



# QUARRY HEALTH AND SAFETY MANAGEMENT SYSTEM

Including guidance on implementation and references to legislation relevant to Occupational Health and Safety (OH&S) in the quarrying industry.

## CONTENTS

<u>SECTION</u>	<u>PAGE</u>
INTRODUCTION	3
SCOPE	4
1. System Overview	5
2. Policy and Strategy	6
3. Planning	10
4. Operation	17
5. Control and Improvement	35
6. System Review	45
List of Appendices	46

Useful elements of legislation are referred to in green (or darker) boxes with a single black border. While such information is believed to be reliable at the time of issue, no representation, warranty or responsibility to any party is accepted by the author or sponsors as to the accuracy or completeness of this information and users are referred to the original legislation, normally available for viewing at [www.opsi.gov.uk](http://www.opsi.gov.uk)

NOTES: Useful notes on managing the system are given in blue (or lighter) boxes with a double black border

## INTRODUCTION

Depending upon the current status of OH&S management within a company, the management system offered herein may be taken either as:

- a starting point for a new approach;
- the basis for a 'gap analysis' to assess existing processes; or
- simply a reinforcement of existing good practice.

It is vital that the OH&S management process is not viewed as a procedural system, however. Management at all levels should provide clear, visible leadership and commitment to OH&S, while employee involvement and responsibility is the only effective way in which policy and objectives can be fully realised in the working environment.

In order to maximise the usefulness of this OH&S management system within the quarrying sector, this document contains information and references that are believed to be current at the time of issue, but may require subsequent updating.

While the number of words may appear daunting at first sight, most are intended simply as useful aides and the essence of the process is nothing more than sound modern management.

## SCOPE

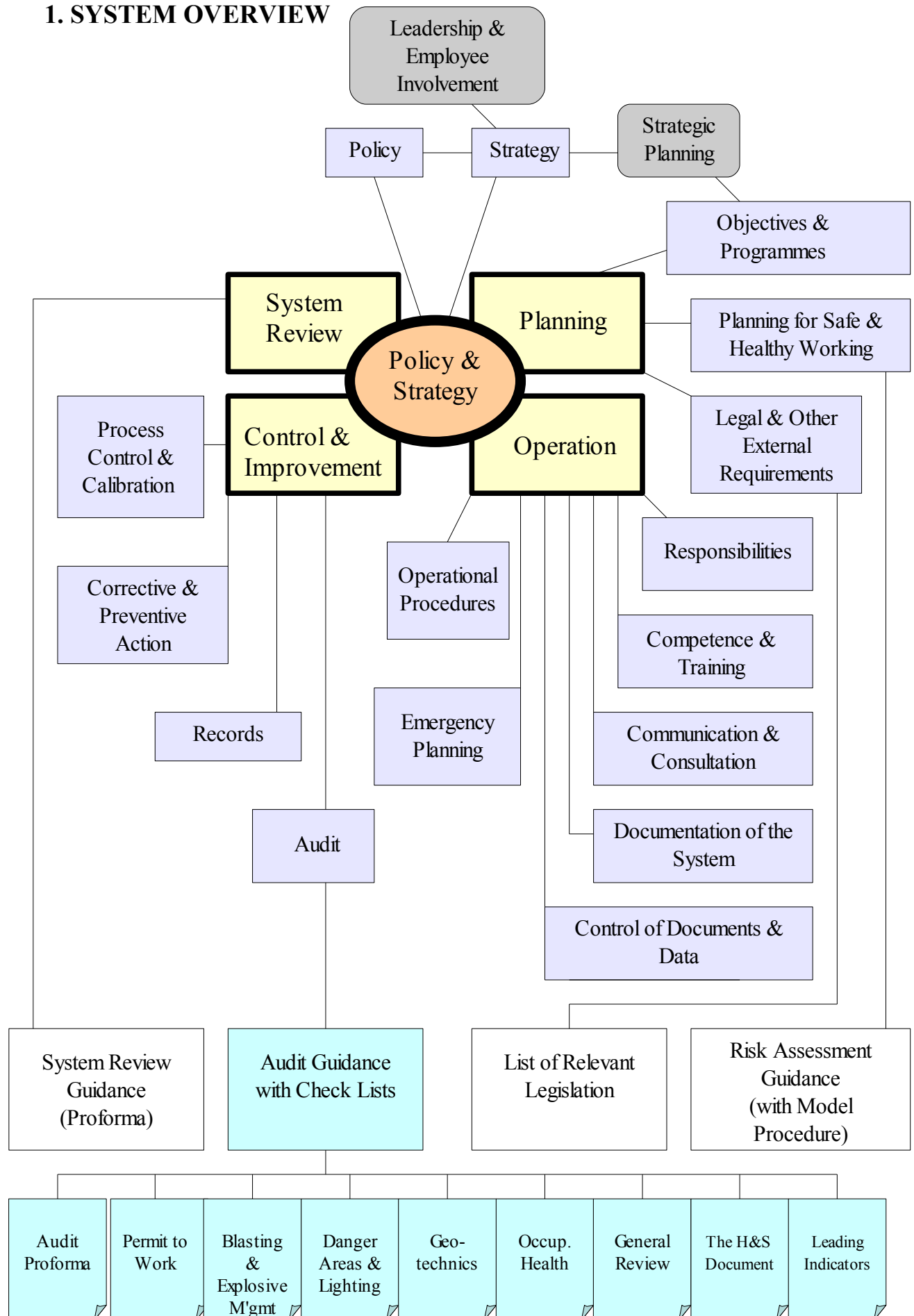
This document provides an auditable OH&S management system framework, compatible with the OHSAS 18001:1999 international standard, that is applicable to any company in the UK quarrying sector that wishes to establish a system to minimise OH&S risks. It is intended to be adaptable to existing performance management processes within a company. The intention is to provide a system specification and guidance for the industry, rather than another standard, and the style is intended to be procedurally friendly rather than rigorously formal. There are several references to legislation, including the UK Quarries Regulations, and to other official information such as that provided by the Health and Safety Executive (HSE). Such information is provided in good faith and the authors take no responsibility for accuracy, validity, timeliness or completeness.

## ACKNOWLEDGEMENTS

The Camborne School of Mines wishes to thank those from the UK Quarrying Industry, the Minerals Industry Research Organisation, the Health and Safety Executive and elsewhere that have given their support.

NOTES: The Quarries Regulations 1999 may be viewed at <http://www.opsi.gov.uk/si/si1999/19992024.htm>  
The Health and Safety Executive (HSE) has produced a 'Simple Guide to the Quarry Regulations', which may be viewed at <http://www.hse.gov.uk/pubns/indg303.pdf>  
Further information about the Camborne School of Mines may be viewed at <http://www.uec.ac.uk/csm>

# 1. SYSTEM OVERVIEW



## 2. POLICY AND STRATEGY

### 2.1 Policy

It is a legal requirement under the Health and Safety at Work Act 1974 for any company in the UK employing more than five people to have an agreed OH&S policy that is kept in the attention of all employees, contractors and visitors.

