance vans, that are invariably required to attend breakdowns in operational areas their access should be strictly controlled with escort vehicles and close supervision. Consideration should be given to issuing the visiting drivers with a plan so that their movements and operations are strictly controlled.

## Design and Layout of Road Systems

Each site will have permanent traffic routes which will be used by staff and visitors vehicles, contractors and delivery vehicles, lorries and internal plant and ancillary vehicles. There will also be traffic routes in working and operational areas which



# Safe Workplaces

change as the site work progresses.

There will be pedestrian traffic, employees, contractors and visitors either on their way to or from their normal place of work at the beginning or end of the working day, or as part of their work during the day. Traffic routes should be planned to give the safest route between places where plant, vehicles and pedestrians have to call, park or operate.

Pedestrian routes should be planned to minimize exposure of the pedestrians to vehicle movements by the installation of barriers, crossing points etc.

## Site Roads

Roads should be adequately constructed and be suitable for the vehicles using them. Roads should be surfaced with suitable materials i.e. rock-fill. They need to be well drained to prevent a slippery road surface and protected from falling rock with the installation of suitable rock traps where applicable.

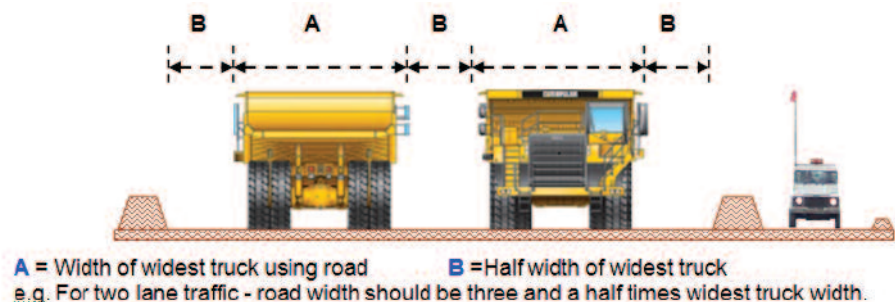
Road widths should be sufficient to allow two of the largest vehicles using the haul road to pass safely. Each lane of travel should provide clearance, left and right of the widest vehicle in use, which is equivalent to one-half the vehicle width. Separate roads should be provided for ancillary vehicles where possible.

The design of traffic routes should take into account the type and size of plant and vehicles being operated on the site and the plant should be designated as “heavy plant” or as “light vehicles” i.e. ancillary vehicles.

Traffic route design should include the segregation of the heavy plant and the ancillary vehicles. Separate roads should be provided for ancillary vehicles around areas such as workshops and for access to the operational areas of the site so far as is reasonably practicable.

Separate traffic controls and signage should be established for the safe passage of ancillary vehicles on these routes.

Recommended minimum road width:



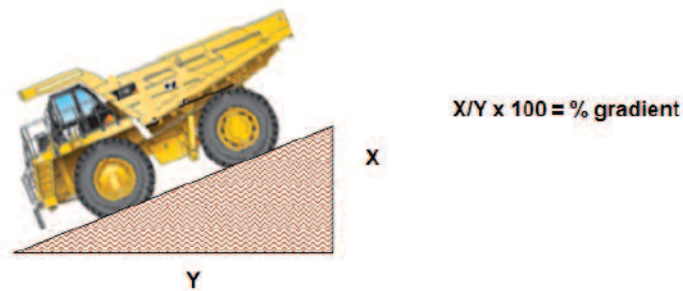
## Benches and Haul Roads

Regulation 13 of the Quarries Regulations 1999 relates to Benches and Haul roads and states that so far as reasonably practicable the operator shall ensure that –

- a) benches and haul roads are designed, constructed and maintained so as to allow vehicles and plant to be used and moved upon them safely; and
- b) where necessary, effective precautions are taken, by the installation of barriers or otherwise, to prevent vehicles or plant accidentally leaving any bench or haul road.

## Gradient and Cross Slope

The gradient of the road is very important to the braking capabilities of the plant and vehicles using it. The gradient, in percent, is equal to the number of metres that the road rises (vertically) over a horizontal distance of 100 meters. For example, a road that rises 9 meters over a horizontal distance of 100 meters is a 9 percent gradient.



Roads should not be designed at more than 10% gradient.

Cross slope, the difference in elevation between the road edges, must be given consideration during haulage road design and construction. On straight roads a level surface would be most beneficial. On curves a cross slope may be required to assist the driver in manoeuvring his vehicle through the curve. Adverse cambers should be avoided.

Adequate water drainage may also require that a cross slope be created. To accommodate both drainage and steer-ability, balance must be established between a level and sloped configuration. The rate of cross slope that will allow a rapid removal of surface water without adversely affecting vehicular control must be determined.

## Rock Traps

If roads are in use along the bottom of a face or below a tipping area the required widths should always be considered to ensure that any vehicles using this road are a suitable distance from the face to protect them from potential rock falls. Consideration should also be given to the installation of rock traps to catch any falling materials. They may need to be designed by the Geotechnical Specialist.

# Safe Workplaces

## Alignment

Benches and roads should be designed with viewing distances and alignment in mind to ensure that a vehicle rounding a curve, cresting a hill, descending a grade, or approaching a junction can stop in time to avoid an object in the road or a vehicle pulling onto the road.

## Edge Protection on Roads

Edge protection must be provided to prevent mobile plant and ancillary vehicles from being driven over an unprotected edge. All benches and roads which run alongside free edges where there is a drop, lagoon or other hazard which would put the driver, or others, at risk if the vehicle left the bench or road, shall have adequate edge protection provided.



On roads used by mobile plant the minimum acceptable height of the edge protection is 1.5m or the radius of the largest wheel / tyre, whichever is greater. Additional protection may be needed in high risk areas such as sharp bends or steep haul roads.

The aim of the edge protection is to stop the largest, fully loaded vehicle crossing it when travelling at the maximum foreseeable speed and it should be constructed with this in mind.

## Maintenance and Repair

Roads must be regularly maintained so that they do not develop bumps, ruts or potholes which may make control of vehicles difficult or cause health problems due to whole body vibration. Also excess mud and slurry can seriously affect the manoeuvrability and braking potential of the plant using the road.



## Drainage

Roads have to be adequately constructed to be suitable for the vehicle using them. This means they need to be well drained and surfaced with suitable materials. This not only improves safety but also productivity. Wherever gaps are left in road edge protection these must be designed so as to prevent vehicles from leaving the roadway and the gap must be minimised to the narrowest practicable.

## Pedestrian Segregation

The greatest risk to pedestrians is from vehicles and mobile plant. Pedestrian activity within the operational areas shall wherever possible be restricted, particularly in hours of darkness. For certain operations “no entry” zones should be identified and clearly marked by signs, fencing, cones etc. Employees must not enter operational areas as a pedestrian unless authorised to do so.



Where practicable, pedestrian routes or zones should be established and designated with suitable signs, barriers, road markings etc. particularly where plant is operating or manoeuvring. Such areas would be in plant and vehicle parking areas, around static plant and around buildings particularly workshops. The Traffic Management plan should also consider pedestrian activities.

## Speed Limits

Plant and vehicles must be operated and driven safely at a speed which is consistent with the prevailing site conditions. Site conditions can vary considerably over a relatively short period of time, either because of changing weather conditions reducing visibility or by road conditions deteriorating; reducing traction or becoming more slippery or because of the volume of traffic which accelerates wear and tear on bends and other areas where braking takes place.

There is no hard and fast requirement for speed limits on haul roads, as the surface mine environment is very dynamic and subject to the above changing conditions, however consideration should be given to maximum speed limits. Any such speed limits would need to be regularly monitored and reviewed to ensure that they are still appropriate.

Permanent site roads such as access roads to the office, welfare buildings, workshops, stocking ground, weighbridge etc. should be assessed for suitable speed limits, as invariably these are metalled roads and speeding vehicles can be a problem. Where speed limits are set adequate signage must be in place.



## Traffic Signage

Potential dangers need to be indicated by suitable warning signs. Drivers and pedestrians should be able to expect that the layout, signs, road furniture and markings on site will be similar to those on public roads.

Signs and lighting should be kept clean and well maintained so that they are always visible.

