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Effective Risk Allocation in Infrastructure Projects

A presentation to the New Zealand Council for Infrastructure Development Building Nations Symposium, Auckland, 14 August 2008 by Bell Gully partners ***Garry Downs*** *and* ***Hugh Kettle***

Risk is real

The finance company meltdown/credit crunch tells us risk is real. There is nothing like being told that an investment might have risk as well as an upside and for that risk to eventuate to focus the mind.

We are taking a much more positive approach today – proactive risk identification and allocation is an essential planning tool in the successful delivery of major infrastructure projects.

It was said at the Symposium yesterday that "manage the risks and the money will look after itself" – this is a slight simplification but there is no doubt that quality execution of an infrastructure project including the successful management of risks holds one of the keys to the project's success or failure.

As an observation, while conscious of risk, projects in New Zealand have perhaps been more reactive in their approach. The opportunity is available to apply a proactive framework for assessing and allocating risk as a key tool for achieving a successful project.

What is risk and optimal risk allocation

Risk is "the chance of the event occurring which means actual project outcomes differ from those assumed".

Stakeholders have to either spend time, cost and resources in restoring the project back to those expected outcomes or be faced with taking a reduced rate of return of the service delivery level. So, in overall terms, optimal risk allocation is giving stakeholders confidence in two things:

1. From the sponsor or owner's perspective, that the desired outcomes of the project will be delivered. In a roading PPP this might be commuters having a viable alternative road to travel on which reduces congestion – in a transmission power project this might be that the transmission upgrade is delivered on time to allow new generation to come on stream and that electricity is capable of being conveyed without constraint or downtime.

2. For the owner and equity / debt providers perspective, that the money – being the cash flows of the project – will be protected.

In a PPP, to some extent, there is tension between the above two aims. A balance has to be struck between making a project profitable and delivery of value for money.

Of course risk allocation has to be seen simply as part of the overall business plan. From a sponsor's perspective, this needs to start with a clear identification of the outcomes required in order to allow assessment of those risks.

By way of illustration, during the current waterfront redevelopment being undertaken by Auckland Regional Holdings, four key principle based outcomes were identified. These included developing a world class mixed use waterfront development and doing this in an environmentally sustainable way These principles have been the touchstones against which everything else is measured.

Similarly, for PPP. clarity around the service and the public outcomes required will be critical. A long term planning horizon is needed.

To indulge in some wishful thinking for a moment, when you consider the possibility that one of the most significant transport projects ahead of us, being the second harbour crossing, were to be done as a PPP then the challenge would be to take a long term planning view:

- Where is New Zealand in the context of the port supply chain?
- How is freight to be carried over the next 30 to 50 years?
- What transport needs will the second harbour crossing serve?
- What is the expected population growth and energy needs?

Only after considering these questions can robust outcomes be identified, which will give all stakeholders confidence that the spending decision will be the right one in the long term.

An effective risk framework

A key message we wanted to give from our presentation is that there is value in adopting a recognised framework for effective risk allocation. This has been successfully utilised in overseas PPPs but has universal application to all infrastructure projects.

The first phase of an effective risk framework is made up of two steps.

The first step is the identification of all the material risks of doing the project, defining them in broad terms against:

- which are to be retained by the owner or sponsor,
- which are to be transferred to another party, and
- those which by their nature have to be shared.

The second step is to assess the material risks and to quantify the risk outcomes in order to place a value on them.

The risks are then allocated to the party which is to manage the risk during the life of the project.

These first 2 components are typically undertaken during the project formation and due diligence stages with risk allocation being the most important process which occurs as part of contract formation and negotiation.

The second phase of the risk allocation framework applies after the contracts are signed. This includes the follow up of mitigation of known risks and the adoption of a robust management plan to monitor the identified risks and respond to them if they occur.

Obviously it is not as compartmentalised as this and it is a dynamic process. Each of these elements have to be continuously reviewed during the life of a project, especially as unforeseen circumstances are encountered.

