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RISK ALLOCATION UNDER THE PRINCIPAL 'TRADITIONAL' IRISH FORMS OF BUILDING CONTRACT

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Construction projects are risky ventures. The Department of Public Enterprise and Reform (2009) define risk as the '*uncertainty of outcome, whether positive or negative.*' Hughes, Champion and Murdoch (2015) point out risks are inevitable and cannot be eliminated. They can, however, be transferred through appropriate wording in the clauses of a contract. They argue that a primary function of construction contracts is to allocate particular risks between the parties in order to identify who bears the cost if a particular risk comes to pass.

This study examines how contractual risks are allocated to the contracting parties under the Royal Institute of Architects in Ireland Form, 2012 version, where quantities form part of the contract, commonly known as 'the Yellow Form', (the RIAI Form) and the Public Works Contract PW CF1 Form v 1.10 (Office of Government Procurement, 2014a) where the design is provided by the employer (the PWC Form).

The Department of Finance has identified that the principal commercial risks borne by clients and contractors in the delivery of construction projects relate to safety, quality, cost and time (NPPU, 2007). This study compares and contrasts how the contracts above deal with various matters which may give rise to uncertainty in delivering these key project objectives, and presents an overview of these broad risk categories. It does not seek to provide a detailed examination of every potential risk inherent in the two contracts. In this regard a summary of the risk allocation under the PWC is tabulated on pages 32 to 38 of the *Report on the Review of the Performance of the Public Works Contract* (Office of Government Procurement, 2014b)

Insurance and Bonding Requirements

Hughes et al. (2015) point out that some of the risks encountered on construction may result in enormous losses and must be covered by insurance or other form of guarantee. The most important of these risks arise from personal injury, damage to third party property, and damage to the works or the existing structures. Insurance is necessary because the parties would not normally be able to fund the replacement of costly building

works. Nor, would they typically be able to meet a claim for serious personal injury caused by an accident on site. Both the RIAI and PWC Forms require the contractor to insure against damage to property, injury to persons and damage to the works themselves. The employer is required to insure against damage to the existing structures. Insurance cover is provided through employer's liability insurance, public liability insurance, motor insurance and contractor's all risks insurance. The employer is required to take out property insurance to cover existing structures. The minimum levels of cover are set out in the appendix or schedules to the particular contracts. Consultants appointed *under separate conditions of employment*, are typically required to take out professional indemnity insurance to cover liability for defective design and negligence.

Contractor insolvency represents a particularly onerous risk borne by construction clients. This risk is typically covered by bonding arrangements. The collapse of the Irish construction industry and its recent levels of insolvency has led guarantors to limit the rate of cover provided by bonds. The level of available bond cover has fallen from 25% of the contract sum to 12½% during the past decade. The PWC typically requires the contractor to provide a bond and sets out the level of cover required in the contract schedules.

The RIAI contract is silent on this matter. The Liaison Committee (2006), however, recommend that private sector clients should arrange appropriate bond cover. Figure 1 below set out their recommended levels of cover and while it is realised that these levels would now be difficult to acquire, it nevertheless provides a useful benchmark.

Contract Sum €m	Performance Bond cover level
Less than 2.5	25%
2.5 to 5.0	20%
5.0 to 10.0	17.5%
10.0 to 15.0	15%
over 15.0	12.5%

Figure 1 Recommended Levels of Bond Cover – Source Liaison Committee, 2006

Achieving Quality Requirements

In the long run, perhaps the greatest source of disappointment and annoyance for construction clients is where a project fails to meet the expectations of its owners and/or

users. This may arise through ineffective design or because of defects and/or poor workmanship. The RIAI and PWC are both contracts where the design is provided by the employer, who consequently bears the risks arising from deficient or poor design. Risks associated with defective design are normally covered by professional indemnity insurance provided by the design team. The aesthetic and functional qualities of the design are, in general, not issues which are directly addressed by either contract. The contracts *are*, however, concerned with the standard of work to be delivered and the procedures for preventing and dealing with defective work.

Clause 2 of the RIAI contract requires the contractor to ‘*carry out and complete the Works in accordance with the Contract Documents and with the directions and to the reasonable satisfaction of the Architect.*’ The standards of materials and workmanship are set out in the bill of quantities and specifications. Clause 8 empowers the architect to request the contractor to provide ‘*vouchers to prove that the materials comply*’ and to ‘*carry out any test of any material and workmanship which the Architect may in writing require.*’ Clause 2 empowers the architect to issue instructions regarding *inter alia*:

- opening up work for inspection;
- removing and re-executing of non-compliant work;
- dismissing incompetent or misbehaving persons;
- rectifying defects, and
- ‘*any other matters appertaining to the proper execution of the Contract.*’

The contractor must comply with any such instruction, as otherwise, the architect may employ others to carry out that work and charge the contractor for it.

