

LESSONS FROM DESIGN COMPETITIONS HENDERSON COLLOQUIUM 2007

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Summary

This paper pre-empted the publication of a guidance document by the British Group of IABSE (the International Association for Bridge and Structural Engineering) as the proceedings of the Henderson Colloquium. The annual meeting discusses an issue of topical importance and in 2007 responded to concerns raised by several high profile bridge design competitions in recent years which have failed to produce the desired outcome. As the use of design competitions to procure bridges increases, the wide disparity in organisational quality experienced by participants provides impetus for applying the lessons learned going forward. The forum identified a need to provide clear industry recommendations on the subject of design competitions specifically for bridges.

It is recognised that a majority of commissioning clients will only ever organise a single competition whilst specialist consultants will participate in many. The guidelines are therefore designed to use industry experience to inform potential competition organisers of the issues leading to a successful process. The guidance includes general advice on the procurement of design, and discussions on specific aspects such as the composition and role of the competition jury, submission requirements, competition programme, honoraria and fees, and other relevant criteria.

Keywords: guidelines; design competitions; client; IABSE; Henderson Colloquium



Fig. 1 Henderson Colloquium 2007 Participants

Left to Right. Paul Monaghan [City of London], Stuart Withycombe [Halcrow], Dominic Pask [WS Atkins], Henry Bardsley [RFR], Poul Ove Jensen [Dissing+Weitling], Cezary Bednarski [Studio Bednarski], Linda Roberts [RIBA Competitions Office] Giles Waley [Edmund Nuttall], Naeem Hussain [Arup] Louise Harrison [RIBA Competitions Office], Paul Gay [Vale of Glamorgan County Council], Mike Schlaich [Schlaich Bergemann und Partner], Keith Brownlie [Wilkinson Eyre Architects], Martin Knight [Knight Architects], Ian Firth [Flint and Neill Partnership], Martin Lynch [Highways Agency], Angus Low [Arup], Peter Curran [Gifford], Brian Duguid [Mott MacDonald]. Not in picture; Gopal Srinivasan [Arup]

1 Introduction

The Henderson Colloquium of the British Group of the International Association for Bridge and Structural Engineering was held at Magdalene College, Cambridge in July 2007. This paper records the results of the colloquium subject of 'Lessons from Design Competitions' The paper and the publication that will follow it are written in the first instance primarily for the UK market with due regard to compliance with European legislation. The guidance however has a broader international application, and is intended to be extended in its scope and use through IABSE. The participants of the 2007 Henderson Colloquium were substantially from the UK bridge industry representing procuring agencies, owners, institutional competition administrators, contractors, Architects and Engineers. The consultants, from the UK, Denmark, Germany, France and Hong Kong, draw on a substantial body of experience of design competitions on the international stage. The guidelines are designed specifically with regard to bridges and this paper provides only a summary of the guidance in its full form.

1.1 Why this document?

Design competitions are an important and often emotive subject, with a wide reaching influence on the quality and visibility of bridge design. Experience suggests that much could be done to improve and expedite the running of competitions. There is a wide variation in organisational clarity, and the common recurrence of aspects of conditions previously found to be ineffective or detrimental to the success of the project. At the least, a poor competition will result in a waste of industry resources or unfulfilled project potential, and at worst may result in the collapse of the process and substantial financial loss to the procuring party.

A bridge is not a building. Bridge design is a specialism with a range of pitfalls particular to the type, and the application of knowledge and experience related to the procurement of buildings or other forms of engineering infrastructure is limited in its relevance. The bridge design community is uniquely placed to offer the benefit of its experience since the majority of commissioning clients will only organise a single competition whilst specialist consultants will participate in many. This is an inversion of the natural order as seen in, for instance, the examination system where those with experience and understanding set tasks for first-timers whose abilities are unproven. The guidelines are therefore designed to use industry experience to aid and inform clients in the selection of a competition as a procurement methodology and set out the ingredients of a successful, fair and professional process.

