RISK MANAGEMENT

The five key areas of risk in consultants' appointments

INTERNATIONAL FEDERATION OF CONSULTING ENGINEERS

A Short Guide

Fédération Internationale des Ingénieurs-Conseils
International Federation of Consulting Engineers
Internationale Vereinigung Beratender Ingenieure
Federación Internacional de Ingenieros Consultores

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FIDIC is an international federation of national Member Associations of consulting engineers.

FIDIC was founded in 1913 by three national associations of consulting engineers within Europe. The objectives of forming the Federation were to promote in common the professional interests of the Member Associations, and to disseminate information of interest to their members. Today, FIDIC membership covers more than 80 countries from all parts of the globe and encompassing most of the private practice consulting engineers.

FIDIC is charged with promoting and implementing the consulting engineering industry's strategic goals on behalf of Member Associations. Its strategic objectives are to: represent world-wide the majority of firms providing technology-based intellectual services for the built and natural environment; assist members with issues relating to business practice; define and actively promote conformance to a code of ethics; enhance the image of consulting engineers as leaders and wealth creators in society; promote the commitment to sustainability.

FIDIC arranges seminars, conferences and other events in the furtherance of its goals: maintenance of high ethical and professional standards; exchange of views and information; discussion of problems of mutual concern among Member Associations and representatives of the international financial institutions; development of the consulting engineering industry in developing countries.

FIDIC members endorse FIDIC's statutes and policy statements and comply with FIDIC's Code of Ethics which calls for professional competence, impartial advice and open and fair competition.

FIDIC, in the furtherance of its goals, publishes international standard forms of contracts for works and for clients, consultants, sub-consultants, joint ventures and representatives, together with related materials such as standard pre-qualification forms.

FIDIC also publishes business practice documents such as policy statements, position papers, guides, guidelines, training manuals and training resource kits in the areas of management systems (quality management, risk management, business integrity management, environment management, sustainability) and business processes (consultant selection, quality based selection, tendering, procurement, insurance, liability, technology transfer, capacity building).

FIDIC organizes an extensive programme of seminars, conferences, capacity building workshops and training courses.

FIDIC publications and details about events are available from the Secretariat in Switzerland. Specific activities are detailed in an annual business plan, and the FIDIC website, www.fidic.org, gives extensive background information.

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Foreword

There has been an increase worldwide in liability actions affecting consultants supplying professional services. As a consequence, many consultants risk the possibility of claims on every assignment they undertake.

A liability claim, even if successfully defended, can prove to be a major distraction and even disastrous for a professional practice.

The deterioration in the working climate has occurred for many reasons. Important among these has been a marked change towards consultant relationships with some form of committee as the client coupled with greatly increased statutory requirements and more complex procurement processes.

It is in the interest of the consulting industry as a whole to reverse adverse trends in the liability scene. Consultants can help achieve this by practicing sound risk management procedures.

The short guide focuses on straightforward and basic risk management of the key issues commonly found in all professional services appointments.

Since FIDIC members practice in many countries, with differing laws and conditions of practice, a publication of this type can provide only broad and general information. To that extent, the reader is cautioned to recognise that the discussion under each heading may or may not be totally applicable or appropriate to the conduct of a professional practice in a particular country or situation.

Before acting on any specific points covered in this publication, the consultant should check with a FIDIC Member Association, and with legal and insurance advisors to determine the most appropriate course of action.

Acknowledgements

This short guide to risk management for consultant's appointments has been prepared by a drafting task group of the Risk and Liability Committee of the International Federation of Consulting Engineers (FIDIC) for the benefit of member firms of Member Associations of the federation, their clients and partners.

The guide aims to be useful in all countries in which FIDIC members operate, irrespective of legal codes, applicable legislation and the state of development of the consulting engineering industry.

FIDIC's Executive Committee and Risk and Liability Committee acknowledge the considerable contributions by the drafting task group that comprised Kevin Corbett, *AECOM , UK*, Nicola Grayson, *ACEA*, *Australia*, Steve Jenkins, *Connell Wagner*, *New Zealand*, Keith Lonsdale, *Berrymans Lace Mawer*, *UK*, and Adam Thornton, *Dunning Thornton Consultants*, *New Zealand*.