We will now look at each of these components in slightly more detail.

Risk identification

Obviously the key starting point is – what are the material risks of this particular project?

Normally there are a dozen or so standard risks which are seen as a part of a major infrastructure project. We will speak to these in more detail later in the presentation, but typically these range from site risk, to design, construction and commissioning risk, change of law and market risk. These generic headings are a good starting point for the identification process.

In our experience risk identification requires a collaborative approach from those involved and it is important to have those with experience of major projects involved so as to add the benefit of that experience. Many of the risks will be self-evident but the ways in which they are managed and whether they should be retained or passed on is typically a function of past experience in managing similar projects.

Risks are then categorised into those which the owner or sponsor will retain, those to be transferred to another, and those to be shared.

In a generation project the owner might, for example:

- Retain fuel risk – this is likely to be the case in renewables projects fuelled by wind, water or geothermal – or they might seek to transfer that risk to a fuel supplier by way of a long term gas supply contract;
- Be prepared to retain market risk by selling electricity into the wholesale market, but mitigate that risk by internal hedge against the customer base or transfer the risk to third parties by way of formal hedge or offtake arrangements;
- Retain the risk of finding a suitable site to build the project, but transfer design, construction and commissioning risk to an EPC provider; and
- Share some key risks – e.g., earthquake or FM risk during construction.

Risk assessment

The second step in risk allocation, after brainstorming the possible risks, is to rank them against two criteria:

- the likelihood of the risk occurring; and
- the consequence of that risk if it did occur.

Typically, these are recorded in a simple matrix shown below:

Low risk Low consequence	High risk Low consequence
Low risk High consequence	High risk High consequence

[walk?]

The diagram shows these as high and low, but in reality it is probably more likely that low, medium and high case on each axis to be more effective. We also heard yesterday that this can be further finessed into the distinct periods of a project life – into the preliminary phase (getting consents), the construction and commissioning phase and then the operational phase.

As a generalisation, risk that only has a minimal consequence if it occurs and therefore is not something that would be of concern to anyone, can be ignored.

At the other end of the scale, a risk which is likely to eventuate, and have a significant consequence on the project, especially if that risk is outside the control of the parties to the contract and cannot be mitigated, might sometimes lead to the decision of walking away from the project. A good example from back in the what some might call the "good old days" where there were thermal gas-fired generation projects, a key risk was always who should take on the field risk of running out of gas during the life of the project. If the field owner was not prepared to either take this risk or provide a cash payment for the gas that was no longer there, the sponsor would be left in the position where it would know the project financier would not provide debt funding to the project without some form of significant credit enhancement from the sponsor. This was because the financier could not take the risk that the project funding would not be serviced and repaid.

Pricing of risk

Material risks are then priced. The cost of restoring the project to the expected position and the cost of available mitigation options are both considered.

It is beyond lawyers to venture into the black art of the pricing of risks. Needless to say, valuing some risks is simply a subjective judgment and others require complex modelling including assigning values for contingency and probability distribution. In the infrastructure projects we have been involved in, the starting point is always the creation of a robust economic model of the cash flows of the project and making realistic assumptions under various scenarios about expected revenues and costs. To value a key risk often needs an independent and peer expert review especially in technical areas such as site issues like decontamination.

This creates a base line for working out expected project return and what can be given away in negotiations while the project remains economic.

Risk allocation

The old adage holds true – risk should be allocated to the party that is best able to manage that risk at least cost.

What you are really trying to do is minimise the chance of the risk actually occurring by allocating it to the party who is best placed to assess the information about the risk and manage it. If you are able to control or mitigate the risk then you have the best opportunity to make sure the risk doesn't eventuate. Because of this. you are also willing to be incentivised or alternatively disincentivised to take on the risk, and you are best able to price it at least cost to the overall project.

