RICS PRACTICE INFORMATION

Fluctuations

UK

1st edition, August 2016

RICS®

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Lead author

Roland Finch FRICS (NBS)

Working group

Chair: Andrew Smith FRICS (Laing O'Rourke)

Stuart Earl FRICS (Gleeds Cost Management)

Roland Finch FRICS (NBS)

Christopher Green FRICS (Capita Property and Infrastructure)

Roy Morledge FRICS (Nottingham Trent University)

Michelle Murray MRICS (DBK)

Michael T O'Connor FRICS (Carillion Construction Ltd)

Alan Cripps FRICS (RICS)

Alan Muse FRICS (RICS)

John Davidson FRICS

David Benge FRICS (Gleeds Corporate Services Ltd)

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RICS standards framework

RICS' standards setting is governed and overseen by the Standards and Regulation Board (SRB). The SRB's aims are to operate in the public interest, and to develop the technical and ethical competence of the profession and its ability to deliver ethical practice to high standards globally.

The RICS Rules of Conduct set high-level professional requirements for the global chartered surveying profession. These are supported by more detailed standards and information relating to professional conduct and technical competency.

The SRB focuses on the conduct and competence of RICS members, to set standards that are proportionate, in the public interest and based on risk. Its approach is to foster a supportive atmosphere that encourages a strong, diverse, inclusive, effective and sustainable surveying profession.

As well as developing its own standards, RICS works collaboratively with other bodies at a national and international level to develop documents relevant to professional practice, such as cross-sector guidance, codes and standards. The application of these collaborative documents by RICS members will be defined either within the document itself or in associated RICS-published documents.

Document definitions

Document type	Definition
RICS professional standards	**Set requirements or expectations for RICS members and regulated firms about how they provide services or the outcomes of their actions.** RICS professional standards are principles-based and focused on outcomes and good practice. Any requirements included set a baseline expectation for competent delivery or ethical behaviour. They include practices and behaviours intended to protect clients and other stakeholders, as well as ensuring their reasonable expectations of ethics, integrity, technical competence and diligence are met. Members must comply with an RICS professional standard. They may include: • mandatory requirements, which use the word 'must' and must be complied with, and/or • recommended best practice, which uses the word 'should'. It is recognised that there may be acceptable alternatives to best practice that achieve the same or a better outcome. In regulatory or disciplinary proceedings, RICS will take into account relevant professional standards when deciding whether an RICS member or regulated firm acted appropriately and with reasonable competence. It is also likely that during any legal proceedings a judge, adjudicator or equivalent will take RICS professional standards into account.
RICS practice information	**Information to support the practice, knowledge and performance of RICS members and regulated firms, and the demand for professional services.** Practice information includes definitions, processes, toolkits, checklists, insights, research and technical information or advice. It also includes documents that aim to provide common benchmarks or approaches across a sector to help build efficient and consistent practice. This information is not mandatory and does not set requirements for RICS members or make explicit recommendations.

1 Scope

Fluctuations (or fluctuating price) is the term used to describe a method of dealing with inflation in construction contracts.

Note: although 'inflation' is generally recognised as representing an increase in prices, it should be acknowledged that the converse can also apply. In the context of this practice information, the term also includes 'deflation'.

Contracts use various descriptions for fluctuations clauses – fluctuations, variation of price, price adjustment for inflation, etc. In this practice information they have been referred to generically as 'fluctuations clauses'.

It is also recognised that standard building contracts use a variety of terms to describe the parties to a contract to carry out construction work. This practice information has adopted the term 'employer' instead of client, purchaser, etc. and 'contractor' to describe the supplier, service provider, etc.

The purpose of this practice information is to outline the different types of fluctuating price mechanisms available for use within those contracts, selection of the most appropriate mechanism for particular situations, and techniques for calculating adjustments. The practice information is intended for anyone involved in fluctuating price contracts, particularly quantity surveyors.

This practice information applies in the UK.

Although some of the examples discussed refer to the UK, the general principles are applicable throughout the world.

2 An introduction to fluctuating price contracts

The 'traditional' approach to project procurement is for the employer to produce a set of specified requirements, and, usually following a formal tendering process, to accept an offer from a contractor to carry out the construction work to realise those requirements within an agreed timescale (the 'contract period') and for an agreed price (the 'contract sum').

This contract sum may be adjusted as necessary, and within the terms and conditions of the contract to take account of variations in the kind, quality and scope of the work, but is normally regarded as a 'fixed' (or sometimes 'firm') price, insofar as it is not usually adjusted for changes in the cost to the contractor of labour, materials and plant that become apparent during the contract period.

There has been a tendency over the years for employers, in seeking to add certainty to their financial commitment, to demand fixed price contracts. This means that the contractor invariably assumes the risk of increases (or decreases) in the cost of these items. Such changes would be generally as a result of inflation. This is defined as the general rate at which prices of materials and goods varies, usually upwards, and the consequent purchasing power of money decreases. Alterations to the price of items can also be caused by variations in taxation, 'excise' duties for domestically produced goods, 'customs' duties on imported goods, or those resulting from other fiscal policy influences.

Governments are able to influence taxation and other duties. They seek to control inflation rates by the use of various measures; one of these is the fixing of interest rates. Each of these has an effect on the business community – either as a result of the cost of buying labour and materials, or the cost of financing the purchase.