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Contents

Introduction

Risk is an inherent part of the delivery of any professional services project. It can take many forms including the risk of personal injury or death, damage to the project itself or to third party property, and financial losses such as an increase in project costs.

Risk management represents a process in which an organisation is protected against internal and external threats. The process can vary in complexity from a simple set of house rules on business ethics and conduct to an advanced system in which risks are systematically identified, quantified, evaluated, remedied, and administered.

Risk management is also a tool to reduce both the probability and severity of risk events in project delivery. Systematic risk management aims to set up of realistic mechanisms to finance the residual risk on a project-by-project basis. It is improbable, however, that risk can be eliminated entirely. The allocation of residual risk should be on the basis of the party best placed to manage and finance that risk.

Risk management also embraces the management of society and client expectations of design professionals and other specialists who provide the essential services on which modern living depends. While these professionals offer technical expertise, they do not normally possess the financial resources necessary to absorb their clients' financial troubles.

Within this broad context, risk management addresses the management of relationships between individual clients and the professionals and other participants in a project. Procedures involve reconciling legal relationships and the practical implementation of the legal obligations.

This short guide focuses on the straightforward and basic risk management of the key issues commonly found in all professional services appointments. The issues involve:

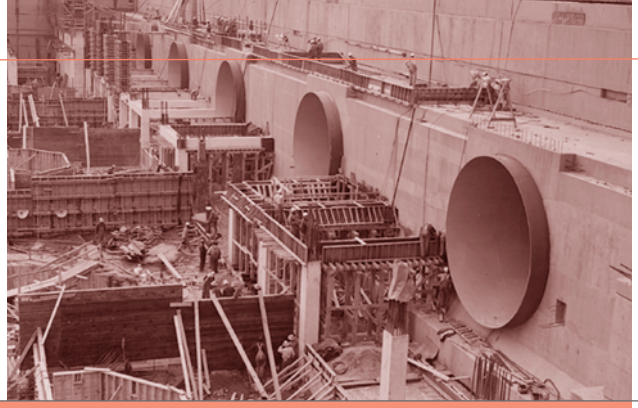
The client
The fee
The scope of services
Resources
The professional services agreement

The guide seeks to highlight the benefits of using FIDIC's standard documents and guidelines and the advice contained therein, such as an express cap on liability in the *FIDIC Client/Consultant Model Services Agreement*. For this reason, the guide gives extensive references to other FIDIC documents.

The aim is to introduce the key issues that will need to be addressed as the starting point for risk management is all organisations. Only when the extent to which good practice can be deployed in an organisation has been exhausted, or when the organisation wishes to examine specific areas of uncertainty, or rank the risks in order of importance or evaluate the effectiveness of risk mitigating measures, would there be a need for advanced risk management systems and for which special assistance should be sought.

The guide touches on all aspects of risk management, but focusses on the five key issues that arise when managing the practical relationships between professionals and their clients. The guide mainly addresses consultants acting as professional advisors to clients and their partners in the construction and infrastructure sectors.

It is important to assess the risks to a project that can arise directly from a client's competence, attitude to ethics and desire for an equitable relationship.



1 Clients

If a client fails to perform the project will fail, leading to the risk of non-payment, disputes and counter claims. This is not in the interests either of the project or of any party interested in the project's success.

Regardless of whether a client approaches a consultant or vice versa, there are a few key risk assessment tools relating to a client that should be applied during the engagement phase of a project. The client's performance and the relationship between the client and the consultant should also be monitored proactively during the entire project life cycle.

1.1 Assessing the client

Clients who understand the nature of risk and who manage and mitigate risk equitably and prudently pose little threat to competent consultants. Those that attempt to instigate disproportionate risk transfer and who follow inappropriate risk management practices can place the consultant (and the project) at greater than normal risk.

Inappropriate risk management includes:

- Inadequate contingencies and/or margins.
- Inadequate (and/or limiting) budgets for investigations.
- Engaging consultants for less than full service, such as for supervision or by specifying limited or ad hoc supervision.
- Procuring contractors without adequate quality assurance and health and safety systems.
- In the case of construction projects, failing to understand that construction cost estimates are an assessment of probable cost and not a guarantee of the total outturn cost.