The policy shall reflect the attention given to it by senior management and hence detailed wording is not specified here, but it shall:

- be integral to the manner in which the company's management intends to pursue OH&S improvement and be suitable for the characteristics of the company, including a clear intention regarding health as well as safety;
- be fully debated at Board level (and a record retained, e.g. in minutes of the meeting) and signed and dated by the Chairman, MD, partners or proprietor;
- state the intention to meet fully the Quarries Regulations, the Health and Safety at Work Act and related Regulations and other relevant current legislation, while seeking to operate where appropriate at a level in advance of any basic standards required therein;
- state the intention to identify and to eliminate or to control effectively any risks to health or to safety and to pursue continuous improvement in this regard;

- include general aims and objectives that encompass the company's approach to ensuring OH&S compliance and improvement, relevant to the environment in which it operates;
- include mention of the importance of employees in the achievement of safe and healthy working for themselves and others;
- refer to (e.g. by reference to a manual or other linking document):
  - the organisation and arrangements in force to carry out the objectives including sources of external advice and means of communication,
  - employee consultation arrangements;
- be brought to the attention of all employees and other relevant persons in such a way that all individuals are fully aware of requirements relating to themselves and of their responsibilities to others;
- be available in controlled documentation for internal or external scrutiny and be formally re-issued and brought to the attention of all employees and other relevant persons when changes occur; and
- be reviewed up to Board level at least annually with appropriate input of information to ensure that it remains up-to-date, comprehensive and useful.

NOTES: The OH&S policy statement and related objectives will benefit from separated emphasis upon 'health' and 'safety', as these engender different approaches at field level. Comprehensive risk-based health surveillance and the elimination or control of hazards to health are vital elements of the system.

The communication of the OH&S policy should be made as effective as possible. Site posters, specialist and general company newsletters and team meetings may all be used in a co-ordinated approach to emphasising the key messages and the importance of the policy and the related objectives, which will only be realised with the total co-operation of all concerned.

## 2.2 Strategy

### 2.2.1 Strategic Planning

Depending upon the approach of the company senior management to strategic planning, the OH&S strategy is likely to be informed by both a reported assessment of current status and a future picture (vision) of improvement, which should take account of legislation and UK quarry industry initiatives (see 3.3). This shall translate into high-level objectives such as described in section 3.1 below.

NOTES: An example of a strategic decision would be an agreement to implement an OH&S management system.

The senior management may wish to take a wider view. For instance, stakeholders such as shareholders or major customers may be interested in risk assessment in general, of which OH&S forms a part, especially following the Turnbull Report (1999), requiring UK Stock Market listed companies to identify, record, manage and review their risks.

## 2.2.2 Leadership and Employee Involvement

The unity of purpose that makes a business strategy work is likely to require more than systems and controls. Modern management theory recognises the importance of appropriate leadership at all levels and the encouragement of employees to take ownership of the quality of their work, including safe and healthy working practice, and to contribute to the effectiveness of work processes. These concepts shall be inherent to the OH&S strategy.

NOTES: While not attempting to specify herein how such cultural enablers might be achieved, there being a substantial body of literature and theory already in existence, this guidance takes these principles as fundamental to an OH&S strategy. As part of strategic development, it is strongly recommended that consideration be given to the capability of the first-line managers and supervisors to encourage and to nurture involvement, while remaining firm in correcting unsafe or unhealthy behaviour. Development in this area of team leadership styles is likely to be appropriate.

### **3. PLANNING**

#### **3.1 Objectives and Programmes**

The company shall set OH&S objectives in pursuance of the agreed policy and strategy, thus putting into place a comprehensive programme of work.

High-level strategic objective(s) shall be set by the Board, with mention of both health and safety (with a record of the discussion, e.g. in minutes of the meeting).

The MD or similar shall take the policy and high-level objective(s) as the starting point for setting a cascaded series of specific management objectives and related actions through the company, to form a cohesive programme of OH&S improvement.

Management objectives shall be set and documented across the company, the overall programme being comprehensive in addressing all operational, legal and any other OH&S issues that may be open to improvement.

Objectives shall be measurable and time-specific as far as possible, so that the overall aims are achieved and that at no point in the organisation is there any doubt that continuous improvement in OH&S management is a priority. Regular interactive review shall take place at all points in management, to put arrangements into place to overcome any difficulties or to reflect changes of emphasis in the programme.

NOTES: Strategic objectives should not be too many in number and as the OH&S objectives at this level sit alongside other objectives such as finance and sales, it may be appropriate to limit this to one statement. This shall be constructed to give comprehensive coverage, however, based upon the current status of OH&S management in the company, and should be measurable and time-specific wherever possible. The industry 'hard target' is a natural basis but must be extended to create health management improvement as well as safety.

*Example of a 'high-level' company objective:*

'(a) To reduce Lost Time Injury Frequency Rate by X% by (date), as measured by the LTIFR (no. of LTIs X 100,000 / total hours worked) and (b) to carry out a review of health hazard monitoring and control to ensure best practice is assured according to the QNJAC OH guidelines by (date).'

*Examples of objectives cascaded in support of the high-level objective(s) and the strategic approach described in the OH&S policy:*

'To establish an effective OH&S management system across the company by (date), as measured by project management reporting milestones and audit outcomes'

'To establish an Occupational Health management programme for all workers, that includes risk-based health surveillance and hygiene monitoring and ensures that all exposure limits are respected, by (date), as measured by programme data'

'To increase employee responses that management is committed to health and safety by Y% by (date), as measured by the employee perception survey'

'To ensure that all mobile plant operators have achieved appropriate NVQ level qualification for operating the vehicles they use by (date), as measured by training returns'

The work towards achieving the objectives shall be monitored and co-ordinated for overall progress, typically involving the H&S officer. Progress reports shall be submitted at specified intervals from appropriate points in management (this may depend upon the size of the company, but typically at site manager level).

NOTES: Some key objectives are likely to be common across line managers or site managers and supervisors. Several objectives are likely to be owned by the H&S officer. Others may be owned elsewhere, such as with a project office or training manager.

*If not already proven to have been comprehensively and effectively carried out, the thorough identification of hazards, assessment of risk and application of controls must form part of management objectives (see section 2.2). It is important to put in place review programmes for this at intervals.*

For companies with an established performance management system, this should not present many problems. For smaller companies that may not have such a discipline in place, it will be necessary to plan line management meetings to agree the objectives, with further ongoing meetings set for review and renewal. An interactive process is essential to ensure understanding and priority. These meetings shall include consideration of methods and resources for achieving the objectives. Records shall be kept of all such discussions.