Signs that should be considered for use along surface mine haul roads include:

- To identify separate traffic routes and inform who can travel them
- To identify safe waiting (holding) areas for working and operational areas
- To identify hazards such as heavy plant crossing points, overhead obstructions etc.
- To identify traffic controls such as speed limits etc.
- To identify pedestrian routes and crossing points.
- Entry to workshop, maintenance, processing etc areas

## Lighting

The Quarries Regulations 1999 Regulation 23 and guidance requires that there should be adequate lighting of site locations and vehicles at all times to enable all persons to work safely and in safety. Adequate lighting should be provided to all areas and especially to those areas used in hours of darkness or in poor visibility or diminished lighting conditions. As a minimum, lighting should be provided for junctions, around plant and buildings, pedestrian routes and areas where loading/unloading is to be carried out.



# Safe Vehicles

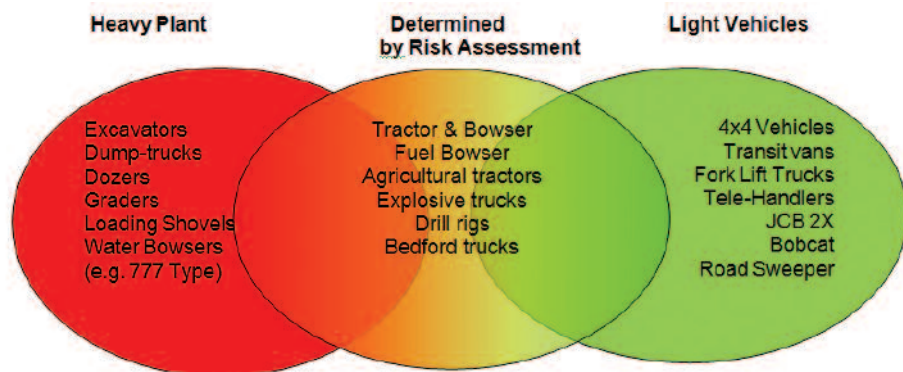
## Vehicle Selection

All mobile plant and ancillary vehicles used on sites shall be safe and suitable for use under the working conditions in which they will be employed. All mobile plant and vehicles shall comply with any relevant statutory requirements and shall be properly operated and maintained in accordance with the manufacturer's operating recommendations and all relevant company requirements.

## Definition of Heavy/Light Vehicles

Any mobile plant or vehicle which operates on site shall be classified as either 'Heavy Plant' or 'Ancillary Vehicle'.

Examples of categories of plant/vehicles:



Some plant or vehicles may need to be re-classified according to their size and the operations that they perform i.e. small front loading dump trucks, mini-excavators etc

Other plant or vehicles not listed above shall be identified and classified according to their size and the operations they perform on site.

The classification of each item of mobile plant or vehicle on site shall be specified in the Site Vehicle Rules.

## Vehicle Inspection and Maintenance

Prior to the operation on site of any mobile plant or vehicles, a competent person shall assess the plant / vehicle to ensure it meets the requirements of the Quarry Operator's Mobile Plant and Vehicle Specification.

All mobile plant and ancillary vehicles shall be included in the scheme for the systematic inspection, maintenance and testing of plant and vehicles required by regulation 12 of the Quarries Regulations 1999. Contractors or hired plant should be included in the scheme.

Examination and tests of plant and vehicles shall be carried out by a appointed person as defined in your management systems. Scheme documentation shall record when inspections are carried out and by whom and record details of any significant defects

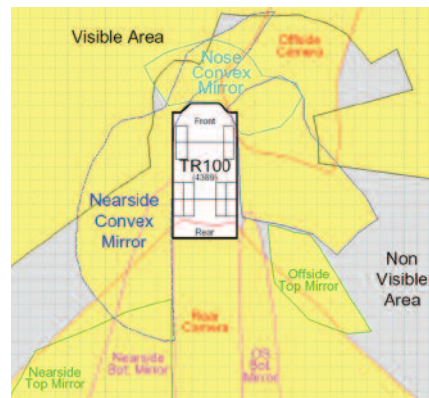
# Safe Vehicles

found and remedial action taken.

Instructions to drivers concerning plant and vehicle checks and the reporting of defects shall be specified in the Site Vehicle Rules. Inspections should be carried out on the machine and it should be suitably recorded in a vehicle log book or checklist. The checks should include items subject to damage or wear, fluid levels, safety devices and the defects recorded and reported.

Safety critical defects must be reported immediately to the appropriate Supervisor or Manager to determine the serviceability of the machine.

## Vehicles and Visibility



The size, weight and power of mobile machinery used in surface mining presents significant hazards to people and equipment in its area of operation. A major reason for these hazards is the operator's restricted view of the surroundings and consequent range of blind spots in which people and objects can be hidden from sight. Many vehicles have substantial blind spots, not only immediately behind the vehicle, but also alongside and immediately in front of it, without suitable visibility aids fitted.

There are also substantial blind spots on dozers, wheeled loading shovels and excavators. Light vehicles and / or pedestrians are at risk of being run over if they are in the operator's blind spot.

To manoeuvre safely the driver needs to be able to see all around the vehicle whether it be large or small. The visibility must be such that the vehicle can be used in complete safety for both the driver and any exposed person. Improvement in visibility is achieved by fitting appropriate aids such as extra (convex) mirrors and CCTV to give adequate visibility to the front, sides and rear and work place layout. As a guide the operator should be able to see a 1 metre high object 1 metre away from any danger point of a vehicle and be able to detect the presence of other vehicles and pedestrians in their intended line of travel when moving off or when reversing.



It is intended that CoalPro will produce a further guidance document on 'All Round Vision'.

## Seat Restraints

Site vehicles and mobile plant have many safety features; few are as easy, as basic or as important as seat belts. A Seat belt is designed to secure the occupant of a vehicle against harmful movement that may result from a collision, roll-over or a sudden stop. Using seat belts in our personal vehicles has become second nature as it is mandatory (it is the law) to wear them on the public highway. When it comes to site vehicles and mobile plant, seat belt use should also be second nature. The Site Vehicle Rules should specify that seat belts, where fitted, must be worn whenever the operator is seated in the cab.

## Roll Over Protective Structure (ROPS)

The structures main purpose is to provide operator protection in the event of a machine roll over. Most Earthmoving machines have a built-in ROPS structure but some ancillary vehicles have to have a ROPS fitted if they are to be used in areas where there is a risk of the vehicle overturning. The decision will need to be based on an assessment.



An employee of a contractor was killed when the 4x4 road vehicle he was driving overturned on a haul road at a quarry. Although the operator was thrown clear during the incident, the roof of the vehicle collapsed. The HSE released a Safety Notice – Rollover risk associated with the use of road vehicles in off-road applications in quarries.

## Falling Objects Protection (FOPS)

The structures main purpose is to provide operator protection in the event of objects falling on to the cab. In the case of surface mining this is more likely to be a loose rock falling from the face and hitting the cab or breaking the windows. Earthmoving machines will not be supplied with FOPS, so this will have to be specified where there is a risk of falling material. Typically this might be coaling or coal cleaning machines that have to operate close to an excavation face e.g. within 10 meters of the face.

## Brake Testing

The Quarries Regulations 1999 and Approved Codes of Practice and Guidance, require the operator to make Vehicle Rules that include cross-references to the scheme for inspection and maintenance of plant. The Guidance, Appendix 4, paragraph 14, requires that a suitable inspection scheme be in place to ensure vehicle brakes are kept in good condition at all times.

In practice, a typical service brake test regime would consist of: a simple driver stopping / instrumented test, or stall test. Carried out either per shift or daily; and an instrumented test at an interval of between 1 and 3 months carried out by a competent person.



# Safe Vehicles

The document, Guidance on Brake Testing for Rubber-tyred Vehicles, Operating in Quarries, Opencast Coal Sites and Mines, prepared by QNJAC and published by EPIC (now MPQC) and OPERC, explains the brake ratio method of brake testing and gives a step-by-step guide on how to correlate braking performance with actual site conditions and how to design and put in place a suitable brake test regime.

## **Breakdown and Recovery**

The breakdown of any plant and vehicles on site can leave the plant or operator in a hazardous environment. Consideration to the immediate safety of the operator and the vehicle shall be given prior to the subsequent recovery operation.

A risk assessment should be carried out by a competent person and consider the following.

