

Minimising Risk in the Field –Risk Management

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Risk Management is not a complex task. It is the process of identifying and assessing risks and developing strategies and a plan to manage them. A risk is something that will have an adverse affect on a business should it happen.

In business the process of risk management can go from being very informal to very formal. We manage risk every day, consciously or unconsciously. Generally the more experienced we are the better we are at managing risk, sometimes having learnt the hard way. Using our learning we put in place processes to prevent an event from happening again.

Unfortunately when things go wrong, they can go wrong catastrophically and it has often been the failure of a sequence of events, where if one event was identified, it could have been corrected and never become a problem. It is also common for problems to occur when we are at our busiest and can least afford the consequences.

It is even more difficult in the current buoyant economy where it is almost impossible to find experienced staff. As managers we need to put in place systems to minimise our risks.

Risk management supports the continued success of the company and the key is to perform it frequently and use as simple a method as possible.

This paper is focussed on minimising risk in the field, because in the field we have unsupervised staff who often encounter different scenarios on site compared to the field brief given in the office. This paper will outline the steps of risk management and later discuss three specific aspects of risk in fieldwork - health and safety, contract and technical competence.

I. RISK MANAGEMENT

The process of Risk Management can be broken into seven stages.

1. Establish the context.
2. Risk identification.
3. Risk Assessment.
4. Risk Management Strategies.
 - a) Avoid the risk
 - b) Transfer the risk
 - c) Minimise the risk (reduction or mitigation)
 - d) Accept the risk (retention).
5. Create the Plan.
6. Implement the Plan.
7. Review and evaluation of the plan.

1. ESTABLISH THE CONTEXT

This is the planning and scoping step. Risk Management is best undertaken by a team of three to five people. A team will be more effective in coming up with a robust risk management plan.

Determine who the stakeholders are, who will be involved in the process and the basis on which risks will be evaluated. Detail a programme and framework for the risk management process.

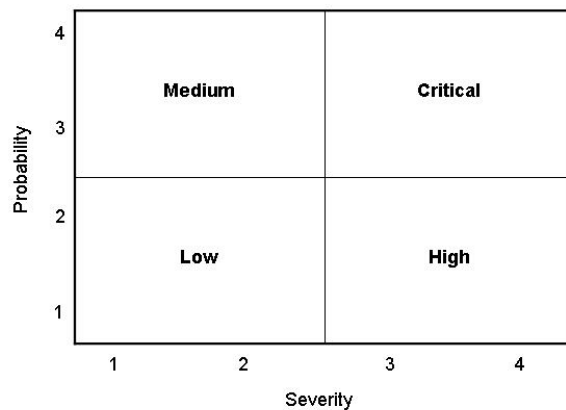
2. RISK IDENTIFICATION

This is where a team is better than an individual. The team can have a brain storming session and list all the probable risks. The team may also consider consulting other people likely to be affected or other people who may have expert experience in identifying the risks. Risk should be defined in two parts; the cause and the impact.

3. RISK ASSESSMENT

After identifying all of the risks the team then needs to assess their probability and severity. A simple matrix can be used to rank their probable impact.

Table 1 – Risk Assessment Matrix



Probability	4	Medium	Critical
	3		
2		Low	High
1			
		1 2	3 4
		Severity	

The key here is to keep it simple and work on a best educated guess. There may be supporting organisation statistics available.

The ranking of low, medium, high and critical give a weighting to the potential impact on the business and the importance of controlling measures.