Clause 11 of the RIAI Contract authorises the architect ‘*to access the Works, workshops of the Contractor or other places where work is being prepared for the Contract.*’ Clause 12 permits the employer to appoint a clerk of works to act as an inspector under the direction of the architect.

Taken together, these provisions identify that the contractor is responsible for the quality of the work, and that the architect is the judge of that quality. Non compliant and defective work may be condemned and the consequent cost of rectifying it is borne by the contractor. Snags are generally covered by the retention provisions in both contracts. The contractor remains

liable for latent defects for six years where the contract is signed, or twelve years where it is executed under seal.

These basic quality control requirements are echoed in Section 8 of the PWC Form, This section adds that the works must comply with other legal requirements and be carried out in a workmanlike manner observing proper practice, and materials must be of good quality and, unless otherwise specified, new. In addition a number quality related measures are included, which may be said to formalise and clarify, rather than extend, the authority of the employer's representative with regard to inspection and testing, and the rectification of non-compliant work. For example, the employer's representative may reject whole sections, or indeed, the works in its entirety. There is also an option for the employer to accept defective works, in which case the employer's representative will determine the reduction in the value of the work which shall be deducted from the contract sum.

Section 8.2 requires the contractor to have quality assurance procedures. Appropriate quality assurance plans are to be submitted to the employer's representative who is entitled to receive QA reports and to carry out spot checks to ensure that the plans are being properly implemented.

Specialist work

One of the most notable differences between the PWC and the RIAI contracts are the means by which specialist work is procured. The nomination process contained in the RIAI contract enables architects to appoint particular subcontractors to carry out specific work packages for, or to supply materials to the main contractor. These subcontractors are typically chosen because of their track records for delivering high quality work, and in many instances, because they carry out areas of the detail design. Where a nominated subcontractor is responsible for the design of part of the work, the employer will, in general, bear the risk of consequences arising from defective design. The contractor nevertheless retains responsibility for ensuring that the specified standards relating to materials and workmanship are complied with. Where design work is carried out by a nominated subcontractor the employer should be advised to conclude a collateral warranty under Clause 37 which guarantees the performance of the specialist's design. The collateral warranty should be bonded.

At present, the PWC contract does not contain provisions for nominating subcontractors and currently specialists, including novated specialists are appointed on a domestic

subcontractor basis. Where a specialist is responsible for carrying out design work the main contractor assumes overall responsibility for that design which must be fit for purpose. In these situations the employer will typically require the contractor to hold adequate professional indemnity insurance cover. The minimum indemnity limit will be inserted in the schedules to the contract. Typically these insurances would be kept in place for at least six years after substantial completion to reflect the statute of limitations in respect of professional liability. It is likely that any such defects will come to light within this period (NPPU, 2007).

In certain instances, specialists may be ‘named subcontractors’ where they are selected from a panel of specialists compiled by the employer. This is by no means a mandatory procedure, and the contract may contain few or no limitations on the contractor’s freedom to procure specialist subcontractors. The main contractor may exert considerable pressure on specialists to lower their prices in order to submit a competitive tender. This may result in standards being compromised with the consequent increased risk of defective work.

The *Report on the Review of the Performance of the Public Works Contract* (Office of Government Procurement, 2014b) recognises this problem and reports that where main contractors are required to assume the risk of appointing specialists as domestic subcontractors in competitive tendering environments, that quality can be ‘disproportionately [adversely] affected’. The *Report* comments on disappointing quality outcomes, particularly in relation to securing value for money over the life cycle of the project. It recommends that direct tendering of specialist works packages should be introduced and that the *‘specialist will be either novated to the main contractor or the main contractor will, under the terms of their contract, be required to enter into a subcontract with that named specialist’s tendered price.’* This recommendation appears to herald a return to a process similar to nomination in the RIAI contract.

Achieving Schedule Targets

The timely delivery of projects is a primary objective of private and many public sector clients alike. Delays in completing projects are likely to lead to substantial losses for both clients and contractors.