### 3.2 Planning for Safe and Healthy Working (Risk Assessment)

This is a legal requirement under the Management of Health & Safety at Work Regulations 1999, including particular attention to the inexperience and vulnerability of young persons.

A documented procedure shall be established to ensure the identification of OH&S hazards in working practices and the working environment, the assessment of the risks they incur to any persons and the implementation of necessary control measures to eliminate or to render the risks as low as is reasonably practicable.

For established activities this procedure shall be carried out and reviewed at regular intervals of time (maximum three years). An assessment shall also be invoked and recorded prior to any non-routine event, such as the arrival of a different vehicle or machine, a change to working practice, a new working area or new information (e.g. from a geotechnical survey) on a currently worked area.

As far as is reasonably practicable, the persons who are to carry out the work should be involved in carrying out the assessment, while management shall always ensure that appropriately qualified and experienced persons are involved. In all instances, all affected employees, contractors or other persons shall be made fully aware of the content and outcome of the assessment.

Generic assessments of risks and controls to apply best practice across more than one working site may be usefully developed by or for the company, but shall always be subject to detailed, documented local consideration and discussion involving all affected persons to ensure applicability and awareness (e.g. team meetings with dated notes kept available of attendance and content, with notes of follow-up for non-attendees).

In the case of Occupational Health, specialist guidance will often be required and shall be provided by or on behalf of the company (e.g. OH professional input co-ordinated as part of the formal responsibilities of the Health & Safety Officer)

The company (e.g. the H&S Officer) has a role in co-ordinating training provision on risk assessment and advice on or provision of some specialised risk control measures, as well as providing a source of general advice.

Each job, each people-related activity and all areas and machines shall be considered from as many perspectives as possible, including analysis of the root causes of known incidents, and with maximum involvement of persons affected in order to:

- Identify hazards, for both safety and for health.
- Estimate the risk from each hazard  
(the likelihood and potential severity of harm)
- Take action to eliminate or to render as low as reasonably practicable the risk

This process and the outcomes (e.g. identification of training requirements, production of safe working procedures, use of protective equipment, guarding and signage of areas) shall be recorded and the record kept easily available.

**NOTES: Appendix 1 provides a format that may be used to record this process. REMEMBER TO WRITE CLEARLY (BLOCK CAPITALS IN BLACK INK) OR TO HAVE RECORDS TYPED UP. THESE ARE LEGALLY REQUIRED RECORDS THAT MAY BE AUDITED AND COULD BECOME VERY IMPORTANT TO ALL PEOPLE CONCERNED WITH AN ADVERSE EVENT.**

The Quarries Regulations 1999 specify that the following be part of risk assessment and control measures:

- Frequency of Inspections of:
  - Vehicles
  - Guarding
  - Safety devices
  - Electrical equipment
  - Pressure vessels
  - Pedestrian routes
  - Excavations and tips
- Condition of Benches and Haul Roads:
  - Width
  - Bends
  - Traffic routes
  - Edge protection (Height: 1.5m or radius of largest wheel)
- Procedures controlling Risk from Vehicles:
  - Driver competence
  - Security
  - Use restrictions
  - Speed Limits
  - Seat belts
- Escape and Rescue facilities
- Barriers

### 3.3 Legal and other External Requirements

The company shall define responsibilities (e.g. within job descriptions) for ensuring that it keeps abreast of legal OH&S requirements that are applicable to it and that everyone is fully informed of any aspects of which they may need to be aware.

NOTES: Appendix 2 provides a check list of relevant legislation, subject to legislative change over time.

All persons involved in any way with the quarrying industry shall be aware of the special importance of the Quarries Regulations in the sector.

The company management should be aware of the 'Target Zero' initiative within the UK quarrying sector and the guidance 'Occupational Health Management in the Quarry Industry' and should consider these requirements as central to planning for OH&S performance.

NOTES: For 'Target Zero' see <http://www.hse.gov.uk/quarries/programme.htm>  
For 'Occupational Health Management in the Quarry Industry' see <http://www.hse.gov.uk/aboutus/meetings/qnjac/qnjac-ohg.pdf>

## 4. OPERATION

### 4.1 Responsibilities

The Health and Safety at Work Act 1974 places obligations upon the employer (e.g. the Managing Director, Chief Executive, partner or proprietor) to ensure the health and safety of employees and others. Obligations placed on the employer under the Act and consequent regulations are qualified as being 'as far as is reasonably practicable', a phrase that has received subsequent interpretation in legal judgements. Responsibilities for OH&S cannot be delegated. It is only the performance or carrying out of responsibilities that can be delegated.

The Quarries Regulations 1999 require that the management structure relating to quarrying activities be defined and that the duties of anyone at a quarry be defined (with special mention of cooperation and participation, reporting, Health Surveillance, Explosive Supervisors and Shot-firers).

ORGANISATIONAL STRUCTURE - Reporting structures across the company and individual sites and necessary contact arrangements shall be clearly defined in controlled documentation and easily available to anyone who may need them, including reference to arrangements to provide competent contact cover for escalation of issues during shifts, out-of-hours events or other situations where local non-availability of individuals may cause risk to OH&S.

Responsibilities for OH&S shall be defined (e.g. in job descriptions) and understood, to take full account of the following:

**SENIOR MANAGEMENT** – Depending upon the structure of company ownership, the Managing Director, Chief Executive, partners or proprietor has ultimate responsibility for OH&S in the company and the senior management team shall take the leading role in ensuring the formation and delivery of effective policy, strategy and related objectives.

**SENIOR OH&S CHAMPION** - A nominated member of the senior management (normally a Board member) shall take particular responsibility for OH&S management, ensuring that the necessary skills and resources are available for the effective performance of the OH&S management system across the company. This shall include the resource (e.g. H&S officer) to ensure that appropriate and timely reports are presented to senior management as the basis for decisions on OH&S performance and improvement. The role of ‘champion’ should be carried out in such a way that the profile of OH&S management is raised beyond compliance with basic legal requirements and that improvement is continually sought.

**OH&S OFFICER** - At least one individual able to provide professional knowledge of Health and Safety management shall be available to the company, typically known as the H&S officer or manager. Consultancy is legally an option, but for a fairly large organisation is unlikely to provide sufficient commitment and availability (see Notes). Such individuals shall have their extensive OH&S responsibilities defined to ensure up-to-date advice and effective performance of the OH&S system.

**THE OPERATOR** – For each quarry, the responsibilities of ‘the operator’, defined in the Quarries Regulations as the person in overall

control of the working of the quarry, shall be defined. These include ensuring that the design, construction, equipment, commissioning, operation, maintenance, ceasing of working and abandonment of the quarry and its plant are carried out in such a way as to enable persons to work without endangering their own or other's health and safety, including duties relating to explosives, and the co-ordination of all measures relating to OH&S for the quarry. The operator shall also ensure that the 'health and safety document' has been prepared.