It is not difficult to imagine the sorts of problems that could be encountered in assessing the price risk to the contractor of entering into a 'fixed price' contract in times of financial volatility. For contracts of relatively short duration, the risk may not be great, as changes are unlikely to have a major effect on the overall cost of the project. For longer contract durations, or during times of higher inflation rates – or where the contract sum is of a size that makes the impact of inflation more significant – the consequences may be more difficult to anticipate.

Therefore, in estimating their costs and preparing their tenders, contractors will be tempted to err on the side of caution, where market forces will permit, to remove any possibility that they may suffer a loss.

Therefore, it may be more appropriate to devise a mechanism whereby the actual cost, or a near approximation to it, can be calculated as the job progresses, with the contract sum adjusted accordingly. This is seen as a fairer way than placing all the responsibility with the

contractor, and is probably more in keeping with the ethos of collaboration and pain/gain sharing. The result is the 'fluctuating price' contract. The principal advantage of this approach is that the employer is not bound by the contractor's estimate of the change in cost, they only pay what is actually incurred, so if in fact there is no subsequent increase, there is no additional payment.

The use of fluctuations is primarily about risk distribution and that should be governed by the general principles of risk management – these principles require that those best able to accept, quantify and manage the risk should have it allocated to them. See the current edition of RICS' Management of risk.

The purpose of the contract's fluctuations provision is to enable this adjustment to take place by introducing a mechanism to be followed when the circumstances are appropriate. This can be achieved in a number of different ways. Some of the more commonly used methods are explained in this practice information.

3 The quantity surveyor's involvement

As the project's cost manager and adviser, the quantity surveyor (QS) plays a key role in financial matters, in particular, the valuation of work carried out when a contractual stage payment is due, together with the assessment of the financial impact of changes and subsequent calculation and agreement of the final account for the job. Separate RICS QS and construction documents deal in more detail with the practice and procedures associated with these topics, but if the contract includes allowances for fluctuations, it will normally be part of the QS' duties to carry out the necessary assessment and evaluation, and include the results at the relevant point in the process.

The application and assessment of fluctuations, in particular the use of price adjustment formula indices, can be regarded as a specialist area; this may be because its use in simple construction contracts is rare.

Nevertheless, whatever the perception, the basic procedures are still used extensively in the industry, especially for longer term relationships such as those envisaged by arrangements like Build – Own – Operate – Transfer ('BOOT') or Design – Build – Finance – Operate ('DBFO'), both of which are used as part of the Private Finance Initiative (PFI).

When considering some other procurement routes, like 'term' contracting (such as may be used for planned and preventative maintenance or facilities management) it can be seen that the issue of increased costs is encountered as a matter of routine. For this reason most 'standard form' contracts include some provision for the recovery by the contractor of this component.

Therefore, QSs need to be familiar with the respective contract methodologies, and the associated means of assessment, as they will almost certainly be the person that other members of the project team will approach for advice.

4 General principles (Level 1: knowing)

4.1 Fluctuations in different types of contracts

The most common situation is where the contract sum is described as 'fixed' or 'firm' price, and it would appear on first inspection that it is not subject to adjustment for these items. However, even these contracts may include provision for adjustment for changes in the contractor's 'input' cost for reasons beyond their control.

An example of such a change would be during 2003, when the UK Government revised the basic rate of National Insurance contributions as part of the Chancellor of the Exchequer's budget. This revision increased the contractor's cost of employing workpeople and would probably not have been known about when the contract was entered into. This would potentially be recoverable under a fluctuating price contract.

Often the fluctuating price element of a contract will be available as an option. For example, JCT incudes this in the Contract Details, whereas NEC has a Secondary Option X1 that must be selected when the contract documents are assembled.

Fluctuating price contracts are used in a variety of circumstances, including:

- Lump sum contracts: the contract sum is based on a specification or set of requirements, but the individual rates and prices are adjusted where appropriate, and the contract sum is recalculated using the new rates.
- Target cost contracts: the target cost (and sometimes a 'pain/gain share') is agreed and the target cost is adjusted for inflation.
- Remeasurement contracts: the contract sum is based on approximate quantities and a schedule of rates. The actual work done is remeasured on completion, but the individual rates and prices are adjusted where appropriate, and the contract sum is recalculated using the new rates and the final agreed quantities.
- Reimbursement contracts: the contractor is reimbursed the actual cost, plus allowances for overheads, profit and other on-costs. Since the contractor's reimbursement is based on the actual cost, it follows that if the contractor's cost changes, the contract sum will reflect this.
- Term works contracts: the contract sum will be based on notional quantities and/or a schedule of rates, but the individual rates are adjusted periodically, and the contract sum is recalculated on this basis.

- Term service contracts: the contract sum will be based on an agreed sum for carrying out the service for a period of time, in some cases together with a fee. One, the other, or both may be subject to periodic adjustment.
- Framework agreements: depending on the particular arrangement, the contractor will be retained over a period of time, to undertake work of a particular nature, and 'packages' of this work will be the subject of a series of 'call-off' contracts negotiated or tendered at various times during the period of the framework. Since the individual contract sums for each of these 'call-off' contracts will usually be agreed at the time at which it is entered into, whether as a result of competitive tender or other means, it follows that each contract sum will be current at the point at which it is entered into and will therefore reflect any adjustments due to fluctuations in price at that time. There may, of course, also be provision within the call-off contract for fluctuations during the period of that contract.
- Construction management and management contracting: the construction manager/management contractor is engaged to provide management services and coordination for which they are normally paid a fee, while the individual contracts for work are let separately, either as a 'work package' contract in the case of construction management or as a 'trade subcontract' in the case of management contracting. In a similar scenario to that encountered in framework agreements, each work contract is tendered at a particular stage in the overall project timeline, meaning that the tender prices will reflect the economic circumstances prevailing at the time. There will usually be a mechanism to allow for adjustment of the construction manager/management contractor's fee, together with the cost of providing any 'common site services' – such as welfare facilities, security, administration and so on – that are provided centrally to all the contractors undertaking the work packages. As with framework call-off contracts, the package contract may also contain provisions for dealing with fluctuations.