1.2 A financially sound client

Understanding a client's business and the way in which the client measures success is an essential prerequisite for assessing the client. In particular, a client's financial standing or backing can be an important factor in the success of a project and in the risk to the consultant. Central and local government authorities and clients with secured loans are likely to have adequate sources of funding; clients who rely on commercial lending will be more susceptible to external economic and market fluctuations and to financial downturn or failure, and are hence less tolerant to budget overruns.

1.3 An informed client

Clients have varying degrees of experience in appointing a consultant. An essential feature is whether the client is a "professional" or regular client, who repeatedly procures engineering services, or a "one-off" client who requires the services of an engineer perhaps only once, or very infrequently. The experienced client is more likely to be informed, and have a clear understanding of the services that are required. A one-off or inexperienced client may require help to understand the services which are required and in preparing a scope of services.

An informed client will:

- Understand the need for equitable conditions of contract between all parties including a reasonable limit of liability (see Section 5).
- Make allowance for design and construction contingency, including a reasonable provision for errors and omissions.
- Understand the need, and the corresponding budget and programme, for a peer review of projects involving complex works.
- Appropriately manage the risks to clients and consultants that can arise from the use of subconsultants.
- Understand the risks that third parties can pose to the consultant and project participants.

1.4 A clearly defined scope

Consultants can easily overestimate the client's understanding of their work and how consultants manage their risks, both technical and commercial. A thorough scope definition is essential, but many clients do not have the expertise either to define scope or to determine beforehand the specialist

skills which may be required for a particular project (see Section 4). In particular, clients may not understand the consultant's limitations and working assumptions and the extent to which the consultant relies on proprietary or contactor design and on the advice of others (including information supplied by the client).

1.5 Consultant selection

Clients who select their consultants on the basis of quality and competence and then negotiate a fee that is equitable and appropriate for the scope of services, are more likely to value more highly the services that a consultant provides. Clients who select their consultants and contractors purely on a price basis and then expect the consultant to put in extra effort to drive down the overall project cost clearly do not understand the nature of professional services or the way to deliver a successful project.

1.6 The client-consultant relationship

The relationship between a client and a consultant, and the maintenance of this relationship, can influence greatly the likelihood of a claim or legal action. The relationship is more than simply a contractual relationship as it is essentially about the personalities, views and objectives of those involved, both at a personal and corporate level. Compatibility of outlook and objectives, and the common goal of delivering a successful project, will make it easier for a consultant to wholeheartedly service the client's project.

Client Checklist

- Budget and programme: does the client have a realistic budget and programme?
- Funding: is funding for the project adequate and secure, and what is the source of the funding?
- Fee payment: does the client have a reputation for the slow or non-payment of fees?
- Consultant selection: how will the client choose consultants and other members of the project delivery team?
- Owner or user: is the client the owner or user of the completed project? If not, are the end-users' requirements known, to limit the consultants' exposure to third-party claims?
- Procurement: are the consultants for the project being procured by Quality Based Selection?
- Fee: is the fee adequate for providing the scope of services that are sufficient to maintain professional integrity and to carry out a reputable job?
- Agreement: will the client agree equitable contract terms such as the *FIDIC Client/Consultant Model Services Agreement* (including the incorporation of a fair limitation of liability)?
- Risk management: will the consultant have to spend a disproportionate time on risk management?
- Claims and litigation: does the client have a history of claims and litigation?
- Specialists: has the client engaged consultants to cover all the specialist disciplines that will be required on the project?
- Other consultants: are the other consultants on the project competent and do they have adequate professional indemnity insurance cover?
- Pre-design and feasibility: have adequate pre-design investigation and feasibility studies been carried out?
- Educated client: is the client experienced and competent in project delivery? If not, does he have appropriate advisors?
- Client access: do the consultants have direct access to the client? Is communication with the client clear and direct?
- Design limitations: Will consultants have an opportunity to adequately explain the assumptions and limitations of the design?
- Contractor procurement: how will contractor procurement be carried out?
- Will non-cost attributes such as relevant experience, quality assurance, integrity management and H&S policies be given high attribute ranking?
- Personality: are the client's personality and outlook on key issues compatible with the consultant's?

There are significant risks for a consultant who agrees to carry out services or undertake a defined scope of work at a fee that is insufficient to allow for the adequate provision of intellect and experience and to make a commercial profit.