NOTES: While 'the operator' is defined in the Quarries Regulations as a person, it is unlikely in a fairly large company that responsibility for all these duties will reside with one individual. In some circumstances 'the operator' may be considered to be the company, such as 'Stone Quarrying Ltd'. It is recommended that specialist legal advice be taken before deciding upon the approach appropriate for a specific situation. Where responsibilities are divided, however, it is vital that co-ordination of processes is guaranteed. For example, a commercial decision to change the mix of products sold from a site since the original site design might result in changed equipment usage or different rates of stockpile accumulation that require careful planning and risk control.

**MANAGERS** - All managers shall have OH&S responsibilities defined, commensurate to their operational role, including formally appointed 'competent individuals' and substitutes to run the quarries. Delivery of OH&S improvement lies primarily with line managers. Authority to issue Permit to Work shall be defined.

**HUMAN RESOURCES** - There shall be defined management responsibilities within the company (e.g. with Human Resources management or embedded in line management) to ensure that:

- account is taken of each employee's abilities, mental and physical, to do the work required of him or her;
- employees are adequately trained on joining and on exposure to new risks; and
- training is ongoing or refreshed periodically.

EMPLOYEES - All employees shall have, as a minimum, responsibilities defined to:

- take care of themselves and others who may be affected by their acts or omissions;
- follow the training they have been given when using any equipment, substance, safety device or procedure provided by the employer;
- follow the employer's instructions to ensure legal requirements are met;
- report to their employer any risks to health or safety they may find; and
- report any shortcomings in the health or safety arrangements.

EXPLOSIVES DUTIES – Responsibilities shall be defined for explosives supervisors, shot-firers and any other work involving explosives, such as transport or storage, while all other persons shall respect precautions relating to any activity involving explosives, this being endemic to employees' responsibilities above.

CONTRACT WORK – Where service providers external to the company may be employed, a procedure such as induction training shall be defined and documented to ensure that all such personnel fully understand their responsibilities. Responsibilities within the company for timely communication of any information relating to OH&S hazards that is appropriate to be provided in advance to them, their employers or agent shall be clearly stated.

The Management of Health and Safety at Work Regulations 1999 apply special responsibilities where premises are shared and particular responsibilities to employers where young people, women of child-bearing age, pregnant women or nursing mothers are employed.

NOTES: Where an external OH&S consultant is required, for example by a small quarrying operation or a small company carrying out contract work in quarries, a professionally maintained register of consultants with guidance on selection may be found at <http://www.iosh.co.uk/index.cfm?go=consultancy.main>

## 4.2 Competence and Training

The Management of Health and Safety at Work Regulations 1999 place a legal requirement upon employers to:

- take account of the ability of employees to perform their tasks
- provide training when:
  - employees:
    - first join the company
    - are transferred to a different job
    - are given changed responsibilities
  - working methods of existing equipment are changed
  - new equipment is introduced
  - new technology is introduced
  - new materials are used
  - the system of work is changed
- give revision training periodically
- give training during working hours.

The Quarries Regulations 1999 place a legal responsibility upon companies with quarrying activities to ensure that all persons working within a quarry have appropriate training and competence. Much of this may be met by use of National Vocational Qualifications (NVQ), which take account of existing knowledge (see Notes).

Documented procedures shall be established to ensure that all persons are enabled to achieve competence in tasks they may perform, typically by job specifications leading to identification of training needs, workplace support, etc., with defined timescales, and that support is provided until competence is achieved. Records shall be kept to show that each employee has received the appropriate training and support. In addition to work-related skills, such competence shall include awareness of the OH&S policy, their personal responsibilities relating to OH&S, the procedures relating to their work and any risks associated with deviation from those procedures.

**MANAGERS & SUPERVISORS:** Managers and supervisors shall receive a development review at least annually to identify and to plan for further growth in their skills and knowledge, including ‘soft skills’ such as communication or counselling (See Notes).

**H&S OFFICER:** Possible qualifications for a Health and Safety Officer range from the NEBOSH general certificate for small or medium enterprises to full membership of the IOSH, but sector experience and qualities such as enthusiasm, communication skills and a methodical approach are at least as important in competence for this role.

**TRADES:** Persons employed in trades with recognised qualifications such as electricians and mechanical fitters shall receive training and support at least commensurate with national competence requirements.

**EMPLOYEES:** Consideration should be given to the provision of National Vocational Qualifications (NVQ) as a means of achieving proven competence. If NVQ is not used, any applicable National Occupational Standard must be matched in other ways. The approach to development shall take into account individual capability, noting that in a quarry environment it may be that high risk exists around work carried out by people who do not all have high levels of education, and support shall therefore be designed to put the messages across in an appropriate manner.

**EXPLOSIVES DUTIES:** It is of particular importance that competence is assured for explosives supervisors, shot-firers and any other work involving explosives, such as transport and storage. The shot-firing

certificate and subsequent explosive supervisor certificate are prerequisites for these roles, together with experience and regular re-assessment (5 years) to meet the National Occupational Standard (see Notes).

**GEOTECHNICAL SURVEY:** The company shall ensure that persons competent in geotechnics are available, able to judge where a ‘serious hazard’ may exist in order to call for a geotechnical assessment.

A geotechnical specialist employed for such assessment of excavations or tips (including lagoons and screening bunds) shall be a chartered engineer or chartered geologist with three or more years’ relevant experience in soil mechanics, rock mechanics or excavation engineering and competent to perform a geotechnical analysis to determine the hazard and risk arising from the excavation or tip being assessed.

**CONTRACT WORK** – Where service providers external to the company may be employed, the qualifications needed and any other competence requirements shall be clearly defined prior to tender (noting that this may include electricians, mechanical fitters, explosives specialists, surveyors or geotechnical specialists) and shall be confirmed prior to commencing work.

**QUARRY WORKING** - A person deemed by management to be competent to take charge of the quarry shall always be present on site when work is in progress and the company shall ensure that a sufficient number of such competent people is available to cover all situations. Such competence shall be clearly documented with the reasons, such as years of experience and qualifications (see Notes).