4. RISK MANAGEMENT STRATEGIES

Once the risks have been identified and assessed, they can be managed or controlled by one or more of four strategies

- Avoid the risk,
- Transfer the risk,
- Minimise the risk,
- Accept the risk.

a) Avoid the Risk

Do something to avoid it, including not performing an activity that could carry risk. Unfortunately avoiding all risk means losing out on potential gain that retaining the risk may have.

b) Transfer the Risk

Make someone else responsible for the risk. This can be by transferring in contract the risk to others. Insurance is another way to transfer risk.

c) Minimise the Risk

Take actions to minimise the severity or probability of the risk. Minimising the risk is a cost continuum, and is best handled by balancing the cost/benefits of the risk. There will be a point where the costs to minimise the risk exceed the benefits gained. A decision needs to be made on what controls will be acceptable, given that the risk cannot be completely removed.

d) Accept the Risk

All risks that cannot be avoided or transferred are retained. This involves being prepared to realise a loss, should it occur. This is an acceptable strategy for a risk that is so small that the effort to do anything is not worthwhile. It also includes catastrophic risks that can not be insured against such as war or economic collapse, but have a low probability

5. CREATE THE PLAN

The team decides on which strategy or combination of strategies to apply to each risk in the form of a written action plan. The plan details the risks and the actions to mitigate the effect of the risks. It should also include who is responsible for the actions and when the actions will be completed.

6. IMPLEMENT THE PLAN

Use the plan. Follow all the written actions for mitigating the effects of the risks.

7. REVIEW AND EVALUATION OF THE PLAN

Risk Management Plans need to be updated regularly. The team should get together and review the identified risks and the management strategies to see if they are still applicable and effective and whether there are any new identified risks.

II. RISK MANAGEMENT OF FIELDWORK

This paper is focussed on minimising risk in field work, specifically three areas; Health and Safety, Contract and Technical Competence.

Most business people are very familiar with their legal obligations under the Health and Safety in Employment Act 1992 (HSE Act) and 2002 amendment. The object of the HSE Act is to promote the prevention of harm to all people at work, and others in, or in the vicinity of, places of work. The emphasis of the law is on the **systematic** management of health and safety at work

The HSE Act prescribes requirements of work place health & safety to manage risk, whereas other aspects of our business such as Contract and Technical are not so prescribed.

Therefore starting with Health and Safety will hopefully give you a clear understanding of the seven stages of risk management.

A. HEALTH AND SAFETY IN THE FIELD

1. Context

The Health and Safety Act requires involvement of all staff in identifying hazards in the workplace. Generally a Health and Safety committee will be formed, made up of management and employee representatives who will create and maintain the Health and Safety Plan. The clear objective is that every staff member returns home safely after a day's field work, and their activities have not put others at risk. A good approach is to consider each staff member as a youth. What steps would you want put in place to protect them from hazards at work?

2. Risk Identification

Risk identification in Health and Safety is called hazard identification. As stated above, the committee must involve all members of staff in the identification of hazards. The Department of Labour Guidelines offer three ways of identifying hazards: by area, by process or by task. Generally in the field we use task, although sites can be treated by area because they have generic hazards.

Common site hazards

- Being struck by construction traffic.
- Being struck on the head.
- Dropping heavy items on your feet.
- Injury through incorrect lifting.

- Falling from structures.
- Minor injuries on site.
- Vehicles accidents.
- Etc.

Fieldwork Task Hazards

- Nuclear density meter testing.
- Radiation exposure.

- Concrete sampling
- Skin exposure to cement.
 - Shot with projectiles from concrete pumping.
 - Struck by a concrete mixer bowl
 - Etc

3. Risk Assessment

Once the identified hazards have been listed then the potential severity of the incident and its probability need to be assessed. Table 2 below is an example.

Table 2 – Hazard Assessment

Probability	4	Vehicle accidents Exposure to cement Dropping heavy items on feet Injury through incorrect lifting	
	3	Minor Injuries on site	
	2		Struck by concrete mixer bowl Being struck by construction traffic Being struck on the head Falling from structures Shot with projectiles from concrete pump
	1		Radiation Exposure
		1	2
		3	4
		Severity	

4. Risk Management Strategies

Most of us are familiar with the language of the Health and Safety Act in its control of hazards by aiming to Eliminate, Isolate or Minimise. These controls are the risk management strategies.