2 Fees

Engineering intellect is not a commodity. Consultants are entitled to receive adequate remuneration to enable the provision of the standard of service capable of meeting the needs of the client and to fulfil the professional obligations of the consultant. Clients expect to receive value for money from their consultants and accordingly, the fee will need to be fair and equitable to both parties. Some clients may need to be assisted in the correct procedures for negotiating contracts that deliver quality and experience.

2.1 Risks

If a consultant does not charge for professional services in an appropriate manner then adverse risks can arise for the consultant from several causes that give rise to various consequences:

- Poor and ineffective design as a deliberate component of cost cutting to sustain low fees

  Loss of reputation
  Loss of staff
  Potentially expensive protracted litigation

- Low bidding in pursuit of work at any price

  Insolvency or bankruptcy

- Token fee

  Poor or ineffective design or advice
  Cursory inspection
  Incomplete report

2.2 Consultant selection

In a competitive environment, particularly where price is a critical factor in making an appointment, a consultant cannot include more than what is required by the project brief. This leads to a minimisation or scaling of the brief so as to compute the minimum fee and consequent tension between the parties when the work done does not meet project objectives. Design deficiency can arise when design fees are reduced below the optimum level. This in turn increases project costs.

The reduction in the level of design fees together with limited time made available to carry out the work can cause problems for the quality of design documents. In the case of a construction, these problems have been shown to affect the efficiency of the construction process.

The pressure on fees from several causes gives rise to several probable outcomes:

- Cash flow maintenance

  Work output is compromised
  Principals pay the cost of the loss
  Low staff morale.

- Loss mitigation

  Work output is compromised
  Principals pay the cost of the loss
  Low staff morale

- Profit derives from turnover with low margin

  Poor quality.
  Low staff morale for smaller firms
  Low margins for larger firms.

- Business promotion to new clients to secure work

  Businesses large enough to finance job loss from a promotion budget may find, at best, a new client or increased work opportunities with improved future margins.

- Price cutting

  Quality of work is compromised to varying degrees in most cases. This compromise may involve one or more of the following:
  - increased whole of life cost;
  - increased construction cost;
  - reduced quality or amenity;
  - design components “downloaded” to the construction phase.

2.3 Basis of remuneration

Fees for the work of a consultant can be expressed in a number of different ways, with payment, for example, in terms of:

- Time basis

  Payments normally invoiced monthly or at other agreed intervals.

- Lump sum

  Based on either:
  - consultant's estimate of the work involved and after subsequent discussion with the client; or
  - a generally accepted fee scale, if any.

  Normally payable in instalments.

- Percentage of the cost of the works

  Based on a percent of the contract price for the works contract.

Direct expenses are normally reimbursed separately, or can be included partly or wholly in other payments, depending on the circumstances.

2.4 Cost of services

The cost of the services will depend on their type and extent, which should be determined in consultation between the client and the consultant and clearly defined in the scope of works. They should be commensurate with:

- Scale and duration of the services
- Level of experience and expertise involved
- Responsibilities being undertaken

Payments should not be affected by risks over which the consultant has no control, such as procedural delays or the performance of other project participants, such as a contractor.

Consultants also need to quantify real costs in determining a fee. In addition to overhead costs, which include for example, salaries, medical, insurances etc,. consultants should also include provision for such costs as, long service leave, accrued holiday pay/leave, taxes, and commercial profits.

2.5 Appropriate remuneration

Appropriate remuneration is required to allow consultants to provide a professional service, including independent and informed advice focusing on the extent and quality of service.

Clients and the project should capitalise on the concept of "value for money" where a greater investment in the early stages of project development (investigations; pre-design briefing; design and documentation) will generally result in a much improved project outcome in terms of both capital cost and facilities management or life cycle cost.

In a competitive situation, well-informed clients will place greater emphasis on the capability and competence of the bidder rather than focussing on the lowest price and risk appetite. This will result in a more competitive and competent industry with sufficient skills to meet the needs of its clients, which together are the basis for the Quality Based Selection of consulting services.

2.6 Cost plus profit

Consultants may find themselves negotiating on a cost-plus-profit basis.In such cases it is important to ensure that the hours presented allow an adequate margin, especially on large projects that have a tendency to become more complex than was assumed initially.

