LEADING INDICATORS OF OCCUPATIONAL SAFETY & HEALTH FOR THE UK QUARRYING INDUSTRY

The guidance below has been developed for the industry as part of improvement output from the Quarries National Joint Advisory Committee (QNJAC), with input from senior company OH&S managers, trade union and workforce representation. It considers a number of aspects of work where good performance in day-to-day operations should result in improved performance in trailing indicators such as accident rates.

Many aspects below relate to an increased level of responsibility taken by individuals at all levels. This is consistent with the working environment that has developed in recent years where individuals are more likely to be working alone and with technology that they may understand better than their supervisors. Trust and empowerment has thus become essential, as has the need to provide planned personal development where there may be less support in the field.

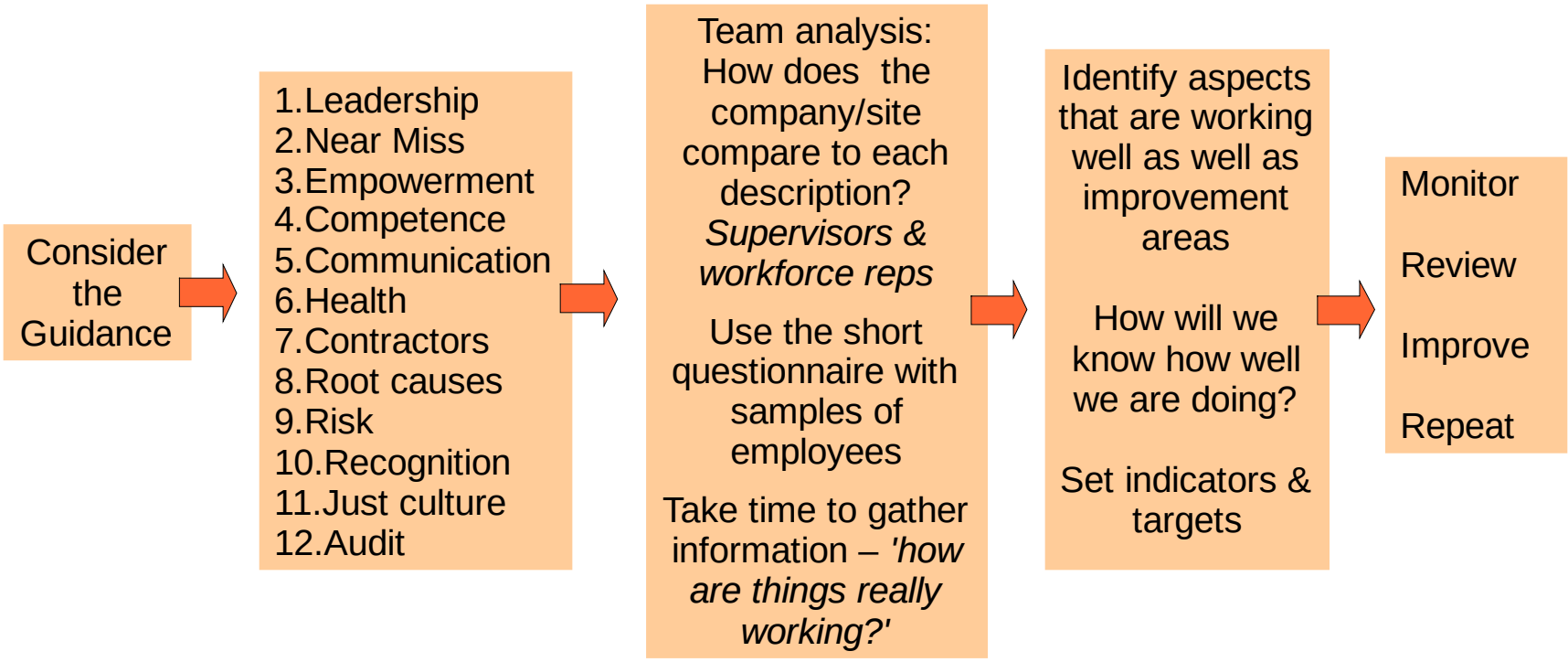
There is a commensurate responsibility upon management to be careful about such aspects as production targets that may rightly be challenging but should not simply be driven upwards without analysis of impacts across the process.