In each case an agreed formal arrangement is set up, included in the contract terms and conditions, and may be used where appropriate to calculate changes in certain specified costs. The methodology and calculation usually differs in each case, and can vary from contract to contract – and sometimes within contracts themselves for different kinds of work.

4.2 Types of fluctuations

4.2.1 Lump sum contracts

A lump sum contract relies on an agreed price for a specified amount of work to be undertaken within a set period of time. Many 'traditional' contracts rely on this arrangement, and the National Construction Contracts and Law Survey carried out by NBS indicates that this is the most popular form of contracting in the UK.

There are three principal headings under which the adjustment for fluctuations might be considered:

a Contribution, levy and tax: the contract sum is usually based on the normal on-costs payable by the contractor by virtue of their status as an 'employer' of people. This would include things like taxes, National Insurance and other forms of excise duties and statutory contributions. Where the contract permits, the contract sum may be adjusted for changes in the rates or amounts at which these taxes or duties are paid, or in certain circumstances where new taxes are introduced, or old ones discontinued.

b Labour and materials cost: the contract sum is based on the cost to the contractor of labour and materials current at a specific moment in time. (This is sometimes referred to as the 'base date'.) Where the contract permits, the contract sum may be adjusted for actual changes in these prices.

c Formula adjustment: essentially a 'hybrid' where, instead of using the actual increases in labour, materials and equipment, the contract stipulates a formula, so that the contract sum may be adjusted, by applying the formula with a series of indices to calculate the increase or decrease for the relevant part of the work.

4.2.2 Term works contracts

A term works contract is often used where repetitive work is carried out over a period of time – the 'term' of the contract. Examples of this type of contract might be for planned and preventative maintenance. 'Standard form' term contracts are published in the UK by several publishers including the Joint Contracts Tribunal (JCT), and as part of the NEC and the Infrastructure Conditions of Contract (ICC) suites. A version of the JCT measured term contract is also produced for use in Scotland by the Scottish Building Contracts Committee (SBCC).

The most common method for dealing with changes in rates in these contracts is the simple application of a percentage adjustment applied on the anniversary of the contract base date. Depending on the type of work involved, a series of percentages may be applied to rates and prices for different types of work. The schedule of rates may be as priced by the contractor, or in many cases the schedules referred to may be produced by an outside body, such as the National Schedule of Rates, the PSA Schedule of Rates, or a series of former government departmental indices, such as NEDO, Osborne or Baxter (now maintained by the Building Cost Information Service – BCIS) These are available commercially, and updated on a regular basis, so the current schedule will reflect changes in costs that apply during the period in which each schedule is in operation.

4.2.3 Term service contracts

While not dissimilar to a term works contract, there are some subtle differences between service and works contracts. Leaving aside the obvious feature that service contracts will rarely include the provision of construction materials, so they are unlikely to require calculation of increases in commodity prices, there may be more than one element to the calculation of increases.

In some situations a service involves a 'commercial' element – one that generates an income. An example may be the provision of transport or leisure facilities, where a charge is made to the end user, and the contractor shares in the revenue. In these cases, the calculation of fluctuations may be linked in different ways. One provision may be to review the charge made to the end user using a predetermined formula. Users of the UK rail network will be familiar with this approach where fares routinely increase on an annual basis, typically based on the change in the retail price index (RPI) for the previous July.

If the service is for facilities management, cleaning or waste disposal for instance, it may be in the form of an adjustment to the fee paid for its delivery.

Sometimes the service contract may be a combination of both elements, and the calculations can also be linked to a notional return, or level of service provision. In these cases the calculation models can be quite sophisticated.

4.2.4 Supply contracts

Generally speaking, supply contracts should be the most straightforward of all contracts to calculate changes over time. The rates and prices of various items for supply can be calculated and adjusted periodically. However, one common alternative is for the supplier to have a catalogue or list of items for supply, which they then offer at a discount to the published rates and prices. The applied discount may diminish in accordance with an applied formula, either over a period of time or depending on the quantities proposed to be supplied that may subject to different changes.

4.2.5 Reimbursement contracts

As noted earlier, the typical reimbursement contract involves the contractor being reimbursed the actual 'invoice' cost of labour, materials and plant. In principle, therefore, that invoice cost will reflect any increases due to price fluctuations. If there is an associated fee, and this is expressed as a percentage of the actual cost, it will probably not be adjusted for any increases in the overhead cost.

4.2.6 Application to DBFO/ PFI contracts

As might be imagined for an arrangement that by definition is something of a bespoke creation, the topic of fluctuations as applied to DBFO/ PFI activities is of necessity in itself bespoke. However, the principle is similar insofar as it will involve a calculation methodology. One of the criticisms aimed at PFI in particular is that the calculations themselves have historically been overly generous to one or other of the parties. This is not a fault of the calculation mechanisms themselves, but more likely the figures that have been used as part of those calculations. This is probably more illustrative of a poor understanding of the potential risks in what was, at the time, a developing market, and is no longer apparent in the vast majority of cases, as the sector has evolved and clients and contractors alike have become much better at assessment and commercial awareness. Often the mechanisms for calculating adjustments to these types of arrangements can be quite sophisticated, as

they involve a number of different cost types, and in many cases will also be linked to key performance indicators for the service provision itself.