NOTES:

UK Health and Safety Executive (HSE) inspectors visiting quarries for inspections or investigations are encouraged to ask what steps the operator is taking to demonstrate the competence of managers and workforce and to pursue enquiries into competence if they suspect that health and safety standards justify this. See [http://www.hse.gov.uk/foi/internalops/sectors/manuf/3\\_05\\_15.pdf](http://www.hse.gov.uk/foi/internalops/sectors/manuf/3_05_15.pdf)

National Occupational Standards (NOS) capture nationally agreed competence for many jobs and are the standards against which National Vocational Qualifications (NVQ) are based. NOS exist for several roles in quarry work and continue to be developed. The HSE policy is to promote the NOS approach to competence. NVQs (SVQs for Scotland) for the extractive and mineral processing industries exist for:

- HS&E Management levels 4, 5
- HS&E Management (for Supervisors) level 3
- Specialised Plant & Machinery level 2
- Process Operations level 2
- Drilling level 2
- Shot firing level 3

(Other relevant areas such as road building and laboratory work also)

National Occupational Standards for the industry and details of the above training may be viewed through EPIC at <http://www.epicltd.com> Training in geotechnics commensurate with the competence requirements of quarry personnel in various roles may also be found via this EPIC web site.

An ACOP associated with the Quarries Regulations 1999 classifies the following features as a 'significant hazard', requiring geotechnical assessment by a Chartered Engineer or Chartered Geologist with defined experience (see above):

- ~ Solid Tips: Covering more than 10,000m<sup>2</sup> *or* more than 15m high *or* on land sloping at more than 1 in 12.
- ~ Liquid Tips: Contents more than 4m above land within 50m *or* containing more than 10,000m<sup>3</sup>.
- ~ Excavated Slopes in moderately weak or stronger rock: Single slopes more than 15m high *or* benched slopes steeper than 1 in 1 and between 15m and 30m high *or* benched slopes more than 30m high.
- ~ Excavated Slopes in rocks or soils weaker than weak rocks: Slopes higher than 7.5m and steeper than 1 vertical in 2 horizontal, *or*
- ~ Where other factors render excavations or tips a hazard

ACOP L188 available in HSE Books 1999 L188 ISBN 0 7176 2458 7

**NOTES:**

Accredited providers of the courses for Explosive Supervisors' and Shot Firers' certificates include:

Camborne School of Mines – view at <http://www.uec.ac.uk/csm>

Exchem – view at <http://www.exchem.com>

Orica – view at <http://www.orica.com>

The National Inspection Council for Electrical Installation Contracting (NICEIC) is an independent body that provides a range of information on electrical contractors at <http://www.niceic.org.uk/specifiers/whatdo.html>

The British Drilling Association has overseen the introduction of NVQs for land drillers and is actively promoting accreditation. Details may be seen at <http://www.britishdrillingassociation.co.uk/training/index.html>

#### 4.3 Communication and Consultation

Defined procedures shall exist to:

- ensure that employees have representation on OH&S within their site and that they are aware of who is representing them, who the company OH&S champion is and whom to approach locally in management (e.g. by notices prominently displayed);
- communicate OH&S information to and from employees and others as required to ensure safety and health (e.g. through management, either directly or by safety representatives as appropriate); and
- consult with and involve employees in any review of or proposed change to ways of working that may affect their health or safety, with special regard to the management of OH&S risk.

In addition, the company shall seek ways of using communication to contribute to the continuous improvement of OH&S, such as presentations, discussions, posters, leaflets and signs. The role of safety representatives is a vital one and interested persons should be encouraged and developed. However, the principle must always be to work towards every person on site being vigilant in these matters and to strive to ensure that all employees accept this responsibility.

The Health and Safety at Work Act includes obligations on employers as far as is reasonably practicable to:

- keep employees and others (contractors, visitors, etc.) on the site informed on H&S matters and arrangements;
- provide adequate H&S instruction and training;
- ensure supervision is adequate and competent;
- if unionised, to recognise union-appointed safety representatives;
- consult with safety representatives and employees on H&S matters;
- establish a safety committee when requested by two or more safety representatives; and
- in shared premises, to co-operate with neighbours on H&S matters.

#### 4.4 Documentation of the System

The OH&S system, as described herein, shall be documented, with appropriate links between components (e.g. to enable users to find their way to the management structure, a procedure index, a file or a flow-chart and hence to the information they require).

Documentation may be in paper or electronic record, if a capable, fully supported and sufficiently accessible electronic system exists.

NOTES: A company using the ISO 9001 quality system standard should already possess an effective procedure. Standard format files with instantly recognisable covers may provide ease of use and a focus for attention to OH&S.

The aim behind any documented system should be to enable and not to stifle effective management and operation. It is an important principle that a management system should be integral to the way people work and not an alien 'add-on' that gathers dust on the shelf.

Procedures should be written in the form and kept in the place most appropriate for the users and may involve, for example, flow charts or bullet points in plasticized form or other representations if appropriate. Procedures shall be 'owned' by particular managers as authors, so that proposed changes are always authorised and introduced in a controlled manner.

Links may be achieved by use of simple tools such as a reference page, company directory, mailing list, document index, filing index or data record, provided that these are kept up to date.

Active parts of the system, such as performance monitoring, reviews and decisions, may be documented with methods commonly in use, such as flow-charts, date schedules, minutes of meetings, memos or e-mails, provided that action points are effectively identifiable to completion (e.g. by number, date and owner) and that any purely electronic holdings are well-ordered, retrievable, backed up and retained for the appropriate time. Again, it is important to base the system upon methods that are habitually in use.

An advantage of an electronic medium, if well managed, is that 'real-time' updating reduces the need for laborious re-issue (controls over content security and a method of drawing attention to changes are nonetheless required). Potential disadvantages in an active area such as a quarry are the risk to the reliability of the network and the difficulty in simply picking up a file and taking it to another part of the site for reference. The integrity, robustness and usability of the system are important considerations.

The Quarries Regulations 1999 require the production of a 'Health and Safety Document' at each quarry, giving key information. As a minimum this shall include:

- The risk assessment procedure.
- The risks.
- The measures taken to control the risks.
- The method of co-ordinating OH&S.
- Management structure and clearly stated responsibilities.
- A control plan for explosion risks.
- A plan for protection against toxic gases.
- A plan of the quarry.
- Procedures for inspection and maintenance.
- Vehicle rules.
- A system for permit-to-work.
- Shot-firing rules.
- Excavation and tip rules.
- Appraisal and assessment of excavations and tips.

This forms a significant part of the company OH&S management system documentation and the system should be complimentary to this, referring to it from elsewhere and adding links to the other elements herein such as training, performance measurement, etc. Other sites and job roles outside the quarries, such as in office premises, shall also have their appropriate procedures, etc., and be integrated to the system.

#### 4.5 Control of Documents and Data

A document and data control procedure shall be established. This shall be adequate to ensure that:

- documents (such as procedures, minutes, risk assessments etc.) and data (such as exposure monitoring outcomes) are easily located by those with the need and authority to view them and are all current at points of possible use;

- where appropriate (such as procedures, risk assessments), documents shall be identifiable to authorised owners and marked with a review date and shall be reviewed and reissued as necessary by those owners at specified time intervals or as and when required; and
- documents and data that are required to be retained (e.g. for legal reasons) are suitably identified and stored, including an archive of former issues of procedures in case of subsequent legal enquiry.