The 'skills' side of management must not be overlooked. For example, a time and frequency target might be set for an increase in manager visibility, while being supported with personal development reviews to identify strengths and improvement areas for individual managers in making such time effective.

Numerical measures are important, but it is rare that 'good' is represented simply by the pursuit of the highest or lowest number. A near-miss reporting procedure that indicates few incidents may relate to a safe operation but might also be the result of poor awareness, an unfriendly reporting process, disillusion with previous lack of feedback or even a misguided desire to keep things quiet. A high number of toolbox talks delivered may not be as effective as a regular series of good quality, relevant talks backed by presentation skills training for the supervisors. Careful judgement must be applied in setting and monitoring the chosen measures.

The twelve key areas shown provide guidance in visualising what 'good' might look like, based on the extensive experience of people working in the field. The column headed 'Measure' provides some suggestions for 'quantity' areas that may be incorporated into a company objective-setting procedure. Actual numerical targets have not been included and have been left to companies to define. The column headed 'Check' relates to a short survey aimed at quantifying the 'quality' of some activities through employee perceptions.

As the characteristics of companies, or even sites, are likely to differ, it is suggested that analysis of the current status of the 'Indicator Areas' be first undertaken by a team including both supervisors and workforce reps.



IMPLEMENTING IMPROVEMENT

A safe working environment and culture is important not only for individual well-being but also for the benefit of the company, which may suffer harm from simple costs of absence through to substantial fines and reputational damage in the event of a serious incident. Concepts such as Safety Culture Maturity Models and the Dupont Bradley Curve show a growth in organisational safety maturity from a vulnerable or reactive culture that may accept that 'accidents will happen' through stages of improvement to a resilient organisation wherein high standards of safe working are universally understood and maintained. A company or site will be at a certain point in this development.

Here we are approaching the challenge by bringing together best practice from within the quarrying industry in order to provide a picture of what effective safety management should include. A comparison of this with the current situation at a site will provide indicators for progress. Some of the guidance below may already be well-established at your sites, but it is unlikely that any site exists that cannot find some areas to improve upon.

1) It is proposed that site managers engage people from different functions, including workforce representatives, and, having considered the contents of this document, identify how well your organisation meets these descriptions.
2) This may require some investigation of processes in order to assess, for example: how well risk assessments have been effectively reviewed and good procedure defined and communicated; how root causes of incidents and near misses are investigated; etc.
3) Gather anecdotal evidence of the working culture, such as whether defined procedure is always followed and if there are reasons why not. This task is best carried out by workforce representatives without attributing individual blame for this exercise.
4) By doing this in a non-threatening way, improvement can be driven forward to the future through communication, training, provision of better procedure or equipment if needed, etc. People should quickly understand the company's desire that they protect themselves and others.
5) It is important that management is closely involved and supportive, as workplace initiatives can fail if the messages from above are not in tune with the aims. The behaviour of supervisors and managers at all levels is as much subject to continuous learning as that of anyone else.
6) The questionnaire provides a quick method to gain a wider workforce perspective in certain key areas, deliberately kept shorter than other survey products to encourage use. Once used, it is essential to be seen to be taking action. The outcomes need to be investigated to identify reasons, again a task suited to workforce representatives.
7) ***Identify improvements and formulate a project plan with ownership and review dates to carry them through.***

INDICATOR AREA	GUIDANCE	MEASURE	CHECK
1. LEADERSHIP	Objectives for improvement in safety and health should exist at high level, being appropriately cascaded through the management in large organisations, and be reviewed in a systematic manner. Improvement in 'trailing indicators' such as accident statistics is appropriate for objectives, but reviews should also capture some of the 'leading indicator' areas described within this document. Hard objectives are not suitable for some leading indicator areas as honesty in reporting is essential and some aspects require underlying understanding of the reasons for trends. Managers at all levels should see 'visible felt leadership' as a key part of their work. From senior levels, some of this is in the tone of messages sent across the organisation as well as actual visits. When visiting sites, it is critical that time is given so that conversations do not appear rushed and that safety aspects are followed by the visitor (correct safety clothing; following prescribed pedestrian routes, etc). Ask yourself: - Have I actively engaged with the people? - Am I reinforcing good aspects as well as observing for issues? - Do I always consider the impression that I am leaving? - Have I agreed anything? Will I be sure to follow it up? Site managers and local supervisors will clearly have a much higher expectation of visibility and related encouragement of safe working. The company must respect the importance of this core function against the more bureaucratic requirements placed upon them that may keep them in offices or responding to smart phones. Workforce safety representatives also have an important leadership role in ensuring a comprehensive site safety culture, with involvement in many of the areas described below. Leadership training, such as that offered by the Mineral Products Association, is an important dimension of competence development.	Improvement objectives with regular review Senior management company-wide messages supporting good OH&S Senior managers visiting sites to meet people Local managers' target for 'walking the job' Planned focus on specific safety aspects Also see 'Competence' below	Survey question 1 *Target average 8* Survey question 2 *Target average 8* (SEE SURVEY BELOW)