The position of the stranded vehicle should be considered with regard to other traffic movements and site hazards.

- Slopes and gradients
- Blind Corners
- Brows of hills
- High walls
- Tight areas
- Tipping operations
- Excavations and haul roads
- Stability

Where a broken-down vehicle causes an obstruction to any roadway or active area provision should be made to safely cordon off the vehicle and divert the site traffic around the obstacle until the vehicle can be safely recovered.

- a) Broken down or stranded vehicles must be reported immediately to a Supervisor who must assess the situation.
- b) When a stranded vehicle has been recovered, it must not be returned to work until it has been inspected for defects.
- c) The risks of an unplanned movement of a vehicle must be considered during all vehicle recovery operations and suitable safety control measures must be implemented. If stranded on a slope, additional physical control measures must be used to prevent the vehicle being set in motion e.g. chocks, blocks, overburden or other physical means of restraint.
- d) Towing of vehicles should be avoided if repairs can be affected quickly and safely.

# Safe Driving and Plant Operation

## Plant Operators and Drivers

Every operator and driver employed directly or indirectly to operate mobile plant or an ancillary vehicle on a quarry shall only do so if:-

- a) They are capable of doing their work in a way that is safe for them and other people.
- b) They are competent by way of sufficient training, experience, knowledge and other qualities to undertake the duties assigned to them.
- c) They are sufficiently fit and healthy to drive safely and not put themselves or others at risk.
- d) They are authorised by the Site Manager.
- e) They have undergone a site induction and are given relevant information and instruction on the hazards and control measures associated with site traffic management.
- f) They have received and confirmed they understand any specific rules issued to them.
- g) Any non-English speaking operators / drivers employed have the rules communicated to them and checked that they understand

There is no legal requirement for plant operators to hold a road driving license unless they wish to drive their vehicles on the public highway. All plant driven on the public highway must comply with the appropriate road traffic legislation.

Persons who drive on the public highway must hold a valid driving license and shall provide the license details to the site. It shall be the duty of the employee / contractor to inform the site of any driving ban or revocation of their license.

## Competence and Capability

All employees who are to operate mobile plant should have a valid site authorisation/ license for the type of plant to be operated.

Trainee operators should remain under the supervision of an authorised competent person until they are deemed to be competent.



The mobile plant operator should be assessed by a Mobile Plant Assessor before the authorisation can be added to the employee's authorisation/licence. The appropriate assessment form should be completed and retained in the employee's records.

Preferably Mobile Plant Assessors should be accredited to an industry recognised scheme.

When involved in operations, all Contractors should be expected to hold a Contractor

Safety Passport or be able to demonstrate a similar level of competence.

All contractors' employees should be able to demonstrate their individual level of competence. This may be a letter of competence from their employer advising how this competence was achieved.

### **Training and Authorisation**

Health and Safety law requires that each operator is given adequate training by their employer so that they are competent to operate the machinery which they use. (Quarries Regulations Regulation 9 & PUWER 98 - Regulation 9)

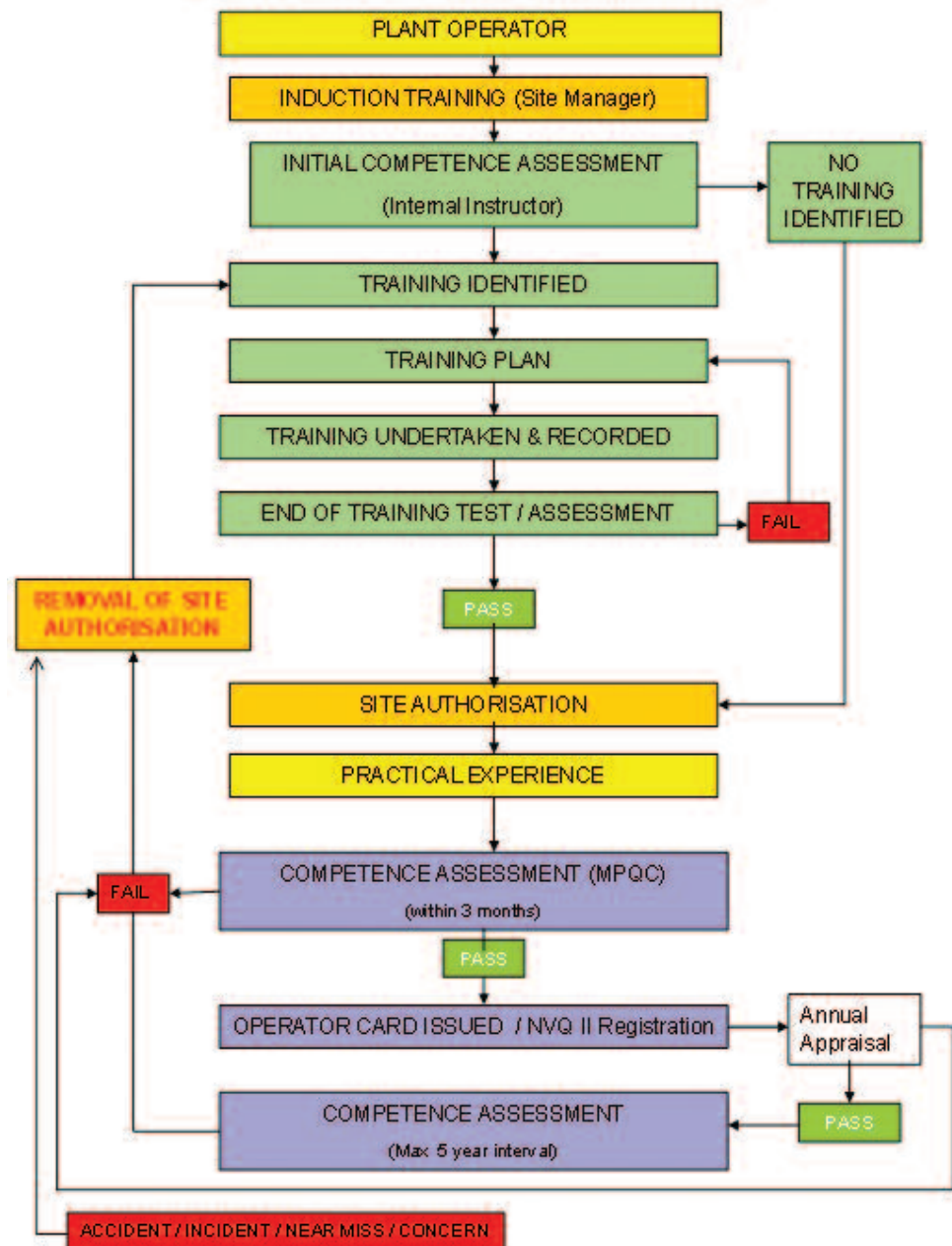
(1) Every employer shall ensure that all persons who use work equipment have received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.

(2) Every employer shall ensure that any of his employees who supervises or manages the use of work equipment has received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.

The Quarry Operator should follow a training scheme as follows:-

- a) Basic and specific training should be carried out by a competent instructor.
- b) Familiarisation training should then be given which needs to take place on the job.
- c) The trainee should be appointed and assigned a supervisor to exercise personal supervision over the trainee during familiarisation training.
- d) The trainee, after familiarisation training, should be given an assessment by a Mobile Plant Assessor.
- e) An assessment record should be completed after an assessment of the trainee. The assessment sheet should recommend the appropriate action i.e. competent or requires further training. The assessment sheet should provide sufficient information to allow the training to be traced back to course content.
- f) Following satisfactory completion of training, the employee should be authorised in writing to operate the mobile plant by the Quarry Manager.
- g) Training records and authorisations / licences should then be updated.
- h) Such a training framework should be set out in the vehicle rules.