Using the Concrete Mixer bowl as an example :

a) Avoid the Risk (Isolate).

The mixer bowl hazards can be avoided by not climbing on the truck, and staying away from the mixer bowl.

b) Transfer The risk (Eliminate)

Have someone else more experienced with the mixer sample from the mixer bowl.

c) Minimise the Risk (Minimise)

Identify a safe place to work near the mixer bowl and have the operator nearby with an emergency response plan, i.e. 'Immediately turn the bowl off in an accident'.

d) Accept the Risk (Not an Option)

The Health & Safety Act requires us to control all identified hazards, therefore we cannot accept the risk unless we have taken all steps to isolate, eliminate or minimise it.

As you can see, we have a few options, but accepting the risk without the other steps would be irresponsible and unacceptable under the Act.

5. Create the Plan

The committee then forms a plan detailing the actions to mitigate the risks. A large ongoing project may require a large document; a single one-off site visit may only require a single page. In both cases a written plan must be available to all employees carrying out the fieldwork.

6. Implement the Plan

Publish and communicate the plan to all relevant employees. Follow all the planned methods to mitigate the effect of the risks.

7. Review and Evaluation of the Plan

The committee needs to meet and review larger plans regularly. Every staff member needs to review the plan on arriving at the site to check if any new hazards have arisen. For example a crane could now be onsite requiring everyone to wear a hard hat.

The continuous improvement and review of the plan is critical.

B. CONTRACT

1. Context

The objective of a contract is to clearly define the roles and responsibilities of the service provider and the customer in a written agreement and to apportion risk. A clear contract helps to define the provision of the field work while limiting our liability. It is common for a contract committee to manage risk through ensuring all contract risk is identified and mitigated.

2. Risk Identification

The committee needs to identify potential contract risks such as payment to others for losses or working for no financial reward.

Common Contract Risks

Claims for consequential damage

- Incorrect test performed
- Late delivery of results
- Insufficient test frequency performed
- Missing the identification of obvious problems onsite
- Results incorrect
- Catastrophic failure onsite linked to incorrect test results
- Claims by association
- Third party claims

Non-payment by Client

- Client disagrees with invoice
- Client asks to invoice someone else
- Client refuses to pay
- Client is a slow payer

Working for no Financial Reward

- Rework due to error in results
- Rework not priced in scope
- Forgot to allow for additional tests
- Error in calculating rates.

3. Risk Assessment

Define the potential severity of the incident and its probability.

In most cases people would judge the probability of these things happening as low, but the severity can be high and very damaging to a business that is not prepared.

4. Risk Management Strategies

(a) Avoid the Risk

Sometimes it is better not to do some types of work where the financial reward is significantly less than the potential financial risk. An appropriate situation could be a client asking you to sign a confidentiality agreement with potential penalties of \$10,000 for a job balanced against an income of only \$150. Another example could be having a request from a client known to be a very slow payer and choosing in this current busy period not to work for them, or asking for payment before working.

(b) Transfer the Risk

There are a few ways you can transfer risk. The first is to transfer the risk to the client or others in your contract, i.e.

- Traffic control is organised and paid for by the client.
- All consents required to be paid for by the client.

The other significant method of transferring risk is insurance.

- Public liability insurance.
- Equipment Insurance

(c) Minimise the Risk

Minimising risk is about doing something which can reduce the severity or probability of a problem. In contract you may insert wording to withhold reports until bills are paid, or stop work if you are not paid on time. It is not a good strategy to continue working when your invoices are not being paid. Standard terms and conditions help minimise potential risks. These can be prepared by a legal firm, appropriately worded for the services you provide and either attached to every contract or printed on the back of your letterhead. You can also minimise your liability by stating a maximum claim value in contract.