NOTES: Document control is typically achieved by means of title, date, issue number, author and page control (e.g. Page X of Y), with distribution lists for issue of common documents to more than one site and an index available to verify the current issue. Electronic 'real-time' updates should be accompanied by advice to users of the changes (e.g. by e-mail) where OH&S may be affected.

#### 4.6 Operational Procedures

Documented procedures shall be established and maintained as fit for purpose to ensure that all activities are carried out in the safest practicable manner, taking account of the company OH&S policy and objectives, including where process analysis and control is taking place for other reasons such as quality assurance or operating instructions. This shall include:

- work processes and the organisation of work;
- all activity related to vehicles or machinery (including operation and maintenance), plant, structures (including design and maintenance of processing and materials handling plant) and dangerous areas;

- issue of 'Permit to Work' for all hazardous operations and for situations where normally straightforward operations may be hazardous due to special circumstances;
- purchase and use of goods, equipment and services;
- communication of procedures and requirement specifications to suppliers, contractors and visitors;
- design and maintenance of sites and workplaces, including access, slopes, benches, haul roads, ramps, etc., and protection of the general public;
- dangerous substances, such as explosives and chemicals;
- health surveillance and health hazard control;
- the development of site first aid cover and OH&S representation.

NOTES: Persons responsible for the design or maintenance of sites shall take into account the Countryside and Rights of Way Act (CROW) that has extended the rights of the public to roam. The following is a quote from an authoritative article on the subject:

'As a result of CROW, quarry operators need to reconsider the risks arising from intended or accidental public access, and how they fulfill their duty under Regulation 16 of the Quarries Regulations 1999. Owners of disused quarries should also review how CROW could be applied to such sites and any additional measures they may need to take to protect public safety.'

Turner H, Chester A; Access all areas; Quarry Management; Sept 2005; QMJ Publishing

Guidance from DEFRA exists and may be viewed at their web-site.

Guidance for fencing standards at quarry boundaries and many other aspects of quarry design and operation is available in Quarry Fact File (Subscription via <http://www.hsebooks.com> stock code QF).

The Quarries Regulations 1999 require that the following procedures be defined:

- Permits to Work:
  - Where permits to be used
  - Maintenance work permits
  - Unusual activities
  - Dangerous activities
  - Authorised persons
  - Performance of the work
  - Hazard identification
  - Handover arrangements
  - Signing procedure
- Explosive Supervisor duties:
  - Blast design
  - Vibration and Overpressure
  - Supervision planning
  - Shift communication
  - Contractor rules
  - Shot-firing rules
  - Blast specification
  - Explosives security and Custody
  - Equipment
  - Shot-firer training and duties
  - Misfire procedure and reporting
  - Prohibited activities and persons
  - Visibility
  - Fly-rock procedure and reporting
- Dangerous areas
- Lighting
- Vehicle rules
- Excavations and Tips:
  - Excavation
  - Tip design
  - Stockpile
  - Tip rules
    - Maximum height
    - Preparation
    - Drainage
    - Plant to be used
    - Dealing with defects
    - Removal of material
  - Excavation rules
    - Sequence
    - Face maintenance
  - Appraisal
  - Significant hazard identification
  - Geotechnical assessment
  - Significant hazard size for tips or lagoons
  - Geotechnical specialist (C.Eng)
  - Regular reviews
  - Low hazard tips (e.g. rehabilitated and landscaped tips)
  - Records of tipped substances
  - Notification of significant hazard tips
- Keeping of records

NOTES: Policy for HSE inspection of face heights in quarries, together with a checklist, may be viewed at

[http://www.hse.gov.uk/foi/internalops/sectors/manuf/3\\_05\\_11.pdf](http://www.hse.gov.uk/foi/internalops/sectors/manuf/3_05_11.pdf)

Current Guidance Notes on all aspects of explosives at quarries are available from EPIC at <http://www.epicltd.com> and include:

- Number 1 - Misfires
- Number 2 - Operators' Rules for Shotfiring Operations
- Number 3 – Blasting Specification
- Number 4 – Training, Competence and Appointments
- Number 5 – Surveying
- Number 6 - Duties

#### 4.7 Emergency Planning

Management shall take steps to identify every emergency situation that may be anticipated and shall establish effective documented procedures for preventing and mitigating as far as is reasonably practicable any likely injury or illness that may be associated with them.

Such procedures shall be periodically tested where practicable and shall be reviewed for effectiveness as part of the management review of the OH&S management system, after the occurrence of related incidents or as and when appropriate for the risk involved. Specific legislation or specialist advice may be appropriate, e.g. relating to fire, explosives, flammable substances, power lines, health-related emergencies.

Access to areas for emergency response shall be planned appropriately.

The procedures will refer clearly to all contacts that need to be made in the event of an emergency as well as such required action as may be planned in advance. As far as possible, responsibilities shall be defined, but all persons likely to be faced with dealing with an emergency shall be kept familiar with the location and content of the emergency procedures and any related equipment or controls.

## 5. CONTROL AND IMPROVEMENT

### 5.1 Process Control and Calibration

Documented procedures and records shall be established for the measurement and the monitoring of appropriate characteristics of OH&S performance (including legally specified requirements such as health hazard exposure limits). Characteristics to be measured are likely to include:

- progress towards achievement of OH&S objectives at all levels;
- quantitative trailing indicators of performance such as the numbers, severity and patterns of injuries and incidents, lost time and reportable injuries and incidents, trends in the lost time injury frequency rate (no. of LTIs X 100,000 / total hours worked), ill health, absences, related financial costs;
- leading indicators of performance such as:
  - Senior Management commitment
    - Activity of MD or similar in OH&S ‘champion’ role
    - Company-wide messages from MD or similar promoting OH&S
    - Appearances by senior managers supporting OH&S activities
    - High-level OH&S objectives in board-level objectives
    - All management team meeting agendas include OH&S
    - Perception survey outcomes

- Continuous improvement processes
  - Integration of OH&S improvement objectives into objective setting/review for managers
  - Competence of audit function
  - Comprehensive nature of the audit programme
  - Number of non-conformity (N/C) counts at audit
  - Handling time for N/Cs and observations (corrective action)
  - Involvement of the OH&S manager in operational meetings
  - Investigation of significant incident root causes and preventive action
  - Frequency of review of risk assessments / systems of work
  - Site inspections and assessments (health as well as safety)
  - Maintenance schedules and outcomes
  
- Communication effectiveness
  - Number of 'toolbox talks' or similar attended by employees
  - Number of company-wide OH&S campaigns
  - Comprehensive nature of OH&S induction and confirmation of qualifications for contractors and visitors

- Competence of the workforce
  - Analysis of jobs for competence requirements
  - Development of employees to competence in defined timescales
  - Development reviews for managers and supervisors
  
- Employee involvement
  - Workforce employee taking part in OH&S ‘involving’ activity
  - Safe behaviour observations
  
- Occupational Health management
  - Risk-based health hazard monitoring and control
  - Job-related health risk profiles in place
  - Risk-based health surveillance
  - Rehabilitation
  - Ergonomics surveys
  - Personal protective equipment condition and availability
  
- consultations
  
- issues raised by employees, contractors and others
  
- corrective and preventive action analysis

Performance reports shall be made available to managers as appropriate, including regular reports to senior management to enable them to understand the status of OH&S performance across the company.