### Plant Operators Competence Scheme Flowchart



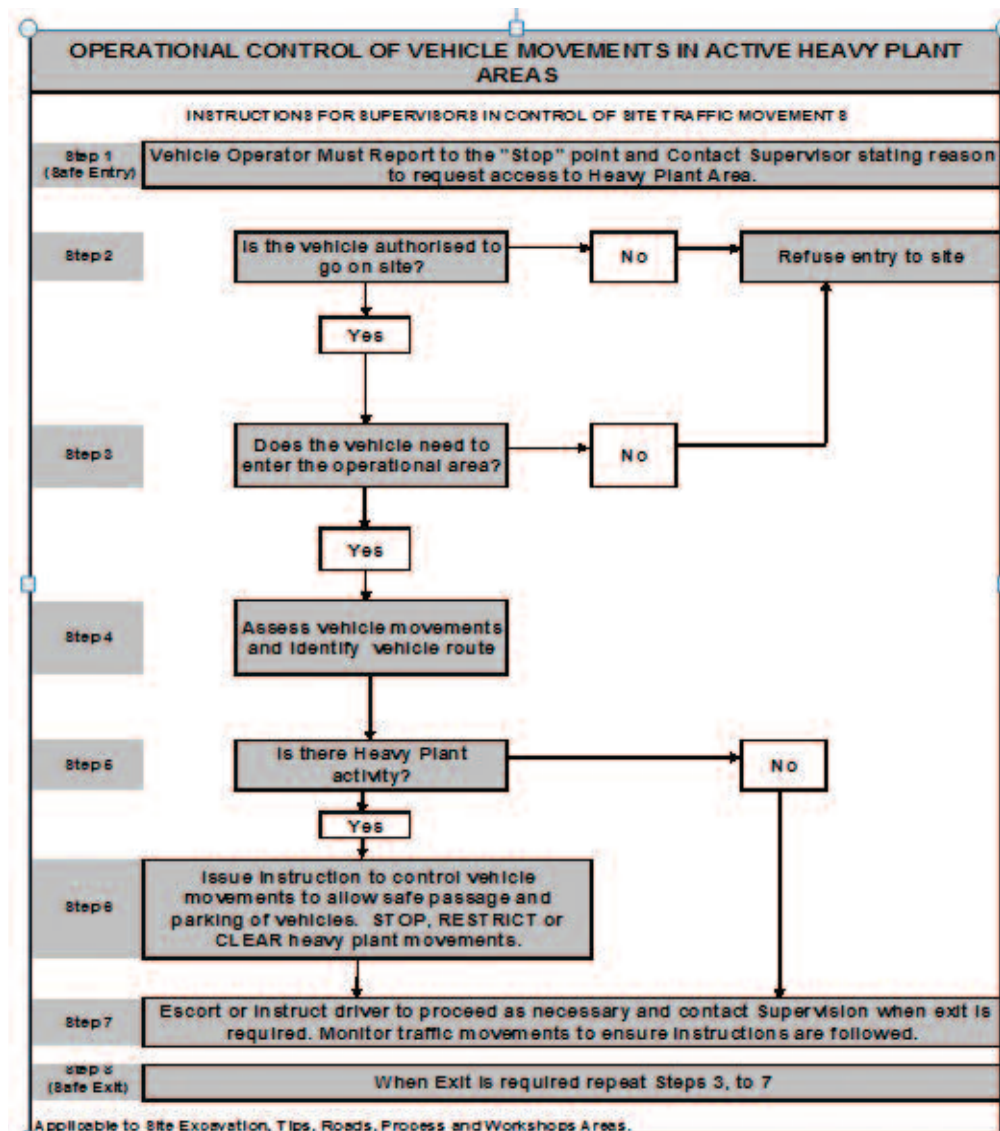
### Control and Supervision

Supervisors should ensure that: -

- a) Site traffic movements are organised and controlled so that vehicles can be driven safely and the risk of collisions is minimised.
- b) Entry, parking and exit to active heavy plant areas such as haul routes, tips, excavations and workshops by vehicles especially light vehicles and pedestrians is authorised and controlled so as to limit the risk of collision with heavy plant to as low as is reasonably practicable. This may require stopping, clearing or restricting vehicle movement but should be based on the flowchart below



# Safe Driving and Plant Operation



- c) They monitor through regular visual inspections from a safe vantage point that site vehicle operations are being carried out in compliance with these rules.
- d) That one way systems and segregated routes are used and reversing movements are minimised.
- e) Access to any haul roads or ramps not suitable for use is restricted by placing a physical barrier at the entrance to the restricted area.
- f) Haul roads and ramps are suitably constructed avoiding steep gradients, sharp bends or blind dips wherever possible.
- g) Adequate edge protection is provided on haul roads, tip edges, water bodies and other locations where there is a drop edge or other hazard.
- h) Roads are adequately maintained with re-grading, slurry and debris removal and dust suppression etc. as necessary.

- i) Unforeseen incidents such vehicle breakdowns, bogged vehicles, rock falls, subsidence etc. are promptly dealt with, with a suitable risk assessment and remedial action.
- j) All site visitors or sub contractors with vehicles will be assigned to the control of a Supervisor or authorised person and be escorted to and from their place of work. A hand held radio must be provided and appropriate instructions issued.
- k) Appropriate corrective action is taken to address any breaches of these rules, reporting non-compliances to the Site Manager as appropriate.
- l) During periods of dry, windy weather, water shall be evenly applied at regular intervals to the surface of the haul roads and benches so as to suppress dust and prevent it from becoming airborne and causing a visibility nuisance. The quantity and frequency of water application must not create a soft slippery surface, particularly on slopes and bends.
- m) In adverse weather conditions supervisors must ensure that plant operators drive to the prevailing conditions. An assessment must be made of deteriorating conditions to establish if operations can continue safely or if vehicle movements must be suspended. Examples of deteriorating conditions could be rain, ice, snow, fog etc
- n) They monitor through regular visual inspections from a safe vantage point that site vehicle operations are being carried out in compliance with these rules.
- o) Wherever possible one way systems are used and reversing movements are minimised.
- p) Access to any haul roads or ramps not suitable for use is restricted by placing a physical barrier at the entrance to the restricted area.
- q) Haul roads and ramps are suitably constructed avoiding steep gradients, sharp bends or blind dips wherever possible.
- r) Adequate edge protection is provided on haul roads, tip edge, water bodies and other locations where there is a drop edge or other hazard.
- s) All site visitors or sub-contractors with vehicles should be assigned to the control of a Supervisor or authorised person and be escorted to and from their place of work. A hand held radio should be provided and appropriate instructions issued.
- t) Any safety concerns are reported immediately to the Site Manager as appropriate and the necessary remedial action taken.

# Safe Driving and Plant Operation

## **Traffic Signalers**

Should signalers be employed to direct plant/vehicle movements they need to be competent in methods used to ensure their own and other peoples safety. Signalers should be suitably trained (accredited course) and authorised and familiar with the signals to be given to drivers.

## **Radio Control**

Radios should be used as a communication aid where appropriate but should not be regarded as the primary means of communication. Eye to eye contact between drivers and/or pedestrians and effective hand signals remain the primary means of communication and should be used wherever possible. You should not rely solely on a radio to keep you safe.

All radio communication should be acknowledged before carrying out the instruction, requirement or request.

When on site you should have a radio in your possession or be accompanied at all times by a person carrying a radio, except in areas exempt from the use of radios, if identified as such by the Site Manager.

If you have been issued with a site radio you should use it in accordance with the Site Manager's instructions. Formal protocols should be drawn up and operators trained in their use.

Site Supervisors should monitor radio communication at all times and take appropriate action to ensure that instructions are properly communicated and understood.

Radios should be used to communicate for operational purposes only.

Communication by radio should be carried out from a place of safety at all times.

Where more than one vehicle is involved, radio instructions should be given in an order that will ensure safe vehicle movements.

Site radios may be either a fixed vehicle unit or a portable handset. Sufficient numbers of portable handsets and charged spare batteries for handsets should be maintained at all times. These should be returned to the charging unit after use to ensure that a sufficient number of working radios are available for operational purposes.

Users should ensure that radios are treated with care and kept in good order.

Radio faults should be reported to a Supervisor and a replacement requested. Local rules should be in place to cover radio faults.

Site radios should be switched on at all times and tuned to the channel for site communications. Other channels should be used for specific works or emergencies as appropriate.

Abuse or frivolous use of the site radio system should not be tolerated and anyone guilty of this should be subject to disciplinary action. The provision of 'Caller ID' would alleviate most mis-use.

Radios should only be used when it is safe to do so and not when carrying out a complex vehicle movement or other task where the use of a radio might present a risk to health and safety e.g. a reversing manoeuvre.

It is essential that radio users identify themselves and name the driver of the vehicle or personnel they wish to communicate with.