2. NEAR MISS & HAZARD REPORTING	Does your company have a Near-Miss (Near-Hit) reporting procedure? These have often been successful using small, widely-available reporting cards or a hotline system. The procedure must be simple and easy to use. This should cover not only dangerous events but also observed unsafe acts, such as lack of 'locking-off' (correction is ideal but not everyone may feel able to intervene at the time or have authority to achieve permanent improvement), or unsafe conditions, such as poor guarding on machinery. Use of the procedure must be actively encouraged. It is essential to follow up reports taking an open-minded view of causes (e.g. was a vehicle issue partly the result of pressure from elsewhere to reduce time, not just a driver's fault). There must be prioritisation and an 'urgent' option for anything representing a continuing unacceptable risk. Similar issues may be grouped for investigation if useful. Incentives may be useful in commencing such a procedure, but should be treated with caution. The aim is for this to be part of everyone's day-to-day responsibilities. It is essential to let people know the outcomes, including wider publicity where useful.	Number of reports per head *(Judgement is needed as to whether higher or lower reporting is due to greater /less vigilance or deterioration/improvement in actual site safety)* Close-out rate Planned safety 'walkabouts' involving workforce reps	
3. EMPOWERMENT TO STOP THE JOB	In a modern working environment with far fewer people on site and much lone working, individuals must be encouraged to take responsibility for the safety and health of themselves and others. This includes feeling able to say that an activity must not proceed if a risk appears too high. Does your company have a stated policy for this? Is this widely publicised, including to contractors?	'Stop' incidents Communication by management, e.g. in toolbox talks, *to ensure that people understand this need*	Survey question 3 *Target average 8*

EMPOWERMENT continued	This fits well with dynamic risk assessment (e.g. Stop & Think!). It requires a high level of trust within the organisation. Do you support and give positive recognition to your people when they take such action?		
4. COMPETENCE	Does your company assess jobs for competence requirements? Do these requirements match the National Occupational Standards (underpinning NVQ)? Does the company provide regular appraisals of individuals and seek to provide timely development with clear timescales for delivery? (e.g. experience; on-job guidance; skills training; OH&S understanding) Care must be taken not to seem to threaten experienced people when such a system is introduced. Once established, it should be seen as a natural part of personal working experience. Supervisor competence should include consideration of their ability to communicate and lead, including presenting, explaining, listening and responding with their team.	Competence needs analysis for jobs Timescales to provide agreed personal development	Survey question 4 *Target average 8*
5. COMMUNICATION	It is of primary importance that the outcomes of incident investigations and reviews of risk assessments and safe systems of work are communicated in an effective manner to anyone who may need to know. The reasons for following good procedure and the potential consequences of not doing so must be made clear, such as examples of injury arising from failure to lock-off machinery or health-related outcomes that are likely in later life.	Number of safety-related communication events per year that workforce members are involved with Safety committee meetings	Survey question 5 *Target average 8*