1.2 Why use a design competition?

A competition is not a shortcut design procurement route, nor a method of procuring free or cut-price professional services. The level of organisation, management, assessment and cost involved, requires the commitment of client resources and finances generally beyond that of alternative methods of procurement. As with any process there are consequent risks, however the tangible benefits of embarking on the competition route are proven and exclusive. In general, the use of a competition is a positive method of achieving design choice and excellence in an open and profile-generating manner. Clients must assess the validity of the route with a clear understanding of the alternatives, and particularly in respect of the project objectives. Competitions by their nature result in a huge amount of abortive industry resources, and the participants commit to the challenge on the expectation of a satisfactory process and the allure of a worthy reward. The competition organiser takes on a consequent responsibility which should be considered in the selection of procurement route.

1.2.1 *Typical reasons to use the competition system:*

To provide a range of options for an important or challenging site;

There are many good bridge designers, but not each one will develop the optimum solution for every site or brief. Competitions provide the client access to a considerable amount of creative design talent, with relatively little exposure. The competitive environment additionally requires consultants to 'raise their game' and can draw out positive proposals that may not have been developed under other circumstances.

To add profile to a project,;

Competitions can be managed as a visible and newsworthy process and lead to exciting and notable solutions. This may be exploited to give focus to a wider initiative, provide a catalyst for development and investment or attempt to re-brand or become synonymous with a place. A good design procured through a visibly open process may provide the basis to

seek project funding through grants or inward investment. In general a competition can add great momentum to a project.

To include stakeholders in the selection process;

Bridges are not usually easy projects to deliver, given the wide range of interested parties, and the sensitivity and visibility of many sites. Competitions offer a good opportunity to solicit involvement and support from a wide range of stakeholders. This can be successful in increasing project viability and negotiating the consents stage.

1.2.2 *Example scenarios where alternative procurement routes should be considered:*

Where minimum cost is critical;

Whilst there is no empirical evidence to suggest that economy, cost certainty, or other financial project constraints are compromised through the use of design competitions, it is an inherent feature of the process that a cost premium is required to achieve the quality of design which competitions are intended to deliver.

Where design sensitivity is required over and above design visibility;

Context is a key issue in the design process but competitions by their nature solicit designs that are generally more 'spectacular' than in a non-competitive situation. This poses a potentially significant risk to the project at the planning stage. This should not preclude a well organised competition with an awareness of the issues and the participation of the relevant stakeholders.

When the client is committed to design and construct route;

This point is likely to cause contention but in general the objectives of a design competition are diametrically opposed to that of a contractor-led process. This is the case even when cost certainty rather than lowest cost is the objective. In a tender scenario the initial bid will be necessarily tight yet the faithful delivery of a fixed bespoke design does not leave a contractor great flexibility to make cost savings in design. Commonly the client's intent will be simply to shift the risk to the contractor, but this must and does have an effect on the outcome. Free of risk does not mean free of cost, and if cost is fixed, quantum or quality must be reduced. A common result is the dilution of quality and the pursuit of claims, coupled with the disempowerment of the designer in his original and traditional role of client's agent. This does not however suggest the preclusion of contractor involvement in the [competition] design process or undervalue the contribution of the constructional professional, which must be engaged fairly and positively.

1.3 **Types of competition**

Every competition differs in its detail, but since they all essentially seek to procure a single design solution from multiple proposals, selecting the appropriate route is a matter of expedience and specificity relating to the process, rather than to the intended outcome. Administering a competition requires commitment and resource, and it follows that the 'size' and complexity of the competition will have a consequent effect on the management of the process.

If a competition is substantially related to cost outcome, other than adherence to budget, it may for the purposes of this document be considered a tender. If the process is primarily concerned with design, albeit related to strict cost checks and controls, it is a design contest the standard generic types of which are outlined below:

1.3.1 *Open design competitions*

Bridge design competitions, in the UK at least, are popular and can solicit a high number of entries potentially in their hundreds. A great many will be dispensable, but a significant number could warrant more serious consideration requiring an extensive review process. The process can provide considerable profile for a project, and might solicit an exceptional design by casting the net wide. However, design competitions are expensive and time consuming to enter and since open competitions tend to reduce the odds of success, they may not be entered by the most capable and experienced designers. Consequently they provide a good opportunity for introducing new talent into the market, but whilst it is not the intention of this document to limit diversity in the marketplace it should be noted that this route can pose risks by not pre-determining consultant capability.