Some contract pricing models are better than others. Time and cost charging is probably the best, because you can claim for every hour worked. Unit rate pricing is also another effective method of pricing, as long as all potential problems are taken into account, such as waiting time or standby time on site. Other things to consider in pricing are:

- What will be the normal working hours?
- Will you apply penalty or minimum call out rates when working out of normal work hours?
- What will you do if you are called out, but no work is done?

Lump sum costing is potentially the riskiest, if you submit a one off lump sum and the contract hours exceed those estimated in the lump sum, then working for nothing becomes a reality.

A formal variation process can help with lump sum pricing by stating that the lump sum was based on certain assumptions, such as a programme duration and number of tests. The variation is then additional charges when there are changes from the original contract scope.

Clear lines of communication, authority and instruction in the contract also prevent instances where field staff may get caught up in contractor's claims where they instructed the contractor's operators to work.

Traceable records also help in the management of risk. A pre-printed communication pad on which to record every verbal communication either in person or by phone discussion is essential. Only key issues that affect the contract should be recorded. A follow up written communication to affected parties to confirm the communication is also recommended. All of these communications must be held in a job file either as hard copy or electronic or both.

(d) **Accept the Risk**

In contract this is self insurance. An example is where clients are slow payers, but they have always historically paid, therefore you may accept they are still likely to pay.

The transfer of risk in (b) above may not be accepted by the customers. Ultimately some risk needs to be retained. This is evident in Alliance contracts, where each party shares the risk based on contract formulas for distribution of profit or loss.

Risk such as war or economic downtown cannot be insured against so these losses are also retained.

(5) **Create the Plan**

The contract committee prepares standard contracts for various types of work. For each new project a contract is written, detailing all the conditions and obligations.

(6) **Implement the Plan**

The contract should be signed by all parties involved.

(7) **Review the Evaluation of the Plan**

The contract committee review and amend the standard contracts to comply with changes in law and references.

Project contracts are reviewed to indicate if changes can be made in the future to minimise risk.

C. TECHNICAL COMPETENCE

(1) Context

The technical competence of laboratory and field work depends on one thing - the employees. ISO 17025 General Requirements for the competence of testing and calibration laboratories details technical requirements of laboratories. When laboratories comply with ISO 17025 they significantly reduce risks associated with technical incompetence.

The management and section leaders are responsible for the technical development of employees. The loss of a single technical expert has resulted in the closing of a few laboratories and the incompetence of a single employee has resulted in significant costs to many laboratories.

Training and development of employees is critical to maintaining and improving technical competence.

Another important part to achieving technical competence is providing a clear brief and supporting documentation.

The management and section leaders need to meet regularly to discuss there staff development and resource needs. The group should also review corrective action reports to see if new procedures need to be put in place.

(2) Risk Identification

The management and the section leaders need to identify potential technical risks, some of these were listed in the contract section.

Technical Risk

- Incorrect test performed
- Late delivery of results
- Insufficient test frequency performed
- Missing obvious problems on site
- Results incorrect
- Field test cause catastrophic failure
- Re-work due to errors in result
- Errors in calculating test results
- Lost records
- Late arriving on site
- Key employees leave or retire
- Employees take leave or are sick
- Poor staff brief

(3) Risk Assessment

Define the potential severity of the incident and its probability.

The consequences of most risks identified above depend on the time between when the field work was performed and discovery of a problem. If a technical problem is discovered weeks or months after the field work, then it is likely to be critical, since additional field work or remedial work may not be possible. Whereas a technical problem discovered within 24 hours may be remedied with only a time cost to the testing service.

When key employees resign the technical consequences can be critical to a business. Similarly the assessment of when key employees are sick or on leave may be considered a high risk to the business.

Poor work briefs can fit in any of the risk ratings, depending on the situation.

(4) Risk Management Strategies

a) Avoid the Risk

When the field work is requested, determine if the testing service can or cannot do the work, for example, if there are no employees technically competent to do the task, then decline the work.