Example:

The normal starting point is to allocate design, construction and commissioning risk to the constructing party. This is normally done by way of a turn key contract in which a sponsor transfers the entire risk of completing the construction on time, on budget and capable of operating to minimal threshold levels. Clearly, there is a premium to be paid for the transfer of that risk and this will determine whether the sponsor is getting value for money. A constructing party is best placed to know its technology, assess the technological design needs of the sponsor and put in place and manage subcontractors to ensure delivery. A constructing party is often incentivised to deliver ahead of budget and willing to pay liquidated damages if it falls behind. Equally, the sponsor is prepared to pay a risk premium for the comfort of knowing that the best placed parties are taking on these risks. Hopefully, the sponsor has also been able to put in place a competitive process by which it can test that the price is market competitive.

Risk allocation in PPPs

The sponsor will always aim to pass on core project risks including design (to a greater or lesser extent), construction, completion and commissioning. However, the sponsor will always also retain some degree of risk. One risk it cannot pass on is the overall 'political' risk of a project – if the project fails it will always be associated with the sponsor no matter what contractual framework was put in place. This makes structure and, particularly, partner selection, of key importance. The sponsor will typically also retain, or share, other more specific risks. These include consenting and land availability and, in some markets, uninsurability. The sponsor also bears the risk of nationalisation/expropriation, which cannot be sensibly passed on to the private sector. Certain project-specific risks may be shared as agreed by the parties.

Core project risks will be passed on to the project SPV, and, in that way. to the equity provider. The SPV will then seek to back off as many of these risks as it can to third parties. The main component of this tends to be a single point EPC/DBFO contract or similar, followed by a long term Operating and Maintenance Agreement. These are often let to parties associated with the equity consortium, depending on its makeup and skill sets. Under these contracts the construction company will be responsible for delay liquidated damages imposed by the sponsor on the project company, and the maintenance company will be responsible for meeting all key performance indicators/service levels required over the operational phase of the project.

Risk allocation tends to become standardised as markets mature. An example of this is the United Kingdom PFI market where, subject to project-specific issues, the risk allocation between the public and private sector follows a well established model.

Mitigation

Mitigation is linked to allocation and who can best manage the risk. It is essentially a two stage process –

1. The initial allocation as part of the contracting process – this determines who is to mitigate the risk

2. Mitigation of events which are unforeseen - having mechanisms in the contract to deal with these including the use of re-openers such as the material adverse change clauses which allows re-pricing to occur without causing a meltdown of the overall contract or relationship.

Mitigation is often achieved by pass through mechanisms, including:

- Insurance – many operating risks are able to be insured, for example, machinery breakdown including replacement and loss of revenue after a stand down period.

- The use of sub contractors – this is an application of the overall allocation principal of transferring risk to those best able to manage it, such that each chosen subcontractor can be engaged to complete a certain aspect of the project for which it has the right expertise and experience, and can price cheaper than the head contractor, while the head contractor retains overall responsibility for the subcontractors work.

- Suppliers – as for subcontractors, risk mitigation is through selection of a quality provider whose product and service is proven and who is also prepared to back up the component with suitable warranties, including replacement, repair and, if necessary, monetary compensation.

- Financial instruments are a useful mitigation tool. These include financial instruments such as hedges, currency and interest rate swaps. From experience, the owner looks to place as much certainty as possible on the cost line of the project during the debt term and is prepared to trade off upside for that certainty by the use of treasury products.

- An exit strategy is an important mitigation technique in any commercial transaction including infrastructure projects. The ability to sell to your joint venture partner or for an equity participant to sell down through an initial public offering either initially or once the project has proven itself so that the new investor takes on a different risk profile from the original equity provider.

- The use of contingency planning to mitigate is important. It should be asked - if this risk did eventuate do we have a contingency plan as a back up?

Monitoring and reporting

A critical part of effective risk allocation is the follow up process. This requires 3 main components.