For some contracts, the procedure is much simplified and a single calculation may be undertaken to deal with 'inflation'. In many ways this is a crude indication of the actual changes in cost since it may only use one measure, for example the 'retail prices' (RPI) or 'consumer prices' (CPI) indices.

When using these types of indices, simplicity is the attraction, as they make the calculation easy to understand and transparent. Nevertheless, care must be exercised to choose the most appropriate index. It may not be prudent to apply general inflation indices to construction contracts, for instance, as they could be based on different criteria – RPI and CPI are based on consumer purchases, not construction materials and labour. This could expose the contractor to additional risk.

4.3 Calculation of increased costs due to delay, and allocation of responsibility

Where the contract period is known, it means that in the normal way of things, both parties can anticipate the point at which known revisions to costs will apply – industry pay reviews, or changes to income tax thresholds – because these usually take place at regular intervals. This means that the financial risk of those changes can be reasonably anticipated and fairly apportioned between the employer and contractor.

However, when the contract period is extended, or the kind and quality of the work is significantly altered, there will usually be a discussion as to the extent to which 'agreed' rates will continue to apply. There is a particular issue where the circumstances result in delay or changes with a variety of causes, and there can be complex arguments advanced surrounding the contractor's entitlement to reimbursement, where for example, there is concurrent delay. It is not uncommon for inflation to be one of the heads of claim where prolongation costs are being considered, and there may be disagreement on the means of its calculation.

This is a complex and evolving area of law and beyond the scope of this practice information, so these issues are not addressed in any detail, other than to acknowledge that such potential complications exist.

4.4 Changes in costs due to currency exchange rates

It is not uncommon nowadays for products and equipment to be sourced from different countries to that in which the work is being undertaken. This usually means that the contractor bears the risk of changes in exchange rates. Some contracts, such as the NEC, attempt to mitigate these effects by including an agreed exchange rate in secondary option X3, which when used with main option A or B enables the parties to manage the associated risks.

5 Practical application (Level 2: doing)

5.1 Introduction

Where the contract includes quantities, the QS input will to a certain extent be governed by the rules of measurement that apply to the calculation of those quantities. RICS' NRM2 contains the following commentary on price fluctuations:

> '**2.6.1 Price fluctuations**
>
> 'The cost to the contractor of labour, materials, etc. used in the works will be subject to price fluctuations during the contract period. Costs might fall but are more likely to rise. The risk of fluctuating prices can be dealt with as follows:
>
> - the contractor prices the risk (a fixed-price contract) or
> - provision is allowed for the contractor to recover full or limited fluctuations on certain prices (a fluctuating price contract).
>
> 'Fixed-price contracts are contracts in which the prices of labour, materials and plant are not subject to fluctuations. Fixed-price contracts are also referred to as fixed-price lump sum contracts, firm-price contracts or firm-price lump sum contracts.
>
> 'In the absence of any provision in the contract, or where the provision for recovering price fluctuations has been deleted, the contractor will be required to take the risk (i.e. price the risk) of price fluctuations during the contract period. To cover themselves, the contractor will make an estimate of the likely increase in costs and include this in their tender price. Where there is no provision for recovering price fluctuations, separate provision should be incorporated in the BQ for the contractor to tender their fixed-price adjustment for pricing the risk. Such provision should be referred to as either the main contractor's fixed-price adjustment or the works package contractor's fixed-price adjustment, whichever is applicable. When preparing BQs, the quantity surveyor/cost manager should ensure that no contract conditions relating to the recovery of price fluctuations exist.
>
> 'Fluctuating price contracts are contracts in which adjustment is allowed for fluctuations in the prices of labour, materials, etc. Various degrees of fluctuations are allowed under the provisions of standard contract conditions. The extent to which fluctuations are allowed will have a significant effect on the contractor's tender price.

> 'Where fluctuations are allowed, no provision for the main contractor's fixed-price adjustment or the works package contractor's fixed-price adjustment is required.'

NRM2, 2nd edition

5.1.1 Calculation methodologies on standard forms

Where the contract provides for adjustment of fluctuations, it will usually be the QS' task to undertake the calculation, or at least provide some assistance. Therefore, it is important that the QS should be familiar with the method of calculation, and the limiting factors that may apply for the various standard form contracts.

5.1.2 JCT lump sum contracts

The JCT Standard Building Contract uses the concept of the 'base date', which is a date stated in the 'contract particulars' section of the standard form. Although no guidance is given as to how this date is determined, it is generally accepted that this will be a date usually just prior to the date for return of tenders. The base date should be a date that enables sufficient time for prices, etc. current at that date to be included in the tender, so that any adjustments for fluctuations are calculated from that point in time.