NOTES: For 'Occupational Health Management in the Quarry Industry', including information and exposure limits for health hazards, health surveillance and rehabilitation see <http://www.hse.gov.uk/aboutus/meetings/qnjac/qnjac-ohg.pdf>

A set of leading indicator areas with quantifiable targets to represent good practice has been developed as a benchmark for the UK quarrying industry for the Quarries National Joint Advisory Committee (QNJAC) and is reproduced below.

It is also expected that companies providing services in quarries on a contractual basis will adopt good practice in these areas. Where contractors are small, such as may be the case with electricians or mechanical fitters, the customer company should involve the supplier employees in its processes.

Documented procedures and records shall be established for the calibration and maintenance of OH&S related measuring equipment where appropriate, with confirmation of calibration and maintenance of any measuring equipment used by contractors, including for health surveillance, and to ensure that individual items of equipment are traceable to times, places and records of use.

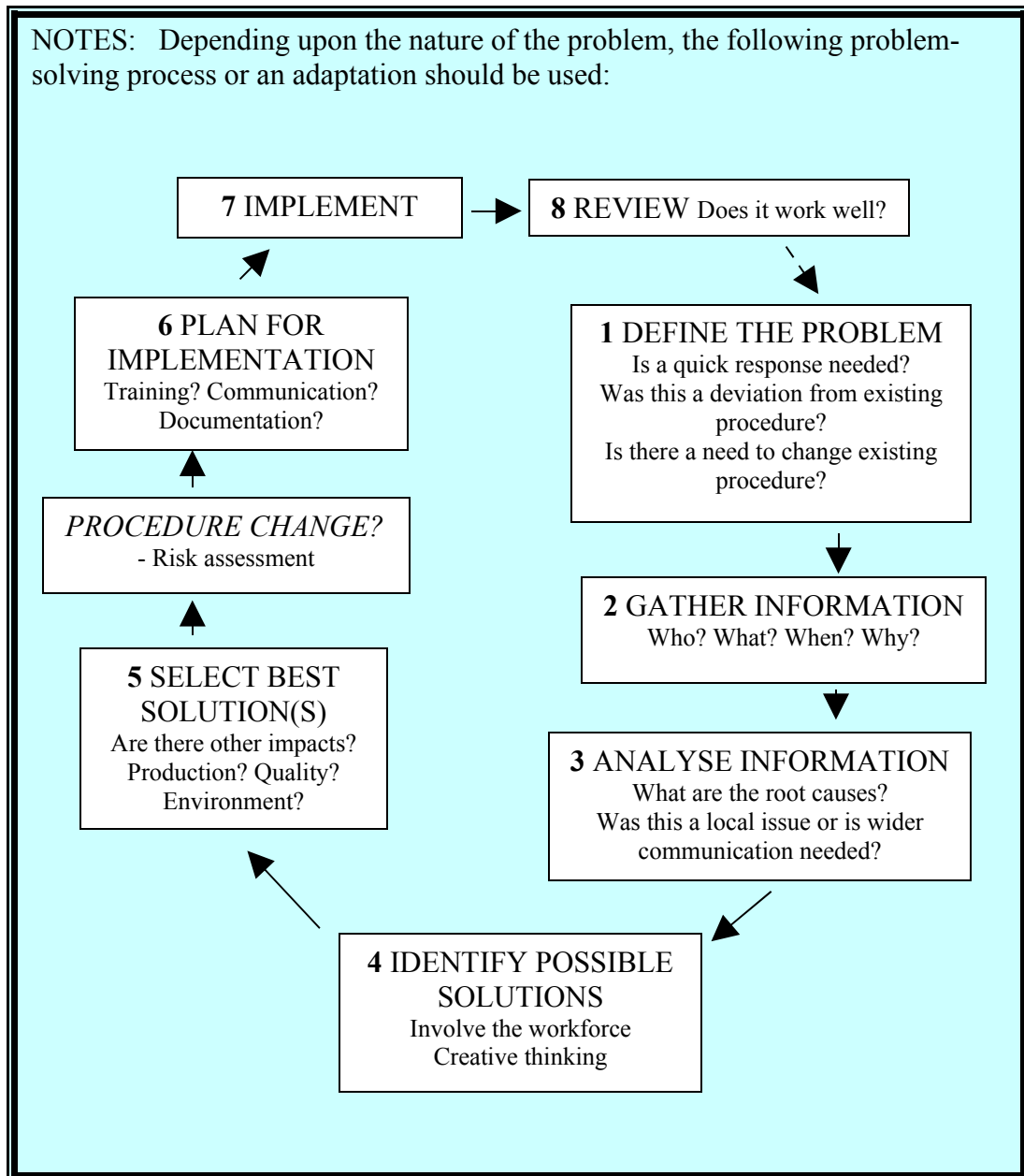
<b>NOTES:</b>		
<b>LEADING INDICATORS OF OH&amp;S FOR THE UK INDUSTRY (QNJAC 09.03.06)</b>		
<b>Key Leading Indicator</b>	<b>Contributory Indicators</b>	<b>Proposed Target</b>
<b>SENIOR MANAGEMENT COMMITMENT</b>	MD or similar accepts OH&S Champion role	Yes
	MD or similar gives company-wide messages of support for OH&S (Written / Road-shows / Video)	3 per year
	Senior managers appear supporting OH&S activity (Presentation photos / Visits / Handshakes)	6 per year
	High level OH&S objective(s) alongside other Board-level objectives. Health as well as safety.	At least one
	All management team meeting agendas mandated to include OH&S	Yes
<b>CONTINUOUS IMPROVEMENT</b>	OH&S improvement objectives for all managers fully integrated into operational management objective-setting and review process	Yes
	Competent OH&S audit function in place	Yes
	Comprehensive audit programme (all places and processes covered at least every two years)	At least every 2 years
	Low non-conformity counts (scope-dependent)	Close to zero
	Non-conformities and observations dealt with within four weeks	90%
	OH&S manager regularly involved in operational management team meetings	Yes
	Significant incident root causes investigated (incidents analysed and grouped to show types and trends / procedure for preventive action)	100%
	Risk assessments (RA) and systems of work reviewed for all tasks	At least every 3 years or when changes occur
<b>COMMUNICATION</b>	Each employee receives toolbox talks or similar interactive discussions on OH&S topics	At least 4 per year
	Each employee receives company-wide messages supportive of OH&S (MD messages / poster campaigns)	At least 4 per year
	Every person present on site has received site OH&S induction (if not accompanied at all times) and has confirmed qualifications for work undertaken	100%
	Publicised recognition of good OH&S practice	At least 1 per year
<b>COMPETENCE</b>	Jobs analysed for competence requirements (against national occupational standards) - experience, on-job guidance, skills training, OH&S understanding	100%
	Employees developed to competence within appropriate, defined timescale for the work	100%
	Managers and Supervisors receive regular competence review and continuing professional development.	100%. At least annual review
<b>EMPLOYEE INVOLVEMENT IN OH&amp;S</b>	Each employee takes part in OH&S involving activity (review of RAs, systems of work / root cause investigation / site walkabout in small group)	At least one per year
<b>OH MANAGEMENT</b>	Risk-based health hazard monitoring and control in place to current nationally quantified standards. Risk-based health surveillance carried out. Rehabilitation procedure in place. (see QNJAC OH guidance)	Zero unprotected exposure to risk outside limits. 100% adherence to guidance.

