



# BCIS Inflation adjustment clauses



## Part 1: Introduction and principles of index-linked inflation clauses

### Inflation indices

Inflation is, in former US Defence Secretary Donald Rumsfeld's term, a 'known unknown'. We know that prices tend to change over time, but we do not know by how much or when. Therefore, when considering future expenditure, uncertainty is a risk.

The magnitude of the risk will be exacerbated by the length, size and location of a project. The longer the project, the greater the uncertainty. The larger the project, the greater the monetary value of the risk, and in some parts of the world, prices are more volatile than in others.

The most common method of allowing for inflation is the use of indices. In the UK, the most commonly used indices are the price adjustment formulae indices (PAFI) prepared by BCIS.

BCIS publishes the PAFI for use in civil engineering contracts within the industry. A couple of notes on terminology:

- Inflation adjustment clauses are referred to by different names in different contracts – fluctuations, variation of price, price adjustment for inflation, etc. We have referred to them in this paper as 'inflation adjustment clauses'.
- Inflation refers to increases in costs, as distinct from deflation, which refers to falling prices. However, inflation adjustment clauses in contracts are designed to deal with both. Rising prices are the norm but there are periods when there are falls in fuel and commodity prices. The impact of an inflation adjustment clause would be that the client receives the benefit of the savings rather than the contractor.

### Why allow for inflation?

To ensure the best price on a contract, the risk for inflation should be taken by the party best able to manage it.

Inflationary risks derived from the local market can probably be managed by a contractor and their supply chain, but the underlying inflation caused by wider pressures from the outside construction and global markets probably cannot.

So, who should take the risk of inflation on a construction contract? To quote from Crossrail's procurement strategy:

The party that is best able to ‘assess and manage’ the risk of inflation will vary from contract to contract depending on the nature of the client, the contractor and the work.

## When should inflation adjustment clauses be considered?

- **During periods of high or uncertain inflation:** The fact that the formulae method of price adjustment was developed in the 1970s is no surprise when you consider the levels of inflation at that time. Figure 1 shows that construction costs (labour, material and plant) rose on average over 16 per cent per annum in the period from 1972 to 1980. Over the past 10 years (2006–15) the average was less than 3% . At the moment, when some underlying costs are falling, the client might consider that it should take the risk of this benefit rather than asking contractors to build it into their prices. Figure 2 shows the recent trends in DERV, steel reinforcement, electrical goods and bricks.
- **In big projects,** where the impact of inflation is significant in monetary terms. ‘Big’ needs to be judged in relationship to the size of the parties.
- **For long contracts:** The longer the contract, the more difficult it is to predict the impact of inflation. This will apply both to projects that will take a long time and to long-term contracts such as framework contracts and maintenance contracts.
- **For complex contracts,** where different contractors will work at different periods during the project.

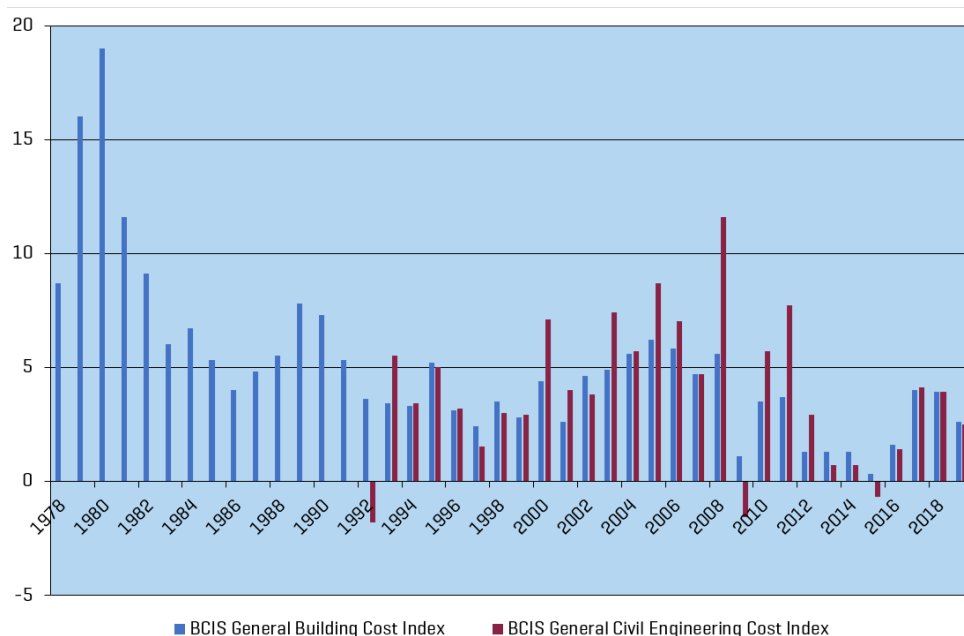


Figure 1: BCIS General Building and Civil Engineering Cost Indices (annual percentage change)

## How to allow for inflation

Before the introduction of the price adjustment formulae, inflation adjustment clauses attempted to reimburse contractors for the actual changes in their resource costs.

Contractors were asked to list in their tender the current prices of the resources that they wanted to be adjusted.

One of the drivers for the introduction of formulae price adjustment was the cost to both contractors and clients of administering the old contracts, which, despite the level of detail involved, resulted in imprecise recovery and were open to abuse.

The formulae method of inflation adjustment was introduced due to industry demand for a speedy yet credible way of calculating and reimbursing fluctuations in costs.

The method relies on resource cost indices for trades and individual resources. These can be weighted to represent the resources on a particular project so that the impact of inflation can be modelled. This allows the contractor to provide the best price in their tender and be confident that the inflation reimbursement will reflect their costs.

The original guide to the formulae stated:

When the formulae method was introduced, the weightings of the indices were linked to items in the bill of quantities so that they were applied differently at each valuation. However, the alternative single index method has become the standard practice so that the weightings of the indices are set, usually by the client, at the outset of the contract and applied to all payments.

Spending time choosing the right mix of indices, and discussing it with the contractors where there is early contractor involvement or competitive dialogue, will help in ensuring that the contractors are comfortable that they are protected from underlying inflation and so offer the best current price. As Figure 2 illustrates, the cost of resources can move in very different ways.

As the practice of using indices in inflation adjustment clauses has become standard practice, the choice of indices has proliferated, not always wisely. The point of the indexation is to match the indices as closely as possible to the work to be carried out.

Therefore, using a general inflation index such as the Retail Prices Index (RPI) or applying a general construction index to specific sectors imposes a double risk for the contractor to

account for both the risk of the inflation measured by the index and the risk of inflation in their actual costs.

The same applies to the practice of main contractors applying an all trades index to a specific subcontractor. Applying an inappropriate index or indices will never achieve the desired effect of attracting the best prices.

BCIS has published six golden rules for choosing an index:

1. Be clear about what you want to measure and how you want to apply it.
2. Choose an index that is measuring the costs that most closely match what you want to measure.
3. If you are using an index linking something in a contract or agreement, be clear that it meets your needs, particularly in respect of:
  - the frequency of the publication (monthly, quarterly, annual)
  - the updating and revisions policy
4. Understand the inputs to the index and the calculation methodology.
5. Read the notes and definitions.
6. Never choose an index because of its past performance.

Depending on the procurement method, the index can be applied either to the contract sum or the target cost.