1.3.2 Limited design competitions

In order to create a quality benchmark, competitions are often limited to the participation of pre-qualified design teams based on an assessment of competence. Numbers are commonly between 5 and 7, but may be as high as 12. As the number of entrants increase, so some of the disadvantages of the open competition route may come into play. The process of establishing a shortlist is an additional organisational requirement but in order to ensure competence it is not necessary to over specify the submission requirements. In general pre-qualification should be determined by a limited amount of relevant information. Excess H&S, QA and other policy compliance does not guarantee a positive outcome, and says nothing about creativity, whereas demonstrable experience and design capability probably do. Limited competitions can also be a good method of initially securing a preferred designer rather than a definitive design but in contrast to open competitions generally suppress the emergence of new talent. This is detrimental to the wider marketplace and could be addressed by the inclusion of 'wildcard' places to those clearly able to bring talent to the proceedings.

1.3.3 Two or multi-stage design competitions

Such procedures provide a way of reducing the competition field without requiring a full design proposal from every participant with the consequent wasted resource. This may take the form of an initial sketch design stage, followed by a second stage full design or may involve an increasing level of information from a diminishing number of participants. In Italy for example it is routine for competitions to require an 'initial-thoughts' submission in the form of a single or two A3 size drawn information. This is considered in combination with a statement of experience/competence to compile a shortlist although teams usually must include an age-limited party, in order to prevent market domination by more established companies or individuals. In a less legislated environment there is the potential to fast track competent consultants to later stages of the process, allowing experienced players and new designers to compete in a limited [reduced odds] scenario.

Anonymity is a common requirement, and the term 'anonymous design competition' is commonly applied. Anonymity may be applied to ensure propriety and might be a requirement of public sector procurement. This is useful in promoting equality amongst designers and providing opportunity for new talent, but suitable although not draconian checks of consultant capability should be undertaken. In limited competitions there seems little to gain from concealing the authorship of each design, and the identity will in any case be made clear to the jury at the interview stage. Publish the identity of teams on the shortlist for the benefit of good PR and the competitive spirit it engenders in the participants.

1.4 Who Is Involved?

Client and Competition Organisers

The organisation and administration of a competition is a substantial undertaking that is routinely delegated by a client to a third party. A distinction should be drawn between autonomous competition organisers who will run the administration of the process, and a technical consultant who will have a wider remit in the capacity of client's agent. Competition organisers may be professional competition management consultants, or institutional organisations such as the RIBA competitions office [UK]. The client is not, and should not be, absolved from 'ownership' of the process.

Advisors and Stakeholders

A range of technical advisors may be required to input into the process. An engineering, project management or cost consultancy is often engaged to manage the process and undertake elements of the competition pre-activity. Rather than applying 'standard' professional procedures the advisor must take particular account of the specific issues of bridge design and construction. The key advisor may co-ordinate the input of other specialists as well as stakeholders whose requirements should be factored into the process at the outset. The role of the public is discussed later in this document.

Participant Design Teams

Design teams will include both bridge engineer and Architect, and for moveable bridges a mechanical and hydraulic engineer is necessary. A lighting designer may also usefully contribute at competition stage. The inclusion of an artist is a debatable subject. Consider, before requiring an artist's involvement, that in its ultimate state the bridge design itself *is* art. The need for an independent cost consultant is dependant, as with all members on the team, on the prospect of ongoing appointment which is often in conflict with a client appointed project cost manager.

2. Guidelines

2.1 Pre-competition Activity

Pre-competition activity is likely to require diverse third party involvement. If the management of this activity is contracted to an advisor it is essential to appoint a party that has a clear understanding of the bridge market rather than merely general construction credentials- many fundamental problems are embedded in a project at its inception, however well intentioned.

At the project planning stage, key decisions regarding procurement and appointment are usually set. It is worth noting that the project scope will substantially inform a consultant's decision to participate. It is not uncommon for competitions to set-out a process where a key party [either architect or engineer] is unlikely to retain control of their design beyond the competition stage, usually through the novation of the design to a third party at a later stage [contractor or consultant]. If this clear at the outset, most good consultants will decline the offer, but those who choose to participate will at least do so on an informed basis. It is essential therefore, to analyse the 'cradle-to grave' life of the process and provide a clear statement of intent. In order to attract, and realise, effective design solutions from competent consultants it pays to plan for their significant and ongoing involvement in the process.