Vehicle operators should not interrupt another person's communication except in an emergency.

Emergency procedures should include the use of radios and emergency call signs.

## Mobile Phones and other Media



Mobile phones can be beneficial to operations on site and can provide security and assistance in an emergency. There has been much attention about driver distraction due to the use of mobile phones in vehicles, however other personnel, such as maintenance staff using tools and equipment or pedestrians, can also be distracted from the dangers of vehicles, mobile plant or other machinery around them when using a mobile phone or other hand held device.

A mobile phone ring tone, text message alert or the 'ping' of an e-mail is a sound few of us can ignore, but they can allow us to become distracted from the task at hand.

A distraction is when someone pays attention to a second activity while carrying out a task. Using a mobile phone distracts you in many ways:

- Physical distraction - for example handling the phone while driving or taking your hand off the steering wheel to dial a phone number or to answer/end a call.
- Visual distraction - for example taking your eyes off the road.
- Cognitive (mental) distraction - for example doing two mental tasks at the same time, like having a conversation and driving.

Using a mobile phone while driving can significantly impair a driver's reaction time, visual search patterns, ability to maintain speed and position on the road and general awareness of other road users.

Using a hands free phone when driving does not significantly reduce the risk. The problems are caused mainly by the mental distraction and divided attention of taking part in a conversation at the same time as driving.



# Safe Driving and Plant Operation

Mobile phones are not the only distraction. Others include:

- Other electronic devices such as IPOD's, PDA's or gaming devices
- The reading of newspapers, books, magazines or other reading material
- The playing of loud music that makes you unable to hear other sounds

While personnel are in the operational areas of surface mines in the vicinity of large earthmoving machinery and other ancillary vehicles any distraction could result in a dangerous situation arising.

The playing of loud music or the use of headsets to listen to music played on electronic devices could result in personnel not hearing other sounds around them and also vital communication messages not being heard.

There have been occasions when following an incident at a site, photographs have appeared on social media internet sites. These photographs could prejudice the result of any investigation following the incident and damage the company reputation.

The use of personal mobile phones and other electronic devices, while driving or operating plant or equipment, should be prohibited.

The site should have a policy / rules which specify, where and when any mobile phone or device can be used. Other points that should be considered could include;

- The use of personal mobile phones and other electronic
- Company issued mobile phones
- Newspapers and other reading material
- Photographic equipment

## Vehicle Operating Practices

### Vehicle Start Up

Prior to a vehicle being operated the following "Vehicle Start Up Procedure" should be adopted:-

- a) Before starting a vehicle the operator should ensure that precautions are taken to prevent any unplanned vehicle movement. The parking brake must be properly applied and the appropriate gear selected. Where necessary the wheels, tracks and other equipment must be prevented from moving by physical measures such as wheel securing, chocking or blocking, jacking or other suitable control measures.
- b) A competent authorised operator should be in control of the vehicle at all times when the engine is running. The operator must not leave the vehicle with the engine running unless suitable precautions have been taken to prevent any unplanned or unauthorised vehicle movement.
- c) Before moving the vehicle in any direction the operator must ensure that the surrounding area is clear of other vehicles, pedestrians and other obstructions,

especially to the front or rear of the vehicle. In the case of rotating, tracked or articulating vehicles this is particularly important.

### **Driving a Vehicle**

When driving a vehicle in the site the following points should be considered when preparing vehicle rules.

- a) All vehicles driven within the site should use dipped headlights at all times.
- b) Ensure that the area around the vehicle is clear before moving away or altering direction. Where reasonably practicable, large vehicles must never be turned using full steering lock from a parked position. Any area where the vehicle may manoeuvre must first be checked and must be clear. Where necessary the driver must exit the cab to check that the area is clear before moving off.
- c) Drive with due care and attention and at a speed that is appropriate to the prevailing ground, weather and visibility conditions. Obey local speed limits where applicable.
- d) A safe distance must be maintained from the vehicle in front so that emergency action can be taken. As a practical rule, vehicles must maintain a minimum of 3 large truck lengths (approx. 30 metres) away from the vehicle in front and further in poor conditions. Particular care should be taken on haul roads that have been newly sprayed with water for dust suppression purposes.
- e) Vehicles will normally be driven on the left-hand side of the road unless specific instructions are issued or local rules implemented to the contrary.
- f) Loaded vehicles always have priority over empty vehicles.
- g) Light vehicles must always give way to heavy vehicles and not enter heavy vehicle areas without permission from supervisors. A safe distance must always be kept from heavy vehicles.
- h) Light vehicles should not travel along areas of reduced visibility on the off sides of dump trucks without advance communication with the dump truck operator.
- i) When vehicles of similar size and capacity are sharing a haul road and there is a need to give way, the vehicle travelling uphill has priority.
- j) Vehicle operators must give way to traffic coming from the right at junctions.
- k) Only trucks for loading or tipping purposes may enter the swing radius of an excavator or manoeuvring zone of a dozer or loading shovel. Pedestrians and other vehicles must not enter the area unless granted permission by the Supervisor or other designated person and the plant is stationary with the bucket, blade, ripper or other raised equipment grounded.

# Safe Driving and Plant Operation

- l) Broken down or stranded vehicles must be reported immediately to a supervisor who must assess the situation, organise vehicle recovery procedures or arrange for the area to be cordoned off by hazard cones or other suitable means, such as a physical barrier, if appropriate.
- m) On no account should a vehicle be driven within any cordoned off areas.
- n) With the exception of authorised vehicles that have been fitted with suitable safety devices, road going vehicles must be escorted while being driven within the quarry working area.
- o) Coasting out of gear is forbidden in all circumstances.
- p) Overtaking manoeuvres must only be done when safe to do so and with the full acknowledgement of the operators in front and to the rear. Signals, radio communication and visual contact must be used as appropriate. Overtaking must not be attempted where there is not enough road width to do so safely or on a short road, ramp or blind corner or in wet and slippery or poor visibility conditions.
- q) Vehicle operators must keep their cabs clean and tidy, store loose and personal items securely and ensure there are no obstructions to visibility aids, windows, controls, gauges, warning lights etc. Vehicles will be driven with the doors closed at all times.
- r) Vehicle operators must remain alert at all times to pedestrian activities which will be kept to a minimum in the quarry. Operators who are unsure about the location of a pedestrian or light vehicle should stop their vehicle immediately. Particular care should be taken during reversing manoeuvres and at maintenance and parking areas.
- s) Vehicles must never enter a pedestrian only zone. Pedestrians must never enter a "No Pedestrian Area."
- t) Pedestrian activities must be kept to a minimum and vehicle operators must remain in their cabs wherever possible. When leaving the cab of a vehicle at any time a vehicle operator becomes a pedestrian and will be required to wear a hard hat, high visibility waistcoat/jacket and safety boots.
- u) Pedestrians must remain in full view of vehicle operators and must communicate with vehicle operators to confirm their presence. Always check – never assume that you have been seen.
- v) Vehicle operators must immediately contact a site supervisor in the event of any breakdowns, emergencies or any other unplanned event.
- w) In the event of an accident mobile plant should not be moved and operators should remain in their cabs unless there is imminent danger. Mobile Plant will only be permitted to be moved once a thorough investigation has been carried out.

- x) If mobile plant is obstructed such that the obstruction is large enough to offer resistance to forward or reverse movement then the machine should be halted immediately and the obstruction investigated before plant damage occurs or is made worse.

### **Entry into a Loading Zone**

The loading zone is defined by the manoeuvring zone of the excavator or loading shovel and the manoeuvring zone of the trucks being loaded or waiting to be loaded.