1. Critically, good governance mechanisms and an operating environment must exist so that there is a body charged with the oversight of allocated risks to ensure action which is proposed to occur to mitigate the risk does happen – and at the same time has the ability and authority to react quickly and flexibly to the inevitable changes in circumstance which occur over time.

2. Putting in place a system to monitor required actions to make sure the actions are taken.

3. A risk management plan which sets out what the identified risks are and the measures that have been taken to control or minimise those risks. It is then reported against regularly to update and allow action plans to be developed.

Common tools used to document risk

Risk matrix

A very useful method of summarising the risk of the project and how it is to be dealt with is the use of a risk matrix.

For example,

Risk Category	Description	Consequence	Mitigation	Preferred Allocation
Construction Risk	Risk project would be delivered on time / on budget	Delay / cost	Selection of proven technology / provides turn-key EPC contract (fixed price/fixed term)	EPC provider – unless specifically relieved of responsibility under the contract (e.g. force majeure)

The above example shows 5 columns of a typical risk matrix where the risk is identified and described, the consequence of the risk occurring is summarised, as well as the mitigation, technique and preferred allocation.

We have found this to be a very good method of summarising all the risks and using it as a basis for contract preparation. It is also a useful tool to come back to at the end of a contract negotiation to make sure that all risks have either been allocated, or to the extent they have been retained, that they are understood and accepted by the owner or sponsor.

You will see that the example above uses the construction risk mentioned earlier. You will see it describes construction risk as a project not being delivered on time or on budget with a consequence of possible delay in cost. The mitigation technique as summarised is to select the proven technology and a quality constructor through the use of a turnkey EPC contract with a fixed price and fixed terms. It also identifies that the preferred method of allocation is to the contractor unless the construction contractor is specifically relieved of responsibility under that contract, e.g. through force majeure events.

This analysis of risks is then repeated for all the identified risks of the project so that a complete summary is obtained.

Contracting

The next tool is the contract itself. As lawyers we believe in contracts. We have seen enough projects to know that contracts are the key mechanism which, via the process of clear drafting and negotiation, record how each matter is to be dealt with between the parties.

Quality contracts are the key to clearly understanding how risk allocation has been decided and the contract quickly becomes the touchstone for revisiting issues when they arise.

Of course contracts are quite rigid mechanisms for infrastructure projects that have a life over many decades. It is important that they include circuit breakers so that changes and circumstance can be appropriately dealt with. This can include a material adverse change in the type provisions and also should include governance mechanisms which force the parties to come together to deal with any material change of circumstance in the interests of the project.

Risk from a lender's perspective

Lenders do not tend to take on their 'own' risks in infrastructure projects. Their risk assessment focuses on their basic expectation of timely payment of principal and repayment of interest. On this basis they will focus on all elements of the project – technical and

contractual – to ascertain whether, in their view, the borrower is taking any particular risks that could result in its inability to meet its debt service obligations.

A lender's ultimate risk is of the SPV being unable to meet its due debts, which typically equates with loss of most or all equity value in the project. In this scenario the lender's security margin has been eroded and it is effectively taking any 'downside' equity risk from that point on.

There are a number of techniques project lenders use to ensure that firstly, there is a significant equity buffer and secondly, that the project company itself has sufficient free cash to operate in the expected manner. These include the use of forward-looking financial covenants (these are particularly appropriate for PPP projects given the near-certainty of revenue streams over time) and reserve accounts, both for debt service and maintenance/capex. They will also seek the greatest level of counterparty protection (e.g. credit support or guarantees from the construction contractor, direct agreements between the lenders and key contractors, offtaker credit support if applicable) as they can achieve.

The involvement of third party financiers enhances the overall due diligence and risk assessment made in respect of a project. Their focus on protecting the SPV's position (thereby protecting themselves) adds a degree of rigour that is not necessarily present in standard publicly financed procurement.