Of course before choosing a design procurement method it must be established that a bridge is actually needed, appropriate and achievable. This might, for example, involve the advice of a bridge designer within the project planning or master planning process. It is also necessary to establish project viability, from a political, legal and funding standpoint or at least to identify and mitigate the risks.

Thereafter a wide range of activities are required to allow the formulation of a comprehensive brief, a realistic budget and an effective management strategy for the process. This will involve defining the project objectives and parameters, and quantifying a wide range of issues including the visual, social and environmental conditions of the site. It also requires the collection and processing of an array of data [topographic surveys, geotechnical surveys, utilities information, navigational constraints etc].

2.2 Setting the Brief

The brief will be independent of the competition conditions which should provide details of the commissioning party, submission requirements, competition timetable, judging criteria and identity of the jury, appointment and compliance requirements.

An ideal brief should be short and relevant. Competitors need clarity and unambiguity but too often the brief is overworked, containing a substantial amount of sometimes conflicting and uncoordinated information, yet omitting one or more essential briefing items. Setting the wider context of the site and project is useful, but it is recommended that the key information is formed into a core brief, and that peripheral background information and detailed technical data form appendices. These will include survey and SI information, environmental data such as hydrological, geotechnical, wind and seismic criteria, and capacity information such as traffic and marine data. The core brief should include but not be limited to nor significantly exceed the following key information. If key data is omitted, designs may be at risk of invalidation, to the detriment of the project.

Scope

A clear indication of what the designer must design. This may include approaches, landscape, independent navigation structures, secondary structures, lighting proposals and so on.

Budget

A headline figure stating clearly what is included, and an elemental breakdown of independent components of the scope. An indication of how the budget was determined and its status.

Architectural

A clear and succinct statement defining visual objectives. Iconic is an overused but uninformative term, it is more useful to identify the key contextual issues and the expectations of the interested parties in an objective manner.

Limited historical and cultural context with a direct bearing on the project.

An indication of 'desire lines' in current and planned configurations.

Site

Site curtilage for final structure, and for construction phase.

Description of any physical or legal constraints that will affect horizontal or vertical alignment.

Dimensional

Definitive navigation clearance envelope [s]- height width and location. In open and closed configurations if moveable.

Bridge width, or sufficient data to enable competitors to determine the width.

Dimensional restrictions on the height of structure [above deck] or location of structure [piers].

Topographic information and tidal variations in water levels.

Requirements for vertical or horizontal delineation of lanes or other issues effecting the deck configuration.

Performance

Expected structural loads and notable or exceptional criteria effecting the performance.

Definition of required performance including design life and maintenance.

Restrictions or requirements on materials.

Requirements for cover, shelter or other 'particularities'.

Legislation

Details of known planning criteria.

Stakeholder requirements including the known requirements of agencies, lobbies, third party funders etc.

Description of any known covenants, restrictions, obligations or conditions that will affect the design.

2.3 Setting the budget

A cost consultant may be engaged in the process to advise on budget and procurement, and to review proposals for cost compliance. It is imperative for the viability of the project to also consult specialist bridge design and construction knowledge on both counts to avoid false presumptions. Benchmarking of similar projects is an effective means of informing the budget, which must be correlated with the brief if the clients expectations are to be realised. The industry has the experience and the data to establish a likely cost, based on deck area, for a particular typology and span range.

There is a natural tendency in the construction industry to ask for wine, but to offer to pay for water. Many projects have faltered or failed by setting the budget too low, or the project requirements too high. Unless there is a realistic budget, and a clear statement of the budget status, competitors are left to choose between the conflicts of budget and design. In competitions, the objective in the first instance is to win, and since the more appealing designs generally prevail, competitors will tend towards a potentially winning design, rather than a safely budget compliant one. If a stated budget really is fixed, this may render the selected design undeliverable in the form proposed, thereby largely negating the process. In public procurement, this would invalidate entries, reducing choice and increasing risk for the client.

In a competition environment it is arguably the job of the designer to maximise the value of the budget, rather than make savings against it. This does not mean profligacy on the part of the professional consultant however, and a realistic budget does not imply an excessive one. In a properly managed process there is no gain from under reporting the budget to provide additional but 'committed' contingency.

Intrinsic to the budget is a clear definition of scope including the extent of landscaping, abutment works, lighting and other 'peripherals'. This must be clearly identified with the budget plan and conveyed to competitors.