## 5.2 Corrective and Preventive Action

Responsibilities and authority shall be defined for dealing with, investigating and taking consequent corrective or preventive action arising from accidents, incidents (including near-misses, dangerous occurrences and any potentially health-affecting events), non-conformities from audit and negative trends arising from the measurement and monitoring of OH&S, so that persons with the most appropriate knowledge, training or specialist background are involved. In many situations this is likely to be co-ordinated by the line or site manager, in others the H&S officer or other specialist or technician.

Based upon the above responsibilities, documented procedures shall ensure further that:

- risk assessment and control procedures are implemented before changes take place;
- accidents and incidents are analysed to identify root causes (serious incidents require direct analysis; minor incidents may be investigated as trends);
- subsequent corrective or preventive action is appropriate and is effectively implemented; and
- any changes to procedures are documented within the OH&S management system where necessary.



### 5.3 Records

Documented procedures shall be established to ensure that records relating to OH&S at both an individual and company level are:

- identifiable;
- subject to stated access authority where appropriate;
- readily retrievable;
- legible;
- traceable to persons or activities involved;
- protected against damage, deterioration, loss or unauthorised access;
- subject to stated retention times, taking account of possible future legal requirements;
- appropriately disposed of when out of retention; and
- kept according to data protection legislation.

Specialist advice may be appropriate for the handling of occupational health records relating to individuals.

NOTES: The growth in compensation claims for industrial injury or disease, partly encouraged by law firms offering 'no win – no fee', has inevitably resulted in some cases appearing that are defensible. Companies have successfully defended against these where they were able to show good practice. Good records are an important part of this. Knowledge that may appear obvious in the present can be difficult to confirm in the future without good records.

## 5.4 Audit

Documented procedures for audit shall be established to ensure that:

- implementation and maintenance of the OH&S management system specified herein is verified, including the achievement of policy and objectives;
- responsibilities and requirements for conducting audits and reporting results are defined;
- a comprehensive audit programme is maintained, with the frequency, methodology and scope of audits within the programme defined;
- competent auditors are available to conduct independent audits (i.e. of sites and processes for which they do not have personal responsibility);
- the effectiveness of company OH&S procedures is verified, in particular the Hazard Identification, Risk Assessment and Risk Control procedures;
- audit outcome information is tracked and made available to management as appropriate to enable corrective and preventive action to be taken and to contribute to effective review both at local and strategic level; and
- previous audit results are retained and may be used in planning subsequent audits and for review, e.g. trend analysis.

NOTES: Appendix 3 provides a series of check lists that may be used either as an initial diagnostic tool, by site managers or others as a check that ongoing requirements are being met or by independent auditors in verifying compliance to the OH&S management system.

Audit of OH&S management usually takes a more structured form than financial or quality audits, which often follow 'audit trails' within information systems or across key processes, although this approach may usefully be used for those aspects of the system that would be difficult to verify comprehensively, for example:

- Sampling and following through selected records to verify that health surveillance has been carried out as specified.
- Speaking with one or two team members to confirm a manager's statement that an objective to give toolbox talks is being met.

Check lists are useful aides to a comprehensive audit.

A 'high-level' risk assessment across all aspects of the company's processes may be a useful exercise in order to prioritise the audits. For example, areas with conveyors or large vehicles may carry a high 'severity' rating for hazards that raises the priority of these parts for verifying the various maintenance schedules, competence, training plans and delivery, risk assessment and control, progress with improvement objectives and so on.

Audit programmes with defined scope may build one upon another. For example, it may be expedient at one time to use the audit resource to verify that the Quarries Regulations are being met at all sites, but the next audit should look at other parts of the system and the ongoing programme should cover all aspects.

Environmental management has a high profile within the quarrying sector and the structure of this OH&S management system is closely compatible with the ISO 14001 standard to enable integrated audit, although differing knowledge requirements relating to environmental impacts and mitigating measures may need to be addressed.

Quality management has contributed the fundamental principles of process control, cost of failure, employee involvement and continuous improvement to management science. Integration with quality audit has advantages, especially where a comprehensive quality management system covers general procedures such as documentation control.

## 6. SYSTEM REVIEW

In addition to the ongoing monitoring of OH&S performance, at least annually a comprehensive review of the suitability, adequacy and effectiveness of the OH&S management system itself shall be carried out and a record kept. Any agreed improvements shall be undertaken, typically managed by objectives with timescales.

A documented procedure shall be in place to generate review throughout the management team and to provide suitable information to enable senior management to carry out a high-level review (e.g. themes summarised by the H&S officer). This shall enable people covering all points in the organisation to take part, as a minimum all managers and the H&S officer but ideally including supervisors, safety representatives and any other interested persons.

Appropriate feedback to all who have taken part shall be provided as quickly as possible, giving areas for intended action and reasons where action is not to be taken. Some aspects of feedback may simply be to improve awareness of things that do exist and are effective but are not visible to some people. It is important for the credibility of management that not only are opinions taken into account but also that they are seen to be taken into account and that explanations are provided when proposed action is not taken.

The Quarries Regulations 1999 require that OH&S matters be subject to regular review.

NOTES: Appendix 4 provides a sample feedback form that could be used as a means of review and upward feedback through team meetings.

## **List of Appendices**

1. Risk Assessment Guidance
2. Relevant UK Legislation
3. Audit Guidance with Check Lists
4. System Review Guidance