2.7 Gaining concessions

An effective way to gain concessions from a client is to identify items that can be deleted from the scope of services in order to reduce the cost, while still maintaining the integrity of the project. This amounts to negotiation on the basis of scope rather than price.

Items that can be considered include:

- Design alternatives

  Limiting the number of design alternatives to be evaluated.

- Pre-engineered packages

  Using pre-engineered package systems instead of custom-designed components.

- Specialist services

  LRequiring the client to contract directly for other required services such as surveying, soils investigations or other field work.

- Contractor design

  Specifying that some design activities be done by the construction contractor, based on performance specifications.

- Reprographics

  Permitting the use of reprographic techniques.

A careful analysis of each project will usually reveal many ways of reducing costs.

At the negotiation stage, the consultant should be prepared to discuss the cost impact of any possible combination of these measures.

2.8 Save interest costs by improving cash flow

- Payment of a retainer

  Consider the merits of the payment of a substantial retainer upon project initiation, to be held until the final payment.

- Weekly invoicing cycle

  Specify a weekly invoicing cycle based upon a pre-established schedule. For example, if a $130,000 project is scheduled to last 13 weeks, the contract can specify an invoicing amount of $10,000 each week.

- Interest on late payments

  Include a clause in the services agreement with the client obliging the payment of interest for delayed payments.

These approaches can cut the overhead rate substantially by reducing or eliminating the cost of interest to finance project expenditure.

2.9 Reducing normal overhead costs

Reduce or eliminate costs that are normally built in to your overhead rate. For example, if the firm allocates accounting costs to a general overhead account (as do most design firms) these costs can be reduced for a specific project by obtaining agreement from the client for a simple invoicing format with no backup documentation of expenses, such as copies of time sheets, phone logs or receipts. Under this kind of arrangement, the client can still be protected by being allowed to audit invoices on a random basis.

An option is to accept the project on a compressed schedule and work overtime. As long as the client agrees to pay for overtime hours at the same rate as regular hours, this can be an effective way of reducing the overhead rate, because overtime hours generally do not carry the same burden as normal working hours. For example, once the office rent is paid, it costs little more to occupy the space for 16 hours a day than it does for eight hours a day.

3.10 Fee tendering

Fee tendering, while strongly discouraged, requires careful management. Factors the consultant needs to consider include understanding the:

2 Fees

- Cost of the deliverables

  Cost of the deliverables, in particular, those by which the performance will be judged by the client.

- Agreements

  Services agreement and associated documents, such as insurance policies.

- Risks

  Risks in the appointment.

Proactive risk management can be achieved by properly assessing and clearly defining the scope of services in the appointment. A poorly described, vague or ambiguous scope causes uncertainty, misunderstanding, fee risk and has the potential to lead to disagreement and protracted disputes.

3 Scope

All written agreements for the provision of professional services contain contractual obligations (for instance, provision of services, duty of care, payment terms, insurance coverage, etc.) as well as a description of the services (or scope) to be performed by the consultant under the appointment. The level of detail in terms of scope description will vary depending on the appointment and should include such matters as scale, technical complexity, role, etc.

Achieving a precise definition of the services to be delivered is a key risk mitigator in every assignment. This rule applies whether the professional services agreement is a bespoke form, a standard form such as the *FIDIC Client/Consultant Model Services Agreement* (the "White Book"), or a purchase order delivered by letter, email or orally.

3.1 Define the scope

It is important, fundamentally, that the scope of services to be provided by the consultant is clearly and precisely defined. It is in the interests of both the client and the consultant that the total services to be delivered are fully understood so that:

- Services can be properly resourced and priced by the consultant.
- The consultant is clear as to what has to be done to discharge the obligations under the services agreement.
- The client is entirely clear as to the services that will be received.

In very simple terms, each project and assignment has to be considered on its own merits. If the consultant is being appointed to provide structural engineering design services, the precise nature of these services should be set out, identifying what is included (e.g., detailed design and layout drawings) and, if appropriate, what is not included (e.g., details of steelwork and connections or reinforcement).