COMMUNICATION continued	Communication must be two-way, with opportunities for people to raise issues or ask questions. It is vital to provide a well-considered response. What means of communication with the workforce does your company have? (e.g. team meetings; toolbox talks; notice boards; posters; publications). Are safety and health regularly featured? Do you consider the style for different audiences? Do you encourage brevity and plain English and avoid over-complexity? Are memorable incidents or stories featured that people can relate to? Are clear flowcharts and illustrations used wherever possible to simplify instruction? (EAST *Easy; Attractive; Social; Timely)* Are there regular messages from senior management to reinforce safety? Does your company have safety committees with suitable representation? Do they have the fully effective participation of the workforce? It is often useful for members of the workforce to study and present health or safety topics to their colleagues, supported by the supervisor.	Issues dealt with and outcomes communicated back	
6. OCCUPATIONAL HEALTH	Occupational health is the area with the most clearly defined cause and effect links due to research and consensus over years. The legal prescriptions are taken here as minimum standards. Have all health hazards been identified and risks assessed? Are people's exposures regularly monitored and assessed to be within prescribed workforce exposure limits (WEL – typically based on 8 hour time weighted average, e.g. noise; dusts; chemicals / or mainly equipment -based, e.g. vibration)?	All exposure within the prescribed Workforce Exposure Limits (WEL) - *See guidance such as EH40 list for COSHH controlled substances; HSE INDG362 for noise; HSE QY-COSHH series for silica dust and others*	

OCCUPATIONAL HEALTH continued	Are there procedures in place to protect against other potential hazards such as sunlight or other radiation, used vehicle oils, bitumen fume, respiratory sensitizers, welding fume, poor workstation or cab design (strain or RSI), manual handling errors, Legionnaire's disease, rest room sanitation issues? Are employees consulted and their views on comfort and usability taken into account when new protective equipment, tools or vehicles are to be purchased? A hierarchy of risk control should be followed: removing people from risk; reducing the source (e.g. sound-absorbent materials); personal protective equipment (e.g. properly fitted, high quality masks). Health surveillance and related monitoring should be provided for all employees on a risk-assessed basis. 'Back-to-work' meetings should be held following absence and support provided as judged necessary. Other modern approaches include a 'well-being' programme for employees (noting an increasing age profile) and stress recognition and support training for supervisors.	Stress recognition training for supervisors Health surveillance schedules Inclusion of observable hazards to health in audit activity	
7. CONTRACTOR MANAGEMENT	Does your company have an effective assessment process for contractor selection, including review of safety standards? Is an approved contractor/supplier list maintained and revised where performance changes? Are contract works effectively planned, with necessary risk assessments and method statements being prepared? Is contractor equipment checked as appropriate?	Contracts initially agreed where safety standards have been reviewed as well as quality and cost when comparing tenders	

CONTRACTOR MANAGEMENT continued	Is suitable supervision provided to monitor contract works? Are Permits to Work used as appropriate to control and coordinate work, and do they include a handover process? Do all personnel on site undergo a health & safety induction and use the approved documentation? Are certificates, safety passports and other evidence of contractor competence always confirmed? Does your company treat contract personnel as if they were employees when providing activities such as toolbox talks, safety bulletins, management 'walking-the-job', etc? Are contractor staff fully involved and considered as partners in planning of changes that will affect them or where their work may affect others? Are contractor-related incidents monitored and analysed to the same degree as employee-related incidents and recorded separately to assist in improvement action?	Contractors reviewed for safety performance when renewing contract %tage of contractor-related incidents compared with overall	
8. ROOT CAUSE ANALYSIS	All significant incidents, whether accident or near-miss, should be subject to an in-depth analysis, seeking to identify all causes including aspects that may derive from pressures or failures apparently remote from the place and people directly involved. Techniques exist to assist with such analysis. Does your company have people trained in an effective approach to root cause analysis? Is this a team approach, using a proprietary method?	Incident monitoring for potential for harm or frequency Incidents analysed for root causes Improvement actions resulting from analysis	

ROOT CAUSE ANALYSIS continued	Is there an open and honest approach to identifying and communicating the improvements that are recommended? It is acknowledged that there may be legal implications to some incidents, but non-specific learning may normally be shared without prejudice and improvement is vital if risk is significant, including communication across the industry if necessary.		
9. RISK ASSESSMENT	Risk assessment is a legal requirement and it is unlikely that any quarrying companies have failed to put this in place. However, the effectiveness, currency, visibility and awareness may vary considerably. Does your company have a policy to involve employees in reviewing the hazards and risks in their work? Is an appropriate level of training provided? Is every employee made fully aware of hazards, risks and safe procedure, including when moving around to different work areas? Is every effort made in ongoing site design to make procedure easy for people to do in the safe way, such as avoiding long walks to put the preventive measures into place. People may be tempted to deviate from complex or time-consuming actions, especially when approaching the end of a shift or under pressure from multiple jobs. Is every employee encouraged to consider the hazards to their own and others' health as well as safety, and how these may be kept to a minimum risk of harm? Are they provided with a suitable level of training for this? Is there a systematic schedule of review of existing risk assessments, with appropriate maximum timescales?	Programme of reviews of existing risk assessments Frequency of involvement of each employee in assessment of risks Risk reduction plans in place Audit and checks to ensure one-off jobs are effectively assessed	Survey question 6 *Target average 8*