2.4 The timetable

How much time to allow in each phase of the competition is function of the magnitude and ambition of the project. As a rule, the quality of the background information will be reflected in the reliability of the proposals and an investment in the pre-planning stage will minimise potential delay later in the process.

Both good competitors and good judges will be busy professionals and the announcement of a pending competition should be made well in advance of commencement of the process to ensure time for resource planning and to ensure the participation of the required calibre of entrants.

A bridge competition design must be developed to a relatively detailed stage in order to be confident of its deliverability. Sufficient time must be allowed to develop the design, and depending on the submission requirements to collate and present a potentially substantial amount of information. Ironically however, competitions often allow too much, rather than too little time in the programme for the design phase, and the consequent expectations of submission material are needlessly onerous. This situation is subject to the 'triangle' of cost, scope and programme, by which a consultant will evaluate his exposure to risk, and his consequent commitment to the process. In general a long design phase of several months will result in a fairly prolonged dormant period followed by intense activity closer to the deadline. It is more productive to provide both a realistic requirement for submissions and a contained but not unreasonably tight design programme.

Conversely, do not rush competitors and then allocate a prolonged or open ended post submission period to award. Plan and publish defined periods for the assessment period, interview process, assessment, contract negotiation and appointment. There are many examples of competitions in the UK where submissions have seemingly disappeared into an administrative 'black-hole', without ever achieving a result or project progression. In general this is bad for business, effecting industry confidence in the competition process and increasing consultants' scrutiny of each new opportunity prior to participation.

2.5 Submission requirements

Bridge design by its nature requires the initial concept to be structurally, visually and financially viable. The competition entry must be an accurate promise of the completed project, because unlike a building proposal there is not the same scope to alter the design within the confines of the concept. This means that a bridge design involves a relatively significant amount of work upfront. In a competition, sufficient information should be required to satisfy the client team that the proposal represents a viable, as well as a compliant and appropriate solution.

A mix of visual and technical information should be presented, but it is necessary to only require what is contingent with the stage reached. Submission requirements for competitions seem to have been subject to a form of inflation, and it is not uncommon for unwieldy and unnecessary inclusions, which are detrimental to the process because they are out of sequence. For example it is gratuitous to ask for an Approval in Principle, third party consultations or consents, detailed cost analyses, wind tunnel tests etc, all of which have appeared in submission requirements for fairly modest competitions in the recent past.

There should be a direct correlation between competition fees and competition requirements. A low honorarium will simply not support the production of extensive and expensive artwork, digital media and physical models. In addition, it should be noted that despite the evolved state of the market, competitions are design contests, not presentation contests. This key point should be reflected in the submission requirements and be recognised in the judging process.

In terms of 'hard' deliverables require only what is necessary to convey the design to a competent jury, the client and the public. It may be appropriate to define exact requirements but this must be reasonable and co-ordinated. It is very common to see briefs which require particular drawings at a particular scale, but to restrict the size and number of drawing sheets to a level that will not accommodate them.

If a model is required, consider providing a single context model for individual models of the structure to fit into. This needs practical planning but saves on duplication. Models are expensive to make transport and store, but are incomparably useful visual tools. It is arguably better to allow models as part of the submission than to require them, unless the cost and organisational implications of doing so are factored into the process.*

As a minimum, and a practical maximum, competitors should be asked to supply the following in proportion and detail according to the project size, complexity and risk:

Drawn information and 3-dimensional views sufficient to represent the concept

A brief report detailing design, structural, constructional, and maintenance issues
 An outline cost estimate
 An erection sequence
 Physical models or photographs of physical models*

2.6 Honoraria, Prize Money and Fees

Consider, in the first instance, that competitions are expensive to enter. Open design competitions will usually attract a high number of entries, representing a varying degree of investment in the submissions. A limited competition will cost a consultant team many thousands of Pounds/Euros on design and presentation of a serious competition entry, and multiplied across a field of entrants this represents a significant industry outlay. Whilst it may not be practical to fully remunerate competitors, a competition should budget to mitigate the risk of entries at a reasonable level.

For open competitions this can only practically take the form of prizes for the highest ranking entries. It is common in Europe to make awards to some entries, and additional 'purchase' others, with conditioned rights over the submissions. Indeed, it is common for entrants to pay an entry fee to offset the administrative cost of the competition but also to ensure the commitment of competitors. This is sometimes, but not always, refunded on submission of a compliant entry.