The experience and sophistication of the client needs to be taken into account. A client with limited experience will require assistance in understanding the services are required - something that a consultant can do as well as any of the other professionals who generally need to be engaged for a particular project. In certain circumstances, it may be appropriate for the consultant, following discussion and consideration of the client's requirements, to set out the services that will provided in order to meet the client's objectives. In other commissions, the client may be experienced, already knows what is required, and/or may have other professionals advising, and is therefore in a position to set out the services that the consultant is required to deliver.

Particular care is required when performing project supervision. The client, with the aid of the consultant or other professionals, must specify the level of supervision required, be it occasional, part-time or full-time. The precise requirements for the client/project will include such matters as the complexity of the project, the procurement method, other retained supervisors (including possibly the client's own representatives), remoteness of location, etc. The consultant must ensure that the client's requirements are clear and recognise the limitations of the specified level of supervision. Whatever the extent of supervision that is agreed, the consultant cannot guarantee the contractor's performance or the quality of the works. The agreed level of supervision should be precisely defined in the appointment.

Other obligations, such as responsibility for the coordination of other design professionals, planning, permits and health and safety obligations also need to be clarified at the outset.

3.2 Further guidance

Owing to the global spread and diverse nature of the services provided by FIDIC member firms, the *FIDIC Client/Consultant Model Services Agreement* provides an appendix for the client and consultant to set out the scope of the consultant services required to be performed.

Several FIDIC Member Associations also have standard appointment terms designed for their

particular countries of operation and membership. Some of these associations include in their standard agreements detailed schedules of services that set out precisely the services to be delivered from the initial appraisal or strategic briefing stage through to the detailed and final proposal stage, and then on to production and delivery. Both the client and the consultant can add, delete and modify the specified services to suit their and the project's particular requirements. This step is a essential, particularly when a detailed list of services is being used.

Consider also the guidance given in this guide with respect to Fees, Resources and Contracts and use the scope checklist given below as an aid to defining and clarifying the scope of services of the appointment.

3.3 Understand the scope

A properly defined and agreed scope assures the client in terms of expectations and enables the consultant to deliver the contracted scope of services. A scope that allows the consultant to deliver as agreed will negate the risk of misunderstandings and conflict (either concerning fees or misunderstanding over poor or non-performance) through the satisfactory performance of the services and the delivery of the agreed scope. In such circumstances, the end results are a satisfied client and a project well accomplished, these being the aims of the appointment.

Client Checklist

- Clear and unambiguous: are the consulting services required to be provided clear and unambiguous (such as listing of engineering services to be delivered)? If not, has any ambiguity been clarified?
- Guidance: does FIDIC or your FIDIC Member Association provide any guidance or specific schedules of services for particular commissions such as lead consultant, programme management, engineering design (civil, structural, geotechnical, mechanical, electrical, environmental, building services, etc.)?
- Properly resourced: have all services to be provided been properly resourced (in terms of appropriate competence and experience) and priced accordingly?
- Specialist subconsultants: are any specialist subconsultants required to deliver the agreed scope?
- Unspecified services: are there any unspecified services connected to the consultant's role? If yes, has the client been alerted to their omission?
- Associated services: are there any associated services that (if not expressly excluded) might be assumed to be part of the scope? If yes, have these suspected problem areas (e.g., cladding, environmental, etc.) been included in the scope?
- Specialities: are there any specialities to be provided for areas such as acoustics, health and safety, security, drainage, fire, lighting, environmental, and project sustainability?
- Survey: does the scope require surveys? If yes, have they been adequately specified in terms of extent and nature (visual, sampling, destructive, etc.)?
- Health and safety: is it clear who has responsibility for coordination and all relevant health and safety matters?
- Permits: is it clear who has responsibility for obtaining any permits, licences or relevant regulatory approvals?
- Supervisory role: does the appointment require a supervisory role? If yes, is the level of supervision adequately specified and clearly understood by both parties?

Resource risk is intimately connected with the risks associated with fees and scope. It can be summarised in its worst-case as not enough of the right people doing the right job.

4 Resources

The most effective tools for mitigating resource risk are a clear project plan, a specific risk assessment and good quality control. These components should be considered not only during the pricing phase or at the start of the project, but should also be reassessed regularly and adjusted to ensure that they take account of changing circumstances in terms of programme impacts, scope, fees, resource availability, and the risk climate.

Commitments made in the project proposal are generally incorporated into the scope of the professional services agreement and become obligations which, if ignored, then become risks and potential liabilities.