RISK ASSESSMENT continued	Do any changes in work, processes or equipment automatically trigger a review of risk assessment? Is there an easy-to-use procedure for one-off jobs? Is it made clear to people, including contractors, that work must not commence until this has been done?		
10. RECOGNITION	Positive recognition of good work is a powerful reinforcement tool but busy people may sometimes be seen to give criticism more than praise, often being unaware of this. A specific effort is required to observe and to give genuine praise on a regular basis. The reason for any recognition must be clearly stated. Does your company encourage recognition of excellent safety performance? Some companies use formal recognition processes, which have included certificates, incentives or rewards. These must be treated with care and may be best used at a team level, but companies can use the presentations as an opportunity for wider publicity.	Recognition events of good safety performance expected of managers Recognition actions per month - at a personal level Recognition actions per year - at a more formal company level	
11. JUST CULTURE	There should be a policy in place to treat people fairly in order to learn when things go wrong. The only errors justifying reprimand should be clearly inappropriate behaviour such as leaving a job in an unsatisfactory state in order to leave work early. Does your company treat errors as lessons to be learned? Do managers stand by decisions made by individuals even if something unexpected caused a problem later?		Survey question 7 *Target average 8*

12. INDEPENDENT AUDITING	There are a great many safety aspects to a large industrial site, some prescribed directly by law and others by the requirement to control risk 'so far as is reasonably practicable'. Good provision in all these areas should indicate good safety outcomes. Effective audit provides an overview of performance. The word 'audit' implies compliance to specified procedures, rules and regulations, but good auditors of safety and health (and environment and quality) may add useful commentary and advice beyond this. Audit may be carried out by internal company auditors. In a large company, these should act independently of a site or process being audited but often are also safety officers who have to be careful to separate responsibilities. Small companies may lack both independence and expertise. Consultants offer independent services, including those working through the British Aggregates Association. An effective option is for an experienced individual from a different site to audit, either within a large company or perhaps different companies assisting each other to provide the 'new pair of eyes'. Does your company have an effective independent safety auditing process? Once there is confidence in the audit, then the number of non-compliances provides a good leading indicator, noting that there may be a need to rate the risk level on some issues. Efficiency in dealing with these provides another indicator.	Effective independent audit regularly carried out Number of N/Cs Time to clear N/Cs effectively	

See attached document 'Health & Safety Survey' related to the 'Check' column above. This provides a simple questionnaire that may be used from time to time to investigate perceptions amongst the workforce, to direct improvement effort and to establish trends. This has deliberately been kept short in order to be user-friendly in a time-restricted working environment. An annual survey using this questionnaire is recommended as a significant leading indicator tool. Areas showing lower scores (e.g. less than 8) may be discussed in team meetings or, for greater anonymity, investigated by safety reps in order to establish the reasons and to formulate an improvement plan.

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N.B. Specific guidance on some of the areas above may be found at: www.qnjac.co.uk; www.hse.gov.uk; www.safequarry.com.

HEALTH & SAFETY SURVEY

Tick the box that represents your answer on a rating of 1-10

1) Senior company managers believe in the importance of excellent health and safety

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

2) Local managers believe in the importance of excellent health and safety

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

3) I could stop a job myself and receive backing from the management if I consider it to be unsafe

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

4) The company always provides me in good time with the support and training that I need to do my job safely and well

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

5) I am kept well informed about matters that may affect safety or health and I am confident that issues I mention will receive attention

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

6) The company ensures that I have thought carefully about the hazards in my work and how to minimise any risk to myself and others

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

7) The management would support me if I made an honest decision that resulted later in an unexpected problem

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree
1 2 3 4 5 6 7 8 9 10

If you wish to comment on or to provide explanation of your ratings for any of the above, please write clearly on the reverse of this sheet, giving the question number to which you refer.