In limited competitions it is more common to offer a flat fee in the form of an honorarium to all competitors, on top of which prizes will be awarded. The winning entrant is usually expected to subsume the payment into the subsequent fee, but it should be noted that a prize is subject to a different tax condition than professional fees, and that the consultant should reasonably expect reward to counter the risk borne during the competition. There must in any case, be a mechanism for full remuneration of the competition stage work, either through fees on appointment, or a prize and fee combination on award. Unless the team is to be appointed and their fee can be reconciled across the later stages, the consultants must be remunerated at higher level relative to the stage reached in order to counter the loss of prospective overall revenue. A derisory honoraria and prize offer will ultimately affect the number and calibre of entrants, the quantum and quality of submission data, and the reliability of proposals to the potential detriment of the process.

2.7 Copyright issues

Copyright is a legally complex issue and a common area of dispute in competitions. Conflict arises through the requirement for the transfer of copyright which may infringe the intellectual rights of the author. Irrespective of the level of remuneration a consultant operating at risk is unlikely to agree to cart blanche rights over the design. A reasonable position is to agree rights over the designs for publication and project promotion, but not the development, construction, or transference of the design in whole or substantial part. This should be true for all competitors, whose intellectual property is a substantial, and in some cases the entire, asset arising out of the competition.

2.8 Judges and Judging Criteria

Judging is a fundamental issue and making the right decision is critical, but is too often unsatisfactory. There are very many examples of competitions where imbalanced or under-qualified juries assess professional submissions. This is commonly for political reasons, but risks relying too heavily on subjective aesthetic judgement and a superficial understanding of the issues. Unless a decision is based upon a sound understanding of the viability of the design, the risk of project failure increases substantially.

The golden rule is to ensure that competitions are assessed by competent, experienced and impartial individuals. There is a need for diversity, but the jury must include professionals capable of making an informed and objective assessment of aesthetics, engineering, and deliverability. As a minimum, a jury should include a representative of the client, a good architect and an experienced bridge engineer. In general it does not serve the process well to give 'appeasement' or PR voting rights to celebrity, politically motivated or single agenda appointees. This does not of course prevent seeking endorsements through the process that would benefit the aims of the project.

Given that competitions generally give rise to innovative and challenging design solutions it is imperative that the technical assessors are able to view the proposals with a detailed understanding, at least equal to that of the competitors. This means that jurors should be practicing, and directly and relevantly experienced in the design, construction and maintenance of high quality bridges. This may include an understanding, through participation, of the

competitions process. It is not sufficient for a building structures engineer, a civil engineering 'generalist', or even a bridge engineer engaged in more utilitarian or expedient bridge forms to determine the viability of proposals that may be designed by leaders in their field. After all, it is arguably as damaging to the process to reject a potentially brilliant solution through ignorance or conservatism, as it is to elect a potentially undeliverable one.

In order to attract the required calibre of judges, they should be properly paid. It is not appropriate to suggest fee levels here, but it is suffice to note that like good competitors, good jurors will assess the quality of the project at least in part through the client's commitment to reasonable remuneration during the competition stage.

Consider also the need for inclusion of non-voting advisors to the jury. These may include experts on a range of issues such as navigation, highways advice, compliance issues, planning legislation, legals, etc, but should not include the technical judges who should be properly empowered in order to increase the likelihood of project success. It does not generally act in the best interests of the project to mimic the UK planning process for instance, where technical officers make recommendations to an effectively lay committee, risking that any aspect of their professional advice be overlooked.

It is critical that the assessors judge the entries in a combined forum. Separate technical and aesthetic jury assessment and recommendation does not reflect successful design collaboration and can only be counter-productive to reaching a balanced conclusion.