JCT does not anticipate a completely fixed price contract so the JCT Standard Building Contract includes three options for calculating price adjustments. These are contained in Schedule 7 of the contract conditions, and selected in the contract particulars:

- **Option A:** contribution, levy and tax fluctuations – the contract states that 'the Contract Sum is based upon the types and rates of contribution, levy and tax payable by a person in his capacity as an employer and which at the base date are payable by the Contractor'. Therefore, it follows that if any of the rates change, or a new tax is introduced, there will be an adjustment to be made. Note that the increases would only apply if, for example, a statutory tax or duty changed. This means that the contractor is not permitted to recover changes due to market conditions, such as variations in the price of construction materials or individually negotiated pay rates.
  Clause A.5 of Schedule 7 provides that the QS and the contractor '... may agree... the net amount payable or allowable in respect of any event such as is referred to...'. The contractor is required to provide such evidence and computations as may be reasonably required to enable the amount to be calculated. It should in principle be reasonably straightforward to adjust the rates and prices by substituting the new rate of tax or duty for the old rate to those items to which it applies.
- Option B: labour and materials cost and tax fluctuations. This states that as a default, the contract sum is based on:
  - the rules and decisions of the Construction Industry Joint Council or other wage fixing body

- any incentive scheme and/ or productivity agreement under the Working Rule Agreement of the Construction Industry Joint Council and
- the terms and conditions of the Building and Civil Engineering Annual and Public Holiday Agreements

It follows that if any of these rates of wages or other emoluments change after the base date, then the contract sum will be adjusted to reflect the increase (or decrease). Option B also permits adjustment of the kind outlined in Option A.

The National Working Rule Agreement covers four classes of worker:

1 general operatives

2 skilled operatives

3 craft operatives and

4 apprentices.

The calculation for each class is based on a number of items – such as basic rates of pay, overtime, bonuses, shift working, annual and public holidays, sick pay, pension contributions and so on. In addition, allowances are made for things related to their employment, such as travel, tools and their maintenance, meal breaks and items classed under subsistence.

If there is an amendment to any of these categories, which is usually as a result of periodic negotiation between the employer and employee organisations that are signed up to the NWRA, there may be an opportunity to recalculate the cost of the overall rate. The calculation may not be straightforward.

The calculation in both options A and B require the contractor to supply a full build-up of the rates and prices used in the calculation of its tender sum at tender evaluation stage. Of course, this figure may already be the subject of a degree of approximation, as the contractor will undoubtedly have made an assessment rather than a detailed computation of the amounts of labour, plant and materials necessary to undertake the contract work. In the circumstances, the calculation will probably require collaboration with the contractor, although the JCT contract places the obligation to undertake the calculation on the QS in the first instance.

- **Option C:** formula adjustment – this method involves the use of the JCT Formula rules and relies on a series of indices that were originally published by the National Economic Development Office (NEDO). The indices are now known as the Price Adjustment Formula Indices (PAFI), and are maintained by BCIS. The JCT Formula Rules describe a 'Base Month', defined as the calendar month prior to that in which the tender is due to be returned.

JCT also includes the option to specify an alternative provision, to be agreed between the parties or state that no fluctuations provision applies.

The default position for JCT is that option A applies. However, it is not unusual to see contracts where all three options are deleted.

Although the use of formula rules in the UK building sector was once commonplace, , particularly in the public sector, it is perhaps indicative of the frequency of usage of this method that JCT's most recent practice note on the topic (Series 1, No. 17) was published in 1998, and is difficult to obtain, notwithstanding that the formula rules document itself was revised and republished in 2011.

(Note: although the use of fluctuations is not currently the popular choice in this sector, it should also be recognised that the principle is regularly applied in the infrastructure sector, as well as in many regions outside the UK.)

Under the rules, the contract sum is divided into a series of work categories or work groups corresponding with the type of work to which it relates and for which there is a separate index. At the end of each period, the value of each category is adjusted using the most relevant index, and this way the overall adjustment may be calculated and applied. Therefore, each valuation is adjusted by the increase, or decrease, in a standard mix of indices.

The JCT Formula Rules 2024 were published in April 2024.

The formula rules contain a provision for the inclusion of a 'non-adjustable element'. This is intended to reflect those parts of the contract sum that will remain fixed regardless of adjustment elsewhere in the prices of materials. These would include things like overhead costs, insurance premiums, and the cost of those things that are supplied directly by the contractor and are therefore not subject to price increases during the contract period.

The non-adjustable element is typically expressed as a percentage, between 10 and 15%. However, it can vary from contract to contract depending on the nature of the work, and there is a temptation to increase it to minimise the overall effect of the adjustment.

5.1.3 NEC lump sum contracts

In the interests of simplicity, the NEC Engineering and Construction Contract (ECC), does not go into the same level of detail when it comes to calculating price fluctuations. In fact, as a general rule, NEC does not use the term 'fluctuations'. The ECC's approach is to use Secondary Option X1 – price adjustment for inflation. This can be used with main options A (activity schedule) B (bill of quantities), C (target contract with activity schedule) and D (target contract with bill of quantities).

Unless X1 is included, the contractor will assume all the risk of inflation under the 'fixed price' main options A and B, but shares the risk under the target cost main options C and D. Note that main options E and F already contain payment mechanisms that enable the contractor to be paid the costs of inflation.

Under X1, the contractor bases all its prices on estimates of cost current at a base date, and it is varied by a price adjustment factor. In NEC3, this is defined as:

> '...the total of the products of each of the portions stated in the contract data, multiplied by (L-B)/ B for the index linked to it'

where B is the latest available index before the base date established in the contract data (base date index) and L is the latest available index before the date of assessment of the amount due (latest index). The values of B and L and the base date are established in the contract data.

Like its JCT counterpart, the NEC calculation allows for a non-adjustable proportion. Both the NEC and JCT contracts also include some provision for the contractor to submit a 'current' price for additional work. NEC allows the valuation of compensation events at current rates under Secondary Option X2, while JCT permits a 'schedule 2' quotation.