As with all other types of financing, the lesser the perceived risk to lenders, the cheaper the debt funding. The cheapest non-recourse funding is available for projects that have a stand-alone investment grade credit rating. For a project to achieve this the rating agencies will require as many credit enhancements (such as those set out above) as possible and will also assess factors such as counterparty credit risk and contractual pass-through risk.

The common project risks

So what are the common risks of infrastructure projects? We would divide these into four categories.

- Fabric risk;
- Component risk;
- Process risk; and
- About a dozen operational risks referred to earlier.

Fabric risk

Fabric risk needs some explaining as it is something that goes to the very heart of the proposed project and has to be solved before the project can even be considered.

For example, for toll roads to go ahead in New Zealand special purpose legislation was needed.

For other projects it may be that one of the operational risks is so key that it must be solved before a project can proceed, such as the need to have clear and unambiguous rights to the site on which the project is to be constructed.

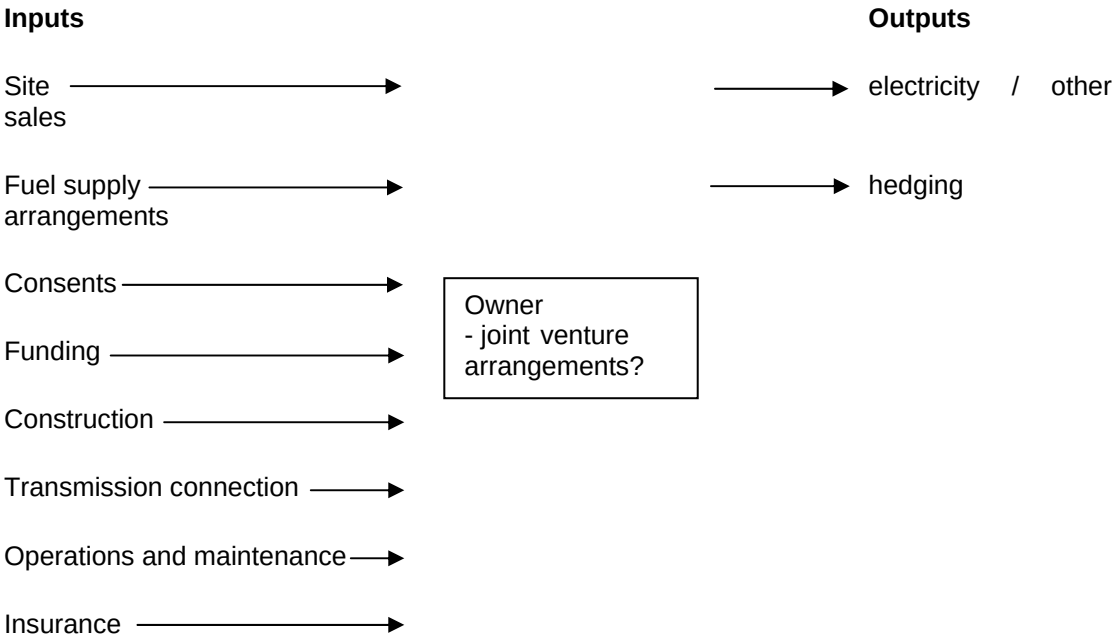
We have heard of projects where one of these fabric risks emerges relatively late in the project – where time and money has already been spent on the assumption this risk was not present or manageable – and suffice to say we can only imagine that these situations are no fun for anyone.

Component risk

On the happy day that somebody instructs Bell Gully on a new major infrastructure project we always start with drawing up a diagram of the key components which are necessary to enable the project to proceed.

What are each of the inputs required and what outputs must be put in place?

Typical Generation Project Components



We find this to be a very useful way of making sure, in an overall sense, that each of the components that are expected to be present have been dealt with, or a plan is in place to deal with them.

This might seem obvious, but we learned many years ago that this was important. At one point we were involved in a bid to build a power station in which both commercial parties thought the other was dealing with transmission and the costs of transmission. There were other reasons why our client was not successful on the tender, but this was certainly one of them.