The basic requirement relating to time under both forms of contract is that the contractor must complete the works within the contract period. Both contracts, however, contain provisions whereby extensions of time may be awarded in certain instances. The time

certainty risk associated with these particular events are borne by the employer. The contractor bears the risk of other sources of delay.

Table 1 sets out the various issues for which an extension of time may be awarded under the RIAI and PWC contracts.

RIAI Clause 30	PW CF 1 Schedule Part 1 K
Force majeure	Change orders
Delayed possession by Employer	Opening up of non-defective works
Exceptionally inclement weather	Employer suspends the work
Rectifying damage covered by insurance.	Contractor suspends the work
Strike or civil commotion.	Incorrect setting out information
Architect's Instructions	Early partial possession by Employer
Late instructions/information to Contractor	Late instructions
Inability to secure labour or materials.	Delay relating to providing possession.
Delays by Employer's direct employees	Delay relating to providing a Work Item.
Other Employer defaults.	Interference by Employer's Personnel.
	Rectifying damage covered by insurance.
	Rectifying damage due to excluded risks
	A weather event
	Strike or lockout affecting the Industry
	Delays due to Court Orders
	Employer's breach of contract
	Unforeseeable archaeological finds
	Unforeseeable ground conditions
	Unforeseeable utilities in the ground
	Delays caused by utility providers

Table 1 – Delay Events under the RIAI and Public Works Contracts.

Where any of the above events occur the contractor may seek an extension of time (RIAI), or apply to use the programme contingency under the PWC Form.

Where the contractor is responsible for delaying completion, both contracts provide the sanction of liquidated damages for the period for which the contractor is in culpable delay. In cases of serious delay or failure to progress the works, the employer has the option to suspend/determine the contractor's employment.

The incorporation of a programme contingency is perhaps the most radical innovation in the PWC contract. The contract period now includes a programme contingency which is a time allowance, or float period, to cover delays resulting from the occurrence of one or more of the Delay Events set out in Table 1 above. The delay period thresholds are inserted in the contract schedules by the employer prior to the tender. This measure is designed to reduce the employer's exposure to the risk of schedule delays. The PWC contract also contains the following provisions designed to improve time management during the contract.

The objective of providing a complete design at tender stage is a key factor in facilitating timely project completion and should reduce the incidence of requests for information on site and the potential for consequent delay claims.

The PWC contains detailed particulars to be provided in the contractor's programme. PWC Section 9.4 requires the contractor to produce a detailed programme and to keep this up-to-date throughout the project. Programmes must include details of when instructions or employer supplied items are required and identify the critical path, float and any flexibility within the programme. They are also required to identify the workforce and resource estimates required on site. This information enables the contractor and the employer's representative to quickly identify variances from the programme and take appropriate action to remedy the situation. The employer's representative may direct that the programme be revised within a fifteen day period and this requirement is enforced through the power to deduct 15% from the contractor's interim payments. The programme may be made a contract document.

PWC Clause 4.10 requires the contractor to give monthly progress reports to the employer's representative. These reports must contain specified information and are designed to facilitate the employer's representative to effectively monitor progress on site against the programme and to highlight any information requirements at an early stage. The discipline of reporting progress is, in itself, a driver to conform to the agreed programme and strengthens the employer's representative's ability to control the process.

These measures represent a shift to a more managerial approach by insisting on prompt and better information combined with strong motivators to achieve contract completion targets.

The RIAI contract is silent on the matter of the contractor's programme. However, the preliminaries sections of bills of quantities or specifications often contain requirements relating to programmes.

Achieving Cost Certainty

The ability to deliver projects within budget and prevent cost over-runs is one of the most important tasks carried out by quantity surveyors. Choosing a suitable contract is a crucial decision in achieving this objective. The Department of Finance states that a key objective of the Capital Works Management Framework is to: *Move towards greater cost certainty at contract award stage and ensure as far as practicable that the accepted tender prices and the final cost are the same*; (NPPU, 2007 p.18). Similar objectives are voiced by many private sector clients. Cost certainty is, therefore, a key ingredient in appraising the success of a project.

The RIAI and PWC contracts are both examples of a *lump sum contract*. Lump sum contracts are those where the contract sum is determined before construction starts with the amount being entered in the agreement. These contracts are based on the contractor's commitment to complete the whole of the work for a specific sum. The arrangement requires that a full design and complete production information is incorporated in the contractor's offer at contract award stage. The arrangement therefore promises a high degree of cost certainty but demands considerable time to prepare and price the tender documentation. Lump sum contracts may be based either on bills of quantities or on drawings and specifications.