- a) The entry of any vehicle other than a dump truck into the loading zone of an excavator or loading shovel is prohibited while excavation and loading operations are active.
- b) The operators of dozers, graders or rigid wheel loaders and other heavy plant that are required to enter the loading zone for operational purposes must receive permission from the Supervisor or other designated person who will exercise control of traffic movements to ensure that no collisions can occur and will give appropriate instruction to vehicle operators.
- c) If light vehicles or pedestrian are required to enter the loading zone, contact must be made with the Supervisor or other designated person by radio to request permission to proceed. Before granting permission the Supervisor or other designated person must ensure that the excavator or loading shovel is stationary with the bucket grounded and dump trucks and other heavy plant have been parked up in a safe location in accordance with Supervisors or other designated person's instructions.
- d) In each situation the Supervisor or other designated person must ensure that radio contact is made with the appropriate personnel and must not authorise entry of vehicles and pedestrians into the loading zone until he has ensured all dump trucks and heavy plant have parked up in a safe location.
- e) If at any time a vehicle or pedestrian enters the loading zone without prior permission a Supervisor or other designated person must be notified immediately and all plant must stop and remain stationary until instructed otherwise by a Supervisor or other designated person. The operator of the excavator or loading shovel must ground the bucket and ensure that the excavator or loading shovel does not move.
- f) If at any time a vehicle or pedestrian enters the loading zone without permission and is seen by any driver, that driver must immediately stop, notify the supervisor and ensure using his radio that all other machines in the loading zone are told to stop and remain stationary. The operator of the excavator or loading shovel must ground the bucket and ensure that the excavator or loading shovel does not move. The supervisor or other designated person must then take control of the situation before any vehicle is allowed to move.
- g) For further guidance refer to the flow chart 'Operational Control of Vehicle Movements in Active Heavy Plant Areas'

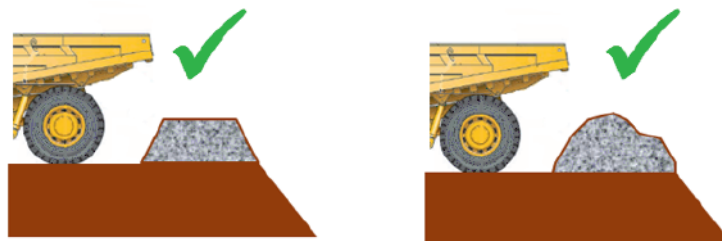
# Safe Driving and Plant Operation

## Loading Operations

- a) During normal loading operations, when the excavator operator is satisfied that a truck is positioned safely to receive a load he will discharge the load from the bucket.
- b) On completion of the load and when the excavator operator is satisfied the truck is safely loaded the excavator horn or other suitable indicating device will be used to inform the truck driver to move off.
- c) On sites where local authority planning permissions restrict the use of horns on nightshift the Site Manager must authorise a safe system of work for communication between excavators and dump trucks, for example signaling using lights to indicate that the truck is safely loaded.
- d) Dump trucks should approach the loading zone in an orderly fashion and should only manoeuvre into position when it is safe to do so.
- e) Whilst loading is underway no vehicles should be parked within the loading zone other than for the purpose of being loaded.
- f) When a dump truck has been loaded it must leave the loading zone and proceed to the tipping area without delay. Excavator operators must check the truck has left the loading zone before making any manoeuvre that would cause collision with the loaded truck should it not move off for any reason. If the truck cannot move off immediately the truck driver must communicate with the excavator operator.

## Tipping Operations

- a) Suitable edge protection berms with a minimum height equal to 1.5m or the radius of the largest vehicle wheel, whichever is greater, must be maintained at drop edges. Such berms and stand-offs should be designed or considered by the Geotechnical Specialist to ensure stability and allow for the maximum rear axle weights and dynamic loading. Tip edge berms must be maintained at all times to a suitable profile as illustrated below.



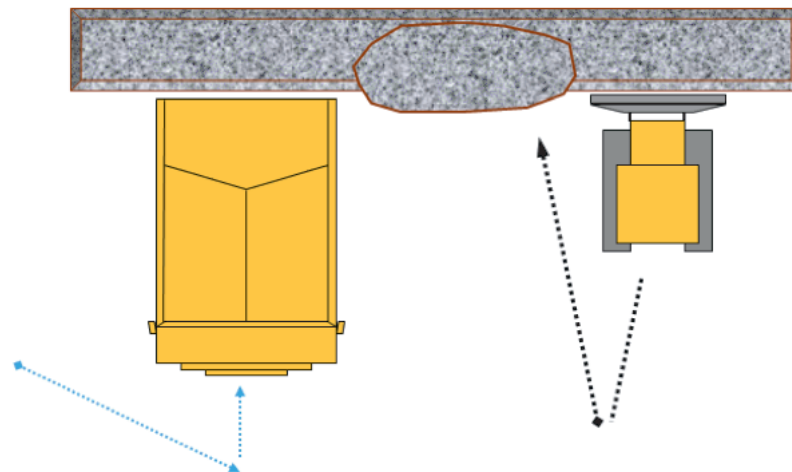
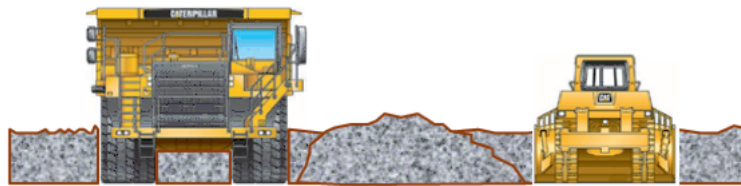
SUITABLE EDGE PROTECTION BERM PROFILE



UNSUITABLE EDGE PROTECTION BERM PROFILE



- b) Dozers and other vehicles in the tipping area must remain in the view of the operator of a reversing vehicle at all times i.e. on the cab side. Dozers and dump trucks must remain at least one truck width apart from other vehicles while on tip edges. Dump truck operators must never drive within the reversing path of a dozer.
- c) On no account should a vehicle be reversed blindly in a tipping area. Operators must make full use of visibility aids and should not reverse until they are certain that the path is clear and only if a stand-off or protection is in place adjacent to any edge or hazard.

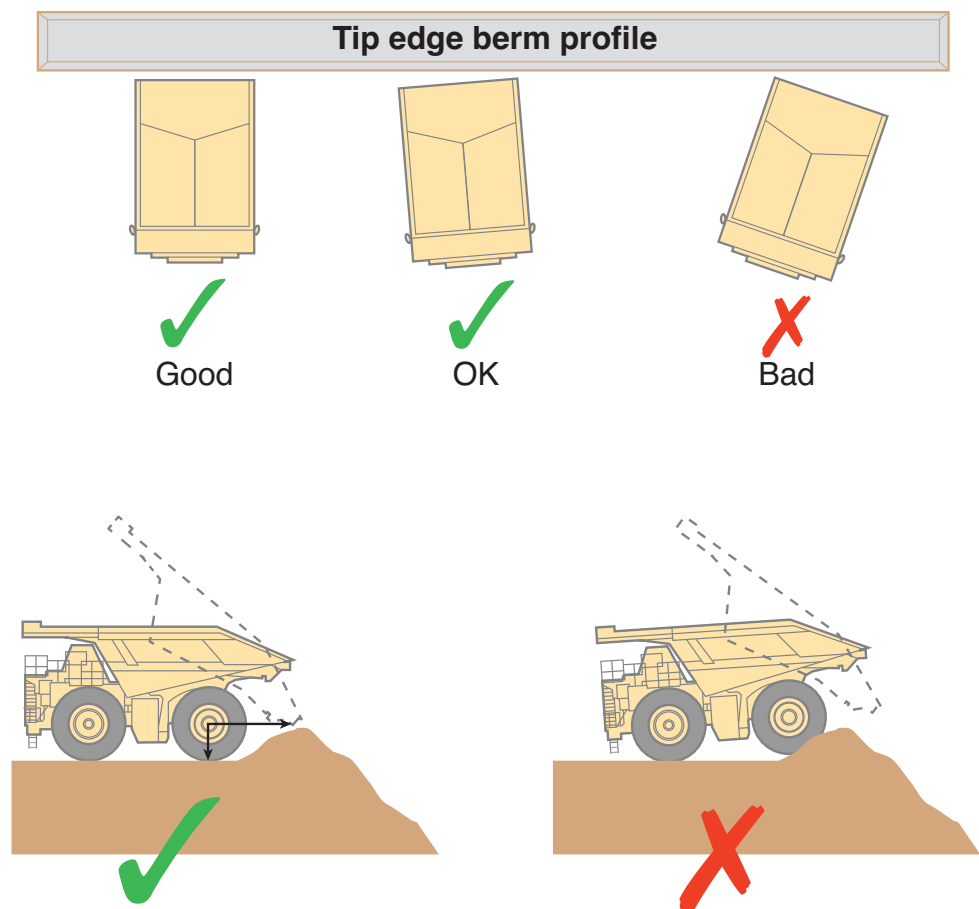


Where possible the dozer should work with a tipped load between the dump truck to ensure a physical control measure is in place to maintain a safe distance. Do not enter the dozers reversing path.