We always find it very useful to review this diagram with the overlay of the risk matrix discussed earlier towards the end of the project to assess how risks have been allocated and to make sure that the risks flow through each of the contracts on the basis that all parties are expecting.

Process risk

Process risk is about making sure that there is a well understood process in place to produce optimal outcomes.

There is an important rule of thumb. At the top of the decision making tree affecting a project those accountable for the outcomes must have control.

It is also important to have good governance mechanisms in place which includes the appointment of a steering committee and project director, and putting in place a high quality

team. Such a team would typically include commercial, financial, legal and other technical expertise required by the project. These team members should each be committed to the project and empowered to achieve a successful result.

Operational risks

As previously mentioned, there are a dozen or so that typically arise in relation to infrastructure projects, as shown below.

<table>
<tr><td>Site</td><td>Operational</td></tr>
<tr><td>RMA / planning</td><td>Market general economic
Conditions
Completion
Demographics
Inflation</td></tr>
<tr><td>Design</td><td>Network</td></tr>
<tr><td>Construction</td><td>Change in law</td></tr>
<tr><td>Technology</td><td>Force Majeure</td></tr>
<tr><td>Commissioning</td><td rowspan="2">Asset ownership
- obsolescence
- terminal value</td></tr>
<tr><td>Financial - sponsor
- financing
- ownership
- tax</td></tr>
</table>

As you can see there are a range of operational risks and, while they are to an extent generic, assessing the project against the headings is a very useful starting point. We have already covered some of these and wanted to speak to three of these risks in the context of PPPs.

Conclusion

Optimal risk allocation is a key ingredient in infrastructure projects.

It requires:

- good planning;
- a good team; and
- good follow up.

A project in which risk is priced, allocated and managed correctly means everyone wins.

Bell Gully's Infrastructure and Projects Group draws together leading specialists into an experienced multi-disciplinary team. It aims to be New Zealand's pre-eminent legal advisory group providing seamless advice on all aspects of planning, documenting, project managing and implementing major infrastructure projects.

The establishment of the specialist group coincides with New Zealand's entry into what is shaping up to be an era of heightened infrastructure development. It also comes as one of New Zealand's leading resource management lawyers, Andrew Beatson, joins Bell Gully, bringing demonstrated experience and success at gaining consent for major projects.

The group includes a core team of partners with legal skills and experience in commercial and contractual work for major projects, construction, resource management/planning, and project financing. It can also call on the full services of other Bell Gully partners, staff and consultants in areas including tax, Maori services, climate change/emissions trading, outsourcing and litigation.

The core members of **Bell Gully's Infrastructure and Projects Group** are:

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Garry leads the group from the Auckland office and is recognised as one of New Zealand's leading major project lawyers. He has been involved in some of the firm's key projects over the last 15 years, recently including the redevelopment of Auckland's waterfront and the commercialisation of geothermal fields in the central North Island.

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Chris leads the group from Bell Gully's Wellington office and has significant infrastructure development and project experience, including project management of large-scale, multi-faceted projects. Chris has particular expertise in the electricity sector and has recently acted on the Kupe gas field development by Origin Energy.

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Andrew, a resource management partner, based in Wellington, has been leading all resource consenting planning work for Meridian Energy wind-farm generation strategy.

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Tom is a partner specialising in infrastructure projects for local authorities and is currently acting for Auckland Regional Council in the electrification of the Auckland train network and the project for the replacement of rolling stock.

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Hugh is a banking and finance partner who, before returning to Bell Gully in 2005, spent three years in the project finance group in the London office of Allen & Overy LLP. While overseas Hugh worked on a wide range of infrastructure projects, including PPPs/PFIs in the transport, government accommodation and education sectors, electricity generation projects and LNG liquefaction plants

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Andrew is in the commercial property team and is fast being recognised as one of New Zealand's leading construction lawyers on major property developments. He is currently leading Bell Gully's work in the redevelopment of Auckland City's historic Britomart precinct.

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