Hughes *et al* (2015) make the following comment in relation to lump sum contracts and rates in bills of quantities:

However, one thing remains constant. In all cases, the contractor offers to do the work for a price, not for reimbursement of cost. A contractor who estimates too low is held to the bargain, even if the job runs at a loss. Similarly, for a contractor who estimates too high, the bargain still holds, despite the employer paying over the odds. This principle underlies some important decisions in the courts that demonstrate reluctance to intervene in what turns out to be a bad bargain. ... It applies as much to every rate in a bill as it does to the whole contract sum. This is

one reason that the bills play such an important role in the management of construction contracts. An employer who does not wish to have the contract governed in this way should use an alternative procurement method.

Lump sum contracts are categorised as being either ‘with quantities’ or ‘without quantities’. Lump sum contracts ‘with quantities’ have been the traditional arrangement for larger contracts. The purpose of the bill of quantities is ‘*to fully describe and accurately represent the quality and quantity of the work to be carried out*’ (ARM4). Ramus, Birchall and Griffiths (2006) identify that an essential characteristic of this method is that both the quantities and the unit rates in the bill form part of the contract. Under this arrangement the employer bears the quantities risk. Incorrect quantities are rectified. Therefore, the contractor’s risk in relation to cost is limited to pricing. This is the position adopted by the RIAI ‘Yellow Form’.

The lump sum ‘without quantities’ arrangement is generally used for small contracts and also for subcontracts on larger contracts. The contract documents include the complete working drawings and details, and a full specification including preliminaries. Under this arrangement the contractor must measure the works, and is responsible for the accuracy of the quantities which are not corrected should they be wrong. The contractor therefore bears both the quantities risk and the pricing risk under this arrangement.

Public sector clients may choose the contractual status of any bills of quantities. It is the intention of the State to enter into ‘without quantities’ contractual arrangement where a comprehensive design has been completed at the time of seeking tenders. Where contracting authorities elect not to include the bills as contract documents, the contract becomes a without quantities arrangement, and in these cases, the contractor assumes the risk for the accuracy of the quantities. This ‘strict’ view of a lump sum arrangement represents a major shift in risk transfer from the employer to the contractor.

The Report on the Review of the Performance of the Public Works Contract (OGC, 2014) has recognised the inefficiencies of contractors having, in effect, to measure the works requirements in order to check the quantities supplied in the pricing document. The summary conclusions of the Report suggests that risk (amongst which is the risk of under-measured quantities) ‘*is not being priced in many tenders for a variety of reasons and, where risk arises it is leading to claims [and] ... is not being bought but deferred to the dispute resolution phase*’. The Report concedes that this outcome ‘*is often the opposite of that intended*’ in respect of cost certainty. The Report’s first recommendation

is to reduce ‘*the level of risk currently being transferred by making the bill of quantities the primary reference document for tender purposes on employer-designed contracts*’.

In the private sector, clients who prioritise shorter project durations or superior quality standards may favour contracts which contain a range of cost variables which provide greater flexibility in appointing subcontractors, selecting materials, and establishing the extent of the works. The RIAI Form, for example, permits the contract sum to be adjusted for:

1. prime cost sums and prime cost rates;
2. provisional sums and provisional quantities;
3. variations;
4. labour and material and price variations (fluctuations), and
5. contractors’ claims for loss and expense.

Prime Cost Work

Prime cost sums (PC Sums) are included in the RIAI Form for works to be carried out by nominated subcontractors or for items to be supplied by nominated suppliers. Prime cost rates relate to materials supplied by a nominated supplier that are then fixed by the contractor. Prime cost work is often paid for on a cost reimbursement basis whereby the contractor is paid the nominated subcontractor’s or supplier’s agreed final account plus tendered sums for attendances and profit. These accounts can be difficult to control and are prone to cost overruns. The contractor has little incentive to control costs under this arrangement which shifts the pricing risk from the contractor to the employer.

Under the PWC contract, specialists are employed by the main contractor on a domestic basis. Under this arrangement the main contractor, not the client, assumes the specialist’s pricing risk. The exclusion of nomination provisions also transfers two significant risks previously borne by employers: liability for failure of the specialist to perform, and liability for defective design provided by specialists. Both of these risks are now borne by the contractor under the PWC contract, whereas they are retained by the employer under the RIAI contract.