- d) On no account should a dozer operator leave a tip edge unless a suitable edge protection berm is in place.
- e) If due to a breakdown or other unforeseen circumstances the dozer operator is unable to form a suitable edge protection berm, the operator must inform a supervisor immediately.
- f) Dump truck operators must ensure that an orderly sequence of tipping is followed at all times giving due attention to other vehicles in the tipping area.
- g) On approach to the tipping area the dump truck must be positioned so that it can reverse safely taking account of other vehicles in the vicinity.
- h) Dump trucks must be reversed safely in the tipping area and approach the tip edge at a decreasing speed. The dump truck must be manoeuvred to allow it to stop at right angles adjacent to the tip edge berm.

# Safe Driving and Plant Operation

- i) Operators must make full use of all visibility aids and other reversing aids throughout this operation to monitor the position of the rear wheels in relation to the tip edge berm.
- j) Loads should only be discharged at a tip edge berm when a suitable edge berm is in position.
- k) On no account should a vehicle be allowed to mount a tip edge berm or the load tipped directly over the tip ed



## Manoeuvring Vehicles in Restricted Areas

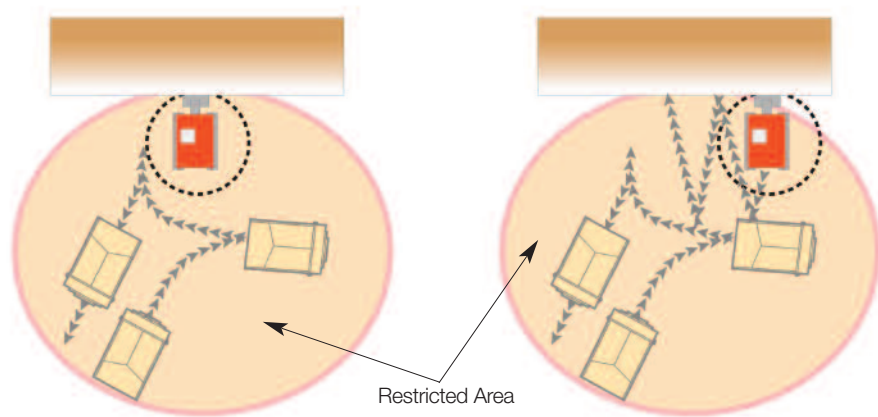
Where vehicle size segregation is not possible then restricted areas shall be established for working areas. Working areas may be defined as: 'Any area where multiple mobile plant operates'.

The movement of all mobile plant must stop before ancillary vehicles or pedestrians enter the working area.

Site Traffic Management Rules shall specify the working areas. The position of working areas may continually change due to site operations, however as a minimum, the following must be specified as working areas.

A place where multiple items of mobile plant are operating:-

- a) Operating area around an excavator on mining operations and the traffic movement associated with it.
- b) Operating area around a dozer on a tip and the traffic movement associated with it.
- c) Operating area around a loading shovel(s) at stockpiles, processing and loading areas and the traffic movement associated with it.

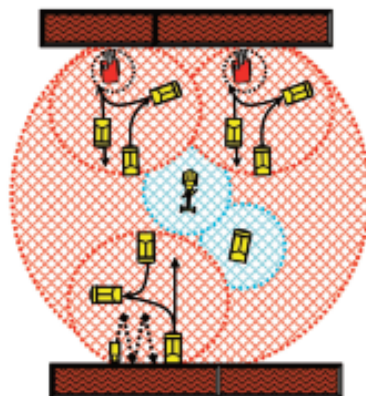


Operational area – An area outside a restricted area where mobile plant and ancillary vehicles operate.

Some ‘restricted areas’ and ‘operational areas’ may intersect or overlap. Under these circumstances the whole area will be classified as a ‘Restricted area’.

Site Traffic Management Rules will specify:-

- a) The extent of the exclusion zones for restricted areas.
- b) The procedure for entering ‘restricted areas’ and ‘operational areas’.



Safe waiting areas (‘Holding Areas’) should be provided outside exclusion zones to enable ancillary vehicles to park, or pedestrians to wait, in a safe place until authorised to enter the exclusion zone when traffic movement has been stopped.

- a) Site workshops and a 10 metre radius around vehicles and plant parked for servicing and maintenance will be classified as restricted areas in which vehicle movements should be strictly controlled. Other restricted areas at sites will be identified by management on a risk assessment basis.
- b) Vehicles should not enter or leave a restricted area, where other vehicles or

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pedestrians are present, without the permission of a Supervisor or other designated person. At workshops a point at which all vehicles should stop and should be designated and clearly identified by means of a warning notice.

- c) Where vehicles have to be manoeuvred in a restricted area this should be done under the control of a Supervisor or other designated person.
- d) In restricted areas light vehicles should wherever possible be parked separately from heavy vehicles; however their manoeuvres may also be restricted and require assistance from a Supervisor or other designated person.
- e) The Supervisor or other designated person will be in control of the vehicle manoeuvring operation and vehicle operators should follow his instructions at all times (eye to eye contact is essential). Radio communication should be used as appropriate.
- f) During the manoeuvring operation the Supervisor or other designated person must: -
  - Wear high-visibility clothing
  - Stay within the operator's direct line of sight
  - Where practicable stay on the vehicle operator's cab side but at all times remain a safe distance away from the manoeuvring vehicle.
  - Be in a position to clearly see the area in which the vehicle is to be manoeuvred and arrange to clear or restrict entry to the area if necessary.
  - Stand in a safe location and remain alert to other activities in the area
  - Use approved hand signals and radio where necessary to communicate with operators.
- g) Prior to engaging reverse gear the operator should sound the vehicle horn 3 times or communicate by site radio to warn of its imminent movement irrespective of whether CCTV and audible reversing alarms are fitted.
- h) Operators should stop their vehicles if the Supervisor or other designated person is not in full view.
- i) Designated persons should consult with supervisors to ensure that vehicles are parked in approved areas, keeping heavy and light vehicles apart wherever possible.
- j) Pedestrian activities must be kept to a minimum in restricted areas.

## Overtaking

- a) Where practicable, traffic segregation should be provided to minimise the requirement for utility vehicles, land rovers etc. to overtake larger vehicles.
- b) Where utility traffic routes are provided, then overtaking can be controlled by the provision of single traffic routes with overtaking bays, so that the one vehicle is stationary whilst being overtaken.

- c) On the main haul roads overtaking should be subject to an approved scheme for overtaking or undertaking.
- d) Consideration should be given to utility vehicles not overtaking dump trucks or water bowsers when they are in operation.
- e) In general, no overtaking should take place on road junctions or on bends.

### **Parking**

- a) Vehicles should be parked on level ground wherever possible to minimise the possibility of them being set in motion.
- b) Vehicles should be parked in an authorised parking area in accordance with a parking



system approved by the Site Manager. If it is not possible to do so or if a vehicle is broken down, permission must be sought from a supervisor to park elsewhere.

- c) When leaving a vehicle unattended the engine should be switched off, ignition key removed, all brakes applied and the appropriate gear selected to suit any gradient. The key or any other device for starting vehicles must be kept in a secure place to prevent unauthorised starting of vehicles.
- d) Vehicles and equipment should be parked a suitable safe distance from a quarry face to minimise the risk of being struck by falls of ground. When this is unavoidable due to a breakdown or unforeseen circumstances a risk assessment must be carried out by a manager or supervisor before permission is given for personnel to enter the area.
- e) Ground engaging equipment i.e. excavator buckets, dozer blades, ripper teeth and scraper bowls should be lowered to the ground when parking and if stopping to be serviced or fuelled.
- f) Vehicles should never be parked within the swing radius of an excavator or the



# Safe Driving and Plant Operation

manoeuvring zone of other operational quarry vehicles unless in accordance with a safe system of work that involves the immobilisation of the other vehicles e.g. during a maintenance operation.