2.9 The role of public opinion

It is common for competitions to involve some form of public participation. This is either to fulfil a perceived or real need for public consultation and/or for raising the profile of the project. There is an inherent conflict in doing so however, with potential ramifications on public relations and thereafter the project. In ordinary circumstances public consultation should be a means of allowing local opinion to effect the design, meaning that the consultation should be held prior to, or during the design process. Usually, competitions produce fixed design solutions, such that the public can only profer their opinion by choosing a 'favourite'. If the public are allowed to assume voting rights, the associated risks of allowing superficial and subjective aesthetic opinion are clear. Conversely, if public opinion is seen to be ignored, the process risks criticism and public alienation to the detriment of the project. The rule of thumb seems to be not to ask the question, if you are not prepared to hear the answer. More practically, it is recommended to not seek public votes, and strongly recommended to not use public voting in the judging process, nor to publish the results of polls. This may of course raise propriety issues in the public sector. If a client seeks the perceived PR benefits of public participation through publishing and exhibiting entries, this is preferably done on a 'for information only' basis and after the judging process. If, for some reason, more comprehensive participation is considered necessary then it is imperative to recognise the risks and to control the process in order to limit them.

2.10 Evaluation criteria

Make sure that the judging criteria is agreed with the jury and publicised to the competitors. This should and will affect the proposals. Criteria may be expressed as a cost/quality or other percentage ratio, or may be an assessment of how well a solution responds to a particular aspect of the brief whether it is a technical or an aspirational issue.

In open competitions it may additionally be required to verify the competence of the team, which if it has not been assured in advance through the imposition of audited entry criteria, will require the jury to make a reserve selection, until the preferred solution is ratified.

In limited or 2 stage competitions the submitted material should be assessed in conjunction with a presentation by, and an interview with, each short listed team. This allows the design teams to accent particular aspects of the design which may not be readily apparent within limited submission material, and allows the client team to meet the individuals with whom they would be forming a professional relationship. Contain all interviews to a single day.

Despite the need to inform the assessment process with an understanding of the evaluation criteria , it is important not to instill an overly proscriptive evaluation system. A design that achieves the highest points score from a formula combining individual scores does not necessarily represent the best solution to the brief. A decision is better determined by an experienced and professional collective viewpoint.

In limited competitions judges should provide a more than cursory feedback review to each competitor, on the conditioned assurance that their decision is final.

2.11 Appointing the winning designer

The procurement route will have been set out in advance of the competition, and it is presumed that for entrants to have reached this stage at all there will be an appointment of some form for professional services going forward. As previously discussed this should ensure the further involvement of all the required design team members unless their competition activity was fully remunerated at standard fee rates and their involvement terminated, as agreed in advance. For clarity this means that if the competition brief cannot be fulfilled without the involvement of a particular discipline then that professional should be included in the upfront fee allowance or the continued appointment.

A period of negotiation over the appointment should be allowed prior to contract. This does not preclude announcing a winner in advance, but it would be a retrograde step to then not agree terms and have to amend the award. Often, competition documents will include a form of appointment, but this is often accompanied by a zealous requirement for pre-competition agreement to the terms. It is not reasonable to require every team to legally review the document at this 'risk stage', and it is not practical or economic for the client to enter into contract negotiations with multiple parties with a high percentage of redundant work. Additionally consultants will generally not challenge conditions before the event to avoid possible penalty or exclusion from the process, choosing instead to wait until they need to address the issue as a designate appointee. As a rule, pre-determined forms of appointment should be included in competition documentation only for participant information prior to subsequent negotiation.

Whatever procurement route is selected the client should ensure that his interests, and that of the project, are protected by the engagement of the original design team to act on his behalf. In a design and construct scenario the designers, if novated, too often have no line of communication to the employer, such that the legacy of the competition may be eroded.

3 Postscript

Many of the best known and most successful bridge structures, both modern and historic, have been as the result of competitions. The system, used properly, can produce enduring structures that could not realistically be delivered by any other method, given the range of creative input, the goodwill and the project momentum that a competition can generate. After more than two centuries of activity the competition system is still evolving and the guidelines, presented here in short-form are intended as a positive stage of that evolution.

No guidelines will be a substitute for the application of experience, and it is recommended that in most circumstances it is appropriate to employ a professional agent and advisor to manage the process. The guidance should be used to augment and audit the client's or their agent's procedural norms rather than provide a framework for 'self-administration' of a competition. Whilst attempting to be general and comprehensive in outlook, its primary value is in identifying and the specific and recurrent 'glitches' that are particular to bridge design competitions, so that they may be avoided.

It is intended that the published IABSE Guidelines will expand upon the discussion introduced here, and include case studies identifying good, bad and typical practice. In the meantime the guidance is presented without prejudice or restriction, for client and consultant reference.