In both cases there is no requirement to use existing rates and prices where the work is additional, so these arrangements would normally be based on 'present day' rates.

5.1.4 Other lump sum contracts

The FIDIC Conditions of Contract for Construction (the 'Red Book') operate in similar way to the NEC approach in that it contains a formula method agreed by the parties and included in the appendix to the contract for adjustment of the prices, taking into account the different kinds of work envisaged. Like JCT and NEC, FIDIC also allows for a nonadjustable element.

The ACA 'PPC' suite of partnering contracts also includes similar options – that is 'contribution, levy and tax', 'labour and materials' or formula adjustment.

The Infrastructure Conditions of Contract ('ICC', formerly the ICE conditions) do likewise, using a construction price factor (CPF) with the subtle difference that the formula rules alternative suggests the use of 'civil engineering' price adjustment indices rather than the 'building' ones traditionally used elsewhere.

5.1.5 Term works contracts

Term works contracts typically make use of a priced schedule of rates. It is possible that for tender purposes they will include a contract sum based on a notional set of quantities, but these are likely to be indicative only. The rates are used to provide a pricing mechanism for individual tasks or 'orders' that are instructed under the contract and these are valued using the rates in the contract schedule.

A term works contract may also include a pricing option to reflect priority in those orders, with a price weighting related to the speed of response required by the contractor.

The JCT Measured Term Contract is designed for use with an independently published schedule of work – the National Schedule of Rates (NSR), published by NSR Management Ltd.

The national schedule is separated into seven subjects. These are:

1 building works

2 access audit

3 electrical services

4 mechanical services

5 painting and decorating

6 highways maintenance and

7 housing maintenance.

The contract enables the contractor to indicate an adjustment percentage that may be applied to the national schedule to reflect their own price for carrying out the work.

Where it is stated in the contract particulars that the fluctuations provisions apply, then each of the NSR schedules is updated and rates revised on an annual basis to reflect cost adjustments. So, by using the schedule for the current year, the update will be reflected in the rate for carrying out a particular order. However, the contractor's adjustment percentage is not affected.

The JCT Measured Term Contract is also capable of being used with a 'bespoke' schedule. In that scenario the rates would still be updated on an annual basis (the contract default for both schedules is 1 August).

The NEC Term Service Contract, like the ECC, makes use of Secondary Options X1 and X2.

The ACA TPC and the ICC Conditions of Contract – term version use a similar methodology to the lump sum versions of their respective standard forms.

5.1.6 Term service contracts

The principal difference between a service contract and a works contract is the subject matter. In the EU, the supplies directive does not define a 'service' precisely, but contracts for services are stated to exclude contracts for works and vice versa, not least because the thresholds at which contracts for works must be subject to competitive tender under the directive is roughly 25 times greater (approximately €5,000,000 for works, compared to €200,000 for services). Some of the publishers of 'standard form' construction contracts propose that their forms may also be adapted to support the procurement of services, in which case any fluctuations provisions contained in those contracts would continue to apply. However, it would be necessary to select indices that properly reflect the nature of the work to be undertaken.

5.1.7 Framework agreements, construction management and management contracts

Because the work 'packages' in these types of arrangements are tendered at different times during the overall project period, it is assumed that the relevant contract sums will be current at the point at which the 'package' contract is entered into, and therefore no adjustment will be required for price fluctuations.

Nevertheless, it is conceivable that there could be a situation where it would be necessary to make adjustment, e.g. in respect of contribution, levy and tax fluctuations, so it would be appropriate to include some provision to accommodate this. For the main contract publishers, the provisions in their standard forms for these types of agreement are broadly similar to those described elsewhere in this practice information, and the processes to follow would typically be as set out there.

5.1.8 'Serial' contracts

There are no 'standard' forms specifically drafted for a serial contracting approach, although in essence it is similar to the framework agreement – the principle is that the contractor is engaged to undertake a series of similar projects or packages, based on a pricing document that may take the form of a schedule of work or set of rates, but without making use of bespoke contract conditions. On completing one package, the contractor proceeds to the next one, the contract sum for which is valued using negotiated adjustments the rates from the previous package. This way, any variation in the contractor's input costs can be accommodated. It is perhaps an interesting irony that the main benefit stated for this method of procurement is that long-term relationships and increased familiarity of repeat work should bring about economies of scale, efficiency and integration.

This in turn brings a client expectation of lower prices in the later stages of a serial arrangement, brought about by a shared desire for continuous improvement, meaning that later contracts are supposed to show a net reduction in the subsequent contract sums, as processes and activities are carried out in a more streamlined way. Where this is combined with a framework agreement, the UK Government construction strategy describes it as 'cost led procurement'.

The cost led procurement guidance explains that:

> 'Cost Led Procurement (CLP) is a procurement method intended to allow industry to use its experience and knowledge to develop innovative solutions through leveraging design, materials, subcontracting direct labour and experience to the advantage of the Public Sector Client. In this model the Client clearly states the outputs and outcomes in a strategic brief and Industry responds by proposing solutions and committing to a price and a set of rules under which that price can be achieved as the final account sum. This sum, i.e. cost ceiling, will be seen favourably against historical reference costs and benchmarks. Commitment to beating the cost ceiling from the supply side is a key feature of this method.'

It can be seen, therefore, that there is a wide variety of possible options available that QSs need to be familiar with if they are to operate in that sector of the industry.