When experienced employees leave a company, leaving a knowledge gap, then management may decide not to offer the service any more.

b) Transfer the Risk

Where the company does not have the technical competence, they may choose to subcontract a testing service to a company that does. They will need to evaluate the subcontractor's technical competence, this may be through auditing, referrals or reputation.

c) Minimise the Risk

It is essential to all testing services to train and develop staff to a determined competency levels. Field employees are at risk, because they have no immediate support when things go wrong. It is very important that field employees get comprehensive training early (1 or 2 days of focussed training early in their career).

Training can be on the job, but a structured approach following a programme is preferred. Training should not only be technical, other skills such as effective use of time, professional selling and work life balance should be included in the training.

Training does not substitute for experience, but repetition, supervision and working with senior staff support the gaining of good experiences. Just by having junior staff working near senior staff allows them to learn by seeing how the experienced people work; how they work with contractors and deal with difficult site conditions.

Field brief and site visit diaries reduce site risks by giving employees clear instructions and getting them to make a good record of what took place.

A field brief should include:

- The client
- The contact person on site
- Who is paying the bills
- Lines of communication
- Details of the specification
- Drawings
- Testing brief, what tests, how many, and what results they should be getting
- Health & safety details
- Reporting timelines

A site visit diary should record:

- Details of tests undertaken
- General site condition
- Communications with client

d) Accept the Risk

We accept small risks of when placing experienced staff on site, for example where they have limited knowledge in a particular field tested. In these cases the experienced person would prepare themselves for what they are likely to encounter on site and would familiarise themselves with the test. It is unacceptable to put in-experienced employees on site.

5) Create the Plan

Managers and team leaders need to create a training plan for the company. The training should start with health and safety training, general induction, then a program of a technical skills training and personal development.

In preparation for site work a clear brief is written for the project including all the items listed in 4c above.

6) Implement the Work

Implement training of all employees and provision of written work briefs.

7) Review and Evaluation of the Plan

Team leaders frequently review all employee's training records at individual one on one meetings. Managers discuss general training needs at appraisals. Managers and team leaders review the training programmes to check field work tests and skills are current or whether to add new field tasks to the training schedule. Field work brief forms are reviewed by managers or team leaders before the field work is carried out.

III. SUMMARY

Risk Management is not a complex task. We manage risk everyday, consciously or unconsciously. Good Risk Management supports the continued success of your company. The key is to perform it frequently and keep it simple.

The seven stages of risk management are:

1. Establish the context
2. Risk identification
3. Risk Assessment
4. Risk Management Strategies
 - a) Avoid the Risk
 - b) Transfer the Risk
 - c) Minimise the Risk (reduction or mitigation)
 - d) Accept the Risk (retention)
5. Create the Plan
6. Implement the Plan
7. Review and Evaluation of the plan

This paper was focused on field work because on sites we typically have unsupervised staff who can encounter different scenarios compared to the field brief given in the office.

Three specific aspects of fieldwork were focused on.

- Health and safety
- Contract
- Technical Competence

Health & Safety

Health & Safety follows the seven stages of risk management, which everyone is familiar with. The health and safety committee is responsible for overseeing the company's health and safety. They should identify all the hazards in consultation with employees and come up with hazard management strategies in the form of a safety plan. They should regularly review and update this plan in meetings with employees.

Contract

Typically a contracts committee manages risk through ensuring all contract risk is identified and mitigated. They ensure the company's standard terms and conditions are up to date and they provide templates for standard contracts. They review contracts submitted from third parties and develop risk management strategies to eliminate or minimise contract risk.

Technical Competence

Technical competence depends on one thing - the employee. Training and development of employees is critical to maintaining and improving technical competence.

Managers and leaders need to meet regularly to discuss there staff development and resource needs

An important element in achieving technical competence is in providing clear work briefs to employees, reviewed by managers or team leaders before the field work is carried out.

References

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