- Promises

  Promising the "A-team" and providing substitutes is risky business.

- Over-commitment

  Going all out for the project and worrying later about how it will be carried out raises the risk profile significantly.

- Cutting costs

  Bidding low and hoping to offset or minimise losses by using junior staff who may not have the experience to assess the technical complexity or to anticipate difficulties which may arise from early design decisions commonly lead to risks becoming crystallised.

Risks that crystallise in the resources area often have consequences that affect parties other than the consultant, and these consequences are often exactly the very issues that the client has employed a professional engineering firm to avoid. It is part of a consultant's professional duty to ensure that risks deriving from inadequate resources do not arise during the project.

Consultants must also learn from their successes and mistakes. It is rare to find a crystallised risk that has not been recognised in advance, or has never been seen or experienced before.

41 Project Strategy

A good project strategy will start with the scope and the professional services agreement, breaking these down into:

- allocated tasks;
- a review of the resources and programme that were promised and have now become contractual obligations, and the allocation the necessary resources;
- appropriate timelines;
- the allocation of the available (and appropriate) fee budget across the activities.

As well as providing a basis for managing the project, such a strategy provides a sound foundation and an early warning system for an analysis of the project risk.

A good project strategy will also include contingency planning. Contingency planning should consider how programme delays can be overcome and succession planning to ensure that in the event of key resources becoming unavailable for any reason, substitutes with appropriate technical knowledge and experience are identified and briefed.

On certain projects, it may be appropriate that these resources are considered and briefed for peer review roles in the quality plan described below.

If it is contemplated that the project resources will include staff who are under training then the project strategy must recognise this. The strategy must also confirm that both time and cost allowances are made for the time and effort that will be required to ensure that the training is effective and the work of the junior staff is being carefully monitored and checked on a routine basis.

4.2 Quality Plan

A good quality plan in accordance with industry or the firm's standards is an essential tool in managing risk in the resource area. Emphasis should be given to ensuring that self-checking takes place at the front line, and that designers, drafters and field engineering staff do not rely on someone else detecting their mistakes.

Peer review using resources from within or outside the firm is an essential mechanism for avoiding risk in this area. It should always be considered for complex projects, particularly where design or construction involves either a significant amount of innovation or unusual or non-standard assumptions. A peer review will not detect detailed design or calculation errors: these should be identified as part of the quality control within the project. A peer review will check that the scope has been correctly interpreted and that any assumptions made or standards adopted are appropriate. An experienced peer reviewer will not only assist in avoiding fundamental errors but also, if involved from early in the project, be most likely able to contribute significantly to the project outcomes for all the parties involved.

4.3 Project Risk Analysis

A project risk analysis can, and should, cover many more areas than simply the resources. The resources section of the project risk analysis should consider issues such as:

- The technical complexity of the project, and the ability of the allocated staff to deal with the complexities.
- The interface between professional advisers and design disciplines and the level and complexity of these interfaces, and the means by which they will be coordinated.
- Consideration of the extent to which the design process will depend on one or more specialists or key individuals, and contingency or succession plans in the event that they become unavailable.
- The general availability of resources, particularly if the project strategy relies on additional recruitment or the availability of contract staff.
- The continued availability of specialist subcontracting design organisations, and their attitude to risk and quality control.
- The availability and reliability of information to be provided by the client, and the means by which the quality of this information will be assessed.
- A review of the risks to the project which may be generated by the size and nature of the fee budget.
- Specific understanding of the level of confidence required by the client in any cost estimations, and an appropriate allocation of resources to meet this level of confidence.
- A review of how the risks associated with field engineering and variations (a primary source of professional indemnity claims) will be managed and controlled.
- The likely structure of the implementation contract for the works, since some contracting strategies such as Guaranteed Maximum Price as well as design-build contracts have inherently higher risk for the design organisation.

4.4 Review after action and lessons learnt

Every project has the ability to enhance a consultant's knowledge and experience. An important part of limiting resource risk is to carefully review both successful and not so successful projects for lessons that can be learnt.

It is particularly important to review and understand projects with risks that have crystallised and where risks have arisen in the resource area since firms generally have the ability to eliminate resource risk in the future, or at least institute procedures which will mitigate or control it.