6 Practical considerations (Level 3: doing/advising)

6.1 Choosing the contract

The schedule of quantity surveyor services for use with the RICS Standard Form of Consultant's Appointment (and the RICS Short Form of Consultant's Appointment) does not specifically refer to fluctuations. However, the core services listed include:

- advising on the cost of the project. Advising on the cost of alternative design and construction options
- advising on tendering and contractual procurement options. Preparing recommendations for the client's approval and
- advising on the likely effects of market conditions.

It can be seen to fall within the QS' remit to consider the opportunity to use the methods of procurement and the form of contract that will produce the optimum outcome for their client. Additionally, the QS may be called upon to advise on the particular method of calculating fluctuations, such as the choice of options A, B and C for a JCT contract.

The QS needs to have an awareness of the particular market in which his or her client is operating. In theory, ensuring that the contractor does not have to bear the risk or increased costs means that the employer will ultimately get a better tender price for the work and there will be a lower risk of subsequent supply chain failure.

However, it is important to ensure that any method and procedures chosen do not over or under-compensate the contractor, as the employer will end up paying more than it needs to, while the contractor may well make allowance anyway for the potential shortfall, and either scenario can cause friction between the parties.

It is natural to seek to achieve certainty where costs are concerned, even if it means paying a little more, but it is not always possible to quantify the benefits of a fluctuating price contract for projects of shorter duration and low levels of inflation.

Note that some 'fiscal' changes may not result in adjustment to the contract sum itself but nevertheless will still effect on the price paid by the employer for the job.

A good illustration came on 4 January 2011, when the UK Government increased the rate of VAT on most goods and services from 17.5 to 20%. Although the majority of UK Standard Form Construction Contracts stipulate that the contract sum is exclusive of VAT, the employer is usually obliged to pay this sales tax, which will be added to the contractor's invoice in respect of any payments due under the contract.

In this situation, although the change is not one that would necessarily fall within the broader definition of price fluctuations, the accuracy of the QS' valuation is critical, because the values of the work done before and after the time when the rate changed would potentially be subject to tax at different rates.

6.2 Factors to consider

There are a number of factors that need to be considered. The first of these is whether a fluctuating price contract would be appropriate.

The leading scenario in which a fluctuating price contract would be the primary choice is one where the prevailing economic circumstances are uncertain. Unpredictable financial forecasts mean increased financial risk.

This doesn't necessarily mean that inflation or interest rates have to be high, just that they are variable. If the contract sum is sufficiently large, the effect of a small percentage change may still represent a large amount of money.

Although most commentators agree that these rates are (at the time of writing) at historically low levels, this usually refers to the so-called 'first world' economies. Developing nations, such as Brazil, India and Russia, typically have high inflation rates, while some 'Eurozone' countries like Greece and Spain have experienced large variations in inflation rates during recent years. These are also seen as areas where it is suggested that the surveying profession can find business opportunities. It is vital that such risks can be identified and anticipated.

The use of an index or group of indices is a sensible approach to the question of cost increases. One reason for this is that it records actual changes in costs rather than trying to predict trends. When assessing and calculating fluctuations, this data is historical and verifiable. The result is that from the contractor's point of view, the cost risk is reduced. In theory at least, this should result in more accurate and competitive tenders.

It is not unknown for employers to ask for two 'alternative' tenders; one to reflect a fixed price and another to indicate what the difference would be if the contract sum was subject to fluctuations. This enables the employer to assess the contractor's price of the risk as part of the tender evaluation.

6.3 Choice of indices and selecting the appropriate method of calculating fluctuations

As well as there being some significant variations between the prediction and performance of a number of key 'financial' indicators, there have also been some significant variances between indicators ostensibly used to measure the same thing, depending on the supporting calculation, as well as the interpretation of the results. An example of this can be seen by comparing the UK's retail prices index (RPI) with the consumer prices index (CPI). Both are

used to measure inflation, but RPI rates are usually quite a bit higher than CPI. This is due to the different methodologies used in their calculation.

RPI originated as an index measuring price increases associated with the First World War. It has undergone a number of significant developments over a number of years before it became the UK's main internal measure of inflation.

CPI, developed by the EU and first published in 1996, is an internationally comparable measure of inflation following international legislation and guidelines. CPI is the basis of the UK Government's inflation target, a target set at 2% since December 2003, and used to shape monetary policy.

However, the fundamental difference between the two is that RPI includes allowances for housing costs: mortgages, rents, council tax and so on. The indices are affected by different factors, and therefore may not be appropriate to use as a measure for particular types of construction work.

Other indices that may be used include:

- tender price indices (TPI), which reflect changes in tenders submitted for similar types of work
- resource cost indices (RCI), which measure changes in the cost of certain materials or labour and
- output cost indices, which measure the changes in contract final accounts.

It is also important, for practical reasons, to make sure that the correct indices are used. There are a wide variety of indices to choose from, and in order to be effective it is essential that they are relevant to the type of work under consideration.

It may appear obvious but it is also important to ensure that, where they are produced by a third party, the indices chosen will continue to be published for the duration of the project to which they are applied.

It is normal practice to use an input cost index. BCIS offers the following advice on the choice of index:

- Be clear about what you want to measure and how you want to apply it.
- Choose an index that is most relevant to the subject that is proposed to be measured.
- If you are using the index linking something in a contract or agreement, be clear that it meets your needs, particularly in respect of the frequency of the publication and updating and revisions policy.
- Understand the inputs to the index and the calculation methodology.
- Read the notes and definitions.
- Never choose an index based on its past performance.