Provisional Work

Provisional sums are included in RIAI contracts to cover “*work or costs which cannot be entirely foreseen, defined or detailed at the time the tendering documents are issued.*” Provisionally measured work typically covers matters such as groundworks, builder’s work in connection with services, remedial works, and contingencies whose extent could not be accurately established in advance of opening up the existing structure or carrying out a site inspection. Under this arrangement the employer bears the quantities risk, and, where provisional sums are used, the pricing risk as well. As is the case with prime cost sums, there is little incentive for contractors to complete work covered by provisional sums efficiently.

One of the central objectives underpinning the PWC contracts is to remove risk inherent in provisional work by providing complete designs in advance of seeking tenders and, consequently, to avoid the need to include provisional work.

Variations and Change Orders

Changes are invariably made to the building design during the course of its construction and therefore both the RIAI and PWC contracts permit variations and change orders. Variations, however, compromise the cost and time certainty of the project. The extent to which variations are needed depends largely on the degree to which the design has been finalised. In general, the provisions covering the valuation of variations are similar in both the RIAI and PWC Forms, but there is a greater emphasis in the PWC on agreeing the cost of varied works before an instruction is issued. Variations tend to transfer pricing risk from the contractor towards the employer.

Price Variation Provisions

Clause 36 of the RIAI Form provides that the contract sum will be adjusted for price variations to labour and materials arising after the submission of the contractor’s tender. In practice, however, this provision is usually the subject of post-tender negotiations and is deleted from the contract. The PWC, on the other hand, is fixed price for a period of 36 months. In effect this means that even very large projects will be covered by this provision and that it will only apply on exceptionally large building projects or in periods of hyperinflation.

Contractors' Claims

The RIAI Contract provides that contractors may be reimbursed for loss and expense where the employer or employer's agents:

1. delay the contractor from completing on time (a prolongation claim) or
2. reduce the productivity levels being achieved by the contractor (a disruption claim).

Contractors contractual claims arise from: compliance with architects' instructions issued under clause 2, or where the employer fails to provide possession of the site under clause 28 or where '*any act or default of the Employer delays progress of the Works*' under clause 29b.

The PWC contract emphasises cost certainty from the outset. Article 4 of the Articles of Agreement states that: "*The Contractor has included in the initial Contract Sum allowances for all risks, customs, policies, practices, and other circumstances that may affect its performance of the Contract, whether they could or could not have been foreseen, except for events for which the Contract provides for adjustment of the initial Contract Sum.*" This is a clear expression that the contract sum will not change except for the occurrence of specific events set out in the contract. These are described as 'compensation events' and they are listed in the schedules to the contract and are shown in Table 2 below.

Compensation Events	Optional Compensation Events
Change orders	Incorrect quantities over €500
Opening up of non-defective works	Unforeseeable archaeological finds
Employer suspends the work	Unforeseeable ground conditions
Contractor suspends the work	Unforeseeable utilities in the ground
Incorrect setting out information	Delays caused by utility providers
Early partial possession by Employer	
Late instructions	
Delay relating to providing possession.	
Delay relating to providing a Work Item.	

Interference by Employer’s Personnel.	
Rectifying damage due to excluded risks	
Employer’s breach of contract	

Table 2 – Compensation Events under the Public Works Contracts.

One of the principles claimed to underpin the PWC contracts is that risk should be allocated to the party best able to manage it. Of particular note are the risks associated with incorrect quantities, unforeseen ground conditions, archaeology, utilities and relocation of utilities, which may be transferred to the contractor where it is considered that there is sufficient information to allow the risks to be accurately priced. The PWC contracts envisage that the design will be comprehensively developed at contract award stage in order to allow this risk transfer to occur. Regarding the incorrect quantities risk this will apply only in the event that the quantities risk is retained by the employer.

The programme contingency also applies to compensation events. This float period covers delay costs resulting from the occurrence of one or more of the compensation events. This measure reduces the employer’s exposure to additional costs arising from schedule delays for which the employer retains the risk. The contractor only becomes entitled to “expenses unavoidably incurred” during a period of delay after the first programme contingency threshold has been exhausted. During the second threshold the contractor will be entitled to half of these expenses. The PWC contract does not provide for the recovery of disruption or loss of productivity costs.

There is an alternative provision to value delay costs the on a daywork basis. In these cases the works are valued at the rates submitted by the contractor within the tender and which form part of the tender assessment. It is likely that such rates will be heavily discounted in order to increase the contractor’s chances of winning the contract.