Case studies developed from actual experience provide some of the most effective mechanisms for illustrating risk management concepts and for training of staff.

Key risks need to be considered when entering into agreement for the provision of professional services.

5 Agreements

The failure to take appropriate care and to seek advice when agreeing contractual terms can lead to disputes, which are expensive and damaging to an firm's reputation. The main potential problems can be identified along with possible remedies.

5.1 Burdensome or onerous terms

Consultants acting in most jurisdictions accept that their services will have to be performed with reasonable skill and care. However, fitness for purpose obligations and absolute or strict obligations which impose a higher burden should be treated with extreme caution. The use of the word "shall" (meaning to "ensure", "comply" or "secure") creates absolute obligations, which may impose liability even for events that are beyond a party's control.

Absolute obligations can also introduce warranties for fitness for purpose by referring to other documents, as for example, the provision: "The Consultant shall ensure that the design will meet the stated requirements of the Client ....", where the stated requirements contain fitness for purpose obligations. Contractual clauses requiring a consultant to indemnify can broaden a consultant's liability beyond that of negligence or a legally enforceable claim. Again, these should not be agreed without understanding the onerous risks that they impose.

To avoid/mitigate contractual risk, consultants should:

- Carefully review and understand the obligations that are imposed under the services agreement.
- Identify critical and onerous terms (with legal advice where necessary).
- Take legal advice as to the impact of such terms.
- Negotiate their removal or modification. For example. a suitable modification for an absolute obligation could begin with: "Subject always to conditions beyond his reasonable control..."

5.2 Unlimited liability

A consultant's liability will usually be unlimited unless express limits are agreed in the appointment. This is clearly undesirable, especially given that there will be a limit on a consultant's PI insurance.

To avoid/mitigate the risk of liability, consultants should:

- Ensure that the contract limits liability to within the level of protection offered by the consultant's PI insurance.
- Take legal advice as to the enforceability of limitation clauses in the relevant jurisdiction.

5.3 Correct form of agreement

Professional services agreements can be made orally, in writing or by conduct. Written contracts can take the form of bespoke agreements or standard forms, modified or otherwise. The risks of using oral and bespoke written agreements are: important aspects may be omitted (for example, how disputes will be settled); unfavourable terms (see above) can be included; there is a greater risk of uncertainty.

To avoid/mitigate risk associated with the form of the agreement, consultants should:

- Take legal advice when drafting bespoke contracts, and/or
- Consider using one of the many standard forms available, notably the *FIDIC Client/Consultant Model Services Agreement*.

The most suitable form to use as a template will depend on a variety of factors such as jurisdiction, type of project, responsibility for design and the preference of the parties. Like most things, choosing the "right tool for the job" is vitally important, especially when operating in different jurisdictions.

5.4 Local considerations

Multinational contractors entering new markets may wish to exclude the effect of local laws by applying English law, for example, to the contract.

However, consideration must be given to the relevant local law. In some areas in the Middle East, for instance, there is uncertainty as to the effect of Shari'a law on some standard clauses in, for example, the FIDIC White Book.

To avoid/mitigate the risks associated with local law, consultants should:

- Take advice from lawyers and from local professionals (engineers or architects) who have a greater insight into local regulatory requirements.
- Where possible, use professional services agreements which contain arbitration provisions for dispute resolution. A good example of this is in Dubai where the FIDIC forms are widely used and contain these provisions as standard.
- Whatever part of the world consultants are operating, where modifications to a standard form are anticipated, legal advice should be sought, as many of the clauses are interrelated.

5.5 Other contractual issues

Sub-consulting

Consultants may wish to subcontract some of their obligations to be preformed by another party. If the consultant has been retained due to their special skill and knowledge, they may not be able to do this. Therefore, consultants should obtain permission in advance if they intend to do this.

Novation

Novation agreements are widely used on design-build projects. Most employer-devised agreements seek to make the consultant liable to the contractor as if the consultant had been employed by the contractor from the beginning of the project, thereby considerably broadening the consultant's liability.

To avoid/mitigate the risks of novation, consultants should:

- Only accept liability to the contractor for breaches of duties owed to the contractor post novation; and
- If necessary, retain lawyers to negotiate and argue that this view represents the legal reality of the situation.

Further information

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