- BCIS currently publishes Price Adjustment Formula Indices (PAFI) under four basic headings:
  - building
  - specialist engineering
  - civil engineering and
  - highways maintenance.

There are several other indicators that may be used from time to time, although they are considered more appropriate for cost planning. These include tender price indices, individual cost allowances for various types of construction, and those from various material and commodity suppliers. By way of illustration, in the UK there are a number of tender price indices. One of the principal ones used by the UK Government is Public Sector Building Non Housing (PUBSEC). This measures the movement of prices in tenders for building contracts in the public sector. It does not include data for contracts for housing, civil engineering, mechanical engineering, electrical engineering, minor alterations projects or for repair and maintenance work.

The Office for National Statistics (ONS), in association with Aecom, publishes construction output price indices for:

- new work
  - public housing
  - private housing
  - infrastructure
  - public non housing
  - private industrial and
  - private commercial.
- repair and maintenance work
  - public housing
  - private housing and
  - non-housing.
- all construction.

ONS indices are under review and it is unclear what indices they will publish in the future. They no longer publish PUBSEC, this is still produced and published by BCIS for the benefit of those departments that still rely on it.

The PSA schedule of rates deals with fluctuations differently than NSR. There are separate schedules for:

- building and civil engineering
- decorations
- electrical installation
- mechanical installation
- landscape management
- maritime works
- roads and
- railways.

For each edition of the schedule, BCIS publishes a monthly updating percentage to be applied to the rates.

An index is a 'composite' measure, made up from a variety of sources. Some indices also have regional variations, both domestically (mainly to reflect changes in the cost of labour) but also internationally, where the prices of materials and plants can also vary from country to country.

Therefore, it is important to strike an appropriate balance between the speed of calculation and its overall accuracy. An index may be considered to simplify the calculation but, if it is not relevant to the kind of work under consideration, it could seriously disadvantage one party.

In this regard, the QS' professional judgment and experience will be highly relevant, and this can significantly add value to the project. Where the indices are unfamiliar the QS should clarify the source, calculation, publication and availability of the indices and make clear reference to these in the contract.

7 Points to note

- Use of a fluctuating price contract removes some of the risk of variations in input costs from the contractor, to the extent that the supply of items is within their control. It is unusual nowadays for contractors to manufacture and install items, but where they do, there may be a different ability to recover price fluctuations for the 'ex-works' items compared to those bought in complete.
- In the interests of fairness, it is important that where the 'lead' contractor's terms and conditions entitle them to reimbursement of fluctuations, this facility should also be afforded to subcontractors and suppliers using the indices appropriate to their work.
- It is clearly inequitable if the contractor can benefit from a notional calculation of increased costs, if these costs do not actually get passed on within the supply chain. For example, a tarmac supplier on a highways scheme may experience cost changes that are much more volatile than the general movement in costs on the contract. Unless the supply chain can assess and price the risk, that supplier is likely to be at a disadvantage.
- Where a fluctuating price contract is used and the job progresses more slowly, it is arguable that the employer loses out, as there is more potential for increased cost on as yet unfinished work.
- Inflation rates in the UK are (at the time of writing) at a relatively low level, but this is not the case in all parts of the world where the QS might find employment. It is still quite common in some areas for fluctuating price contracts to be the accepted norm. So it is important to distinguish the custom and practice of the region of country in which the project is undertaken as well as its prevailing economic situation.

Appendix A Sources of further information

BEAMA indices: BEAMA produce indices for Electrical Machinery and Mechanical Plant for use with their Standard Contract Price Adjustment Clause and Formulae for Electrical Machinery and Mechanical Plant, BEAMA also produces a number of product formulae for specific applications.

Measured term contract updating percentages: Produced for use with the PSA Schedules of Rates these provide separate monthly percent changes to the prices in each edition on the schedules. Originally developed for government contracts they are now maintained and published by BCIS.

BCIS maintenance and cleaning cost indices: These indices are produced by BCIS for use in budgeting and forecasting and as economic measures, however they are used in maintenance and facilities management index linked fluctuations clauses. There are individual indices for maintenance by employment sectors:

- all sectors
- private sector
- health service sector and
- local authority sector.

In each sector there are separate indices for redecorations, services maintenance and fabric maintenance. There are also indices for cleaning costs and cleaning materials.

Tender price indices (TPI)

Tender price indices measure the movement in agreed prices at commit to construct, e.g. accepted tenders, agreed target costs, negotiated prices, etc. They are produced for use in budgeting and forecasting and as economic measures. They measure movement in market conditions as well as underlying cost inflation so should only be used in inflation clauses if a measure of market movement is intended to be recovered.

BCIS Tender Price Indices: The BCIS All-in Tender Price index is the most widely used TPI. BCIS publish a range of sector and trade TPI but their volatility makes them unsuitable for index linking.

BIS Tender Price Indices: BIS formerly produced a series of TPI, the most widely used is Tender Price Index of Public Sector Building Non-Housing (PUBSEC). PUBSEC is currently produced and published by BCIS.

Output price indices (OPI)

Output Price Indices measure the movement in prices paid to contractors. They are produced primarily as deflators for measures of output volume.

Office for National Statistics (ONS) Implied Output Price Indicators: Produced by ONS to deflate current output and new order volumes to constant prices. The current series is an interim measure that will be replaced and therefore do not lend themselves to index linking. There are separate indices for each sector and they are published with the construction output statistics. See the ONS website.

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General enquiries
contactrics@rics.org

Candidate support
candidatesupport@rics.org

RICS®

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