The inclusion of ‘time bars’ and written notices in the PWC further regulates the contractor’s entitlement to claim compensation. All claims for compensation must be notified in writing to the employer’s representative within twenty working days of their becoming [or should have become] aware of the occurrence of a compensation event. This notice must be subsequently supported by full details. Failure to comply with these requirements results in the contractor losing his/her entitlement to compensation.

Payment Risk

Interim payments are a core contractual obligation. Hughes *et al.* (2015) point out that the employer's primary contractual obligation is to pay the contractor. They maintain that the contractor should be paid promptly and fully in accordance with the contract unless there are valid contractual reasons for withholding part of the payment. Keane (2001) notes that under the RIAI contract that '*The employer must honour the Certificate within seven days of presentation. Failure to do so is a ground for the Contractor to determine his own employment under the contract*' (p. 267).

Cash flow is very important for contracting organisations. Most contractors depend on prompt cash-flow for the smooth operation of their business. The RIAI and PWC contracts set out defined timetables for making payments and late or inadequate certification can cause severe cash flow difficulties; particularly if this occurs on a number of projects. In a worst case scenario these could be a significant factor in leading to a contractor's insolvency. Subcontractors, particularly domestic subcontractors, are likewise also vulnerable in these situations as they currently operate on pay-when-paid or extended credit arrangements.¹

The quantity surveyor plays a leading role in the certification process by recommending to the architect or employer's representative how much money is to be paid to the contractor. This valuation represents the amount of work duly executed, materials properly brought onto site, and, where agreed, certain materials held off site. Best practice dictates that interim certificates should be carried out promptly and be as accurate as possible. This will ensure that contractors are fully paid thereby minimising the potentially disastrous consequences of cash-flow difficulties.

An important point to note regarding interim certificates is that they are *not conclusive*. This means that the value of elements of work contained in earlier certificates may be subsequently adjusted or corrected. This is a particular problem where defective work is condemned and must be rectified by the contractor at his own expense. This can have a disastrous impact on the project's profitability and/or programme. Clients may struggle to

¹ These practices will be outlawed when the Construction Contracts Act 2013 is commenced. At the time of writing this legislation is awaiting commencement pending the establishment of a panel of adjudicators.

recover overpayments in difficult cases, particularly where the contractor has completed the works and left the site, or has become insolvent.

Conclusion

This study has outlined the allocation of the **principal** contractual risks under the RIAI ‘Yellow’ and the PW CF1 contracts. The principal commercial risks borne by clients and contractors in the delivery of construction projects were identified as relating to safety, quality, time, cost and payment.

Commercial risks associated with safety are covered under both contracts through the employer’s liability, public liability and motor insurance policies which are taken out by the contractor. These may be arranged by the employer where they are not taken out by the contractor. Cover for damage to the works or the existing buildings and their contents can be transferred to the insurance industry. Insolvency protection may be arranged by means of performance bonds.

Cost certainty is heavily emphasised in the PWC contract. The agreement that the contract sum covers all foreseeable risks apart from those set out in the schedules, the removal of prime cost and provisional sums, provisionally measured work, material and labour price variations and the inclusion of a programme contingency are all designed to minimise or eliminate remeasurement and final accounting negotiations and it must be concluded that the contract is very strong on this aspect. The RIAI contract, on the other hand, is significantly more flexible in terms of catering for an evolving design and may be more appropriate where speed and quality are prioritised over cost.

Regarding quality standards the PWC contract reinforces the RIAI quality inspection and testing powers and requires the contractor to operate a quality assurance system. These measures are designed to foster a culture of high workmanship standards which may lead to fewer defects in the works. Potential problems, however, may arise in the area of specialist work where competitive tendering pressures may lead to inferior design and/or less sustainable options being chosen than would be the case under the RIAI nomination process.

Regarding delivering the contract on time, the PWC philosophy of providing a comprehensive design at tender stage, combined with the requirement to develop a detailed resourced programme should aid the contractor to identify potential blockages

and slippages and lead to fewer delays being experienced on site. Minimising the expenditure of the programme contingency also provides an added incentive for the contractor to complete the project promptly. Nevertheless, the requirement to complete a fully comprehensive design before tenders can be sought is time consuming. It is possible, if not probable, that the more flexible conditions in the RIAI contract may deliver an overall shorter development programme.

With regard to the PWC requirement for contractors to bear ‘unforeseen risks’ and risks in connection with uncertain particulars, this must lead to either increased tender levels, or contractors becoming dangerously exposed to potentially catastrophic losses which could, in turn, have serious rebound consequences for public sector clients.

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