- g) When it is necessary to park light vehicles close to non-operational heavy plant e.g. for maintenance purposes, the heavy plant should be prevented from moving and immobilised before entering the area and must remain immobilised during the operation.
- h) Wherever possible vehicles should be parked on flat, level ground. Vehicles stopping or parking on slopes must never be left unattended unless the wheels are secured, chocked, blocked or angled against a suitable berm so as the vehicle cannot move accidentally. In the case of a bulldozer or excavator, the blade, tooth or bucket must be dug into the ground.

## Dust Suppression

The watering of haul roads to suppress dust has the potential for traffic accidents; either by the water bowser turning over or by the haul roads becoming very slippery because of wet bends and ramps and any other sections of haul road where brakes may be applied.



Drivers of water bowsters should take extra care, especially when full, to avoid driving across gradients due to the potential increase in instability of trucks carrying fluids.

Water bowser operators should at all times 'patch' spray haul roads and avoid blanket spray or excessive amounts of water being deposited on the roads (especially in braking areas, gradients and junctions of haul roads).

## Fuelling and Servicing

### General

- a) All engines should be switched off and vehicles immobilised during fuelling and servicing operations. The key must be removed from the ignition and brakes should be applied and other precautions taken as necessary to prevent unplanned vehicle movements.
- b) Lighting on fuel bowsters and service vehicles should be sufficient so that the unit is readily identifiable and must as a minimum comprise a flashing beacon, sufficient headlights and spotlights to illuminate the fuelling/servicing area and rear warning lights.

- c) Fuelling and servicing of loaded quarry vehicles is strictly prohibited. Where this is unavoidable due to unforeseen circumstances e.g. a breakdown, a risk assessment should be carried out by a manager or supervisor and appropriate control measures implemented before the fuelling or servicing operation is allowed to commence.
- d) Quarry vehicles should be fuelled and serviced in areas designated for this purpose by site management and in accordance with the authorised fuelling and servicing procedure. Fuelling and servicing should not take place adjacent to faces or high walls.
- e) There should be effective communication between personnel at all times using visual contact, recognised hand signals and verbal contact using radios as appropriate. The fuel attendant/serviceman should control the fuelling/servicing operation and vehicle operators must act upon any instructions received.

#### **Wheeled Mobile Plant**

- a) Fuelling and servicing of mobile plant should take place in designated areas in accordance with a written procedure approved by the Site Manager which must identify designated areas, parking and immobilisation procedures. An area of level ground should be selected in a safe position away from normal site traffic.
- b) Maintenance personnel intending to work on vehicles during service intervals or break times should always ensure that vehicles are immobilised before approaching. Immobilisation procedures must be followed.
- c) Operators of vehicles being serviced should not re-start their engines or move away until signaled to do so by the fuel bowser operator or servicemen who must remain in a safe position in full view of any vehicle operator.
- d) Operators of vehicles being serviced in areas other than designated parking areas should move away in a forward direction wherever possible and should only reverse if permitted by a written safe system of fuelling or servicing or under the guidance of a Supervisor or other designated person.

#### **Tracked Mobile Plant**

- a) Tracked excavators, dozers, loading shovels and drill rigs should be positioned in a level area of a sufficient size that permits safe access for the fuel bowser and service vehicles.
- b) Excavator buckets, dozer blades and rippers should be lowered to the ground before fuelling or servicing commences. Where fitted isolators/immobilisation switches must be used.
- c) There should be clear communication between machine operators and the fuel bowser operator and servicemen before and during fuelling or servicing.
- d) The operator of a service vehicle who has the permission of a Supervisor or other designated person to enter an area where fuelling or servicing of a machine is underway should approach with caution, stop a safe distance away and communicate with other personnel before entering the area.

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- e) Where necessary service vehicles should be guided by a Supervisor or other designated person using recognised hand signals when manoeuvring in the vicinity of a machine during fuelling and servicing operations.
- f) Service vehicles should not be driven or reversed towards access points or work stations where pedestrians may be present without the use of a Supervisor or other designated person who must ensure that there are no pedestrians in the path of a manoeuvring vehicle.
- g) Service vehicles should be parked in a safe position with the parking brake applied and the engine switched off where practicable.
- h) Servicemen and other maintenance personnel should not place themselves in a position where there is a risk of being struck or trapped by another vehicle and should obey any instructions given by the Supervisor or other designated person.
- i) Servicemen and other maintenance personnel should communicate with the Supervisor or other designated person and the machine operator to advise him that their work is complete before leaving the area.
- j) Machine operators should ensure the fuel bowser and service vehicles have cleared the area and are free from danger before starting the machine to re-commence operations.

## External Haulage

- a) External coal haulage vehicle operators should comply with any site specific rules applicable.
- b) External coal haulage vehicle operators should not be allowed to proceed into the working area until they have received appropriate permission and instruction in any relevant local rules. Site Managers will ensure that local procedures are implemented to ensure that drivers are made aware of site rules.
- c) The local rules and site traffic management plan will outline procedures and designate loading and unloading areas, trimming off areas, tipping areas, sheeting areas, tailgate securing areas and safe places for vehicle inspections.
- d) Operators of external coal haulage vehicles should remain in the cab during loading operations and at all other times within the loading area. If for whatever reason a driver of an external haulage wagon leaves the cab the loading shovel operator should place the bucket on the ground and ensure the shovel remains stationary until the wagon driver returns to a safe place/cab.
- e) Drivers should ensure that their load is fully discharged. Tipping bodies must be lowered as soon as possible after tipping to prevent the risk of overturning.
- f) Site traffic management plans will specify areas where coal haulage drivers are

permitted to get out of their vehicle. No pedestrians are permitted within 30 metres of an operational loading shovel unless there is a suitable physical barrier to protect the pedestrian from vehicle movements.

- g) Coal haulage drivers should ensure that all lights, directional indicators and reverse warning indicators are working at all times when on site.
- h) In the event of a breakdown or an emergency involving a coal haulage vehicle the driver should remain in his cab unless it is not safe to do so and follow the local procedures for stranded vehicles by contacting a supervisor or weighbridge operator in the first instance. The use of mobile phones will only be permitted in an emergency.



### **Deliveries**

All delivery vehicles should report to a designated control point to sign in, to receive site rules and site induction as necessary and to receive instructions regarding points of delivery and who to report to.

The site rules should include traffic routes to be taken, parking arrangements, pedestrian control and the need to observe signs and instructions in relation to traffic control and segregation, where applicable.

At the point of delivery the receipt of the goods will be controlled by a designated person who will ensure that parking and unloading rules are observed.

Site specific rules should be prepared to cover the delivery of gas oil, explosives and other hazardous materials.

After unloading the delivery vehicle should return to the designated control point to sign out.

Plant delivered to site should be escorted to the designated off loading or build area away from other plant movements. The areas should be suitable for all relevant works such as cranes etc.

# References

1. The Health and Safety at Work etc. Act 1974.
2. A Guide to the Health and Safety at Work etc. Act 1974.
3. Management of Health and Safety at Work etc. Act 1974.
4. Management of Health and Safety at Work Approved Code of Practice L21.
5. Workplace (Health, Safety and Welfare) Regulations 1992.
6. Workplace Health, Safety and Welfare Approved Code of Practice and Guidance on Regulations L24.
7. Provision and Use of Work Equipment Regulations 1992.
8. Work Equipment Guidance on Regulations L22.
9. The Quarries Regulations 1999.
10. Health and Safety at Quarries, The Quarries Regulations Approved Code of Practice L118.
11. Traffic Signs Regulations and General Directions 1994.
12. Signpost to the Health and Safety (Safety Signs and Signals) Regulations 1996
13. Workplace Transport Safety: An Employer's Guide HSG 136.
14. Supply of Machinery (Safety) (Amendment) Regulations 1994.
15. Workplace Transport Safety: An Overview Leaflet INDG 199.
16. Avoidance of Danger from Overhead Power lines General Guidance Note GS6.
17. Guidance on Brake Testing for Rubber-tyred Vehicles operating in Quarries, Open Cast Coal Sites and Mines EPIC.
18. Safe Use of Vehicles on Construction Sites HSG 144.
19. Reversing Vehicles INDG 148
20. Safety in Working with Lift Trucks.
21. Health and Safety in Road Haulage INDG 379
22. Mobile Plant Safety Standards Coalpro.
23. Vehicle Safety Induction DVD Coalpro
24. Fatal Accident Inquiry Determination 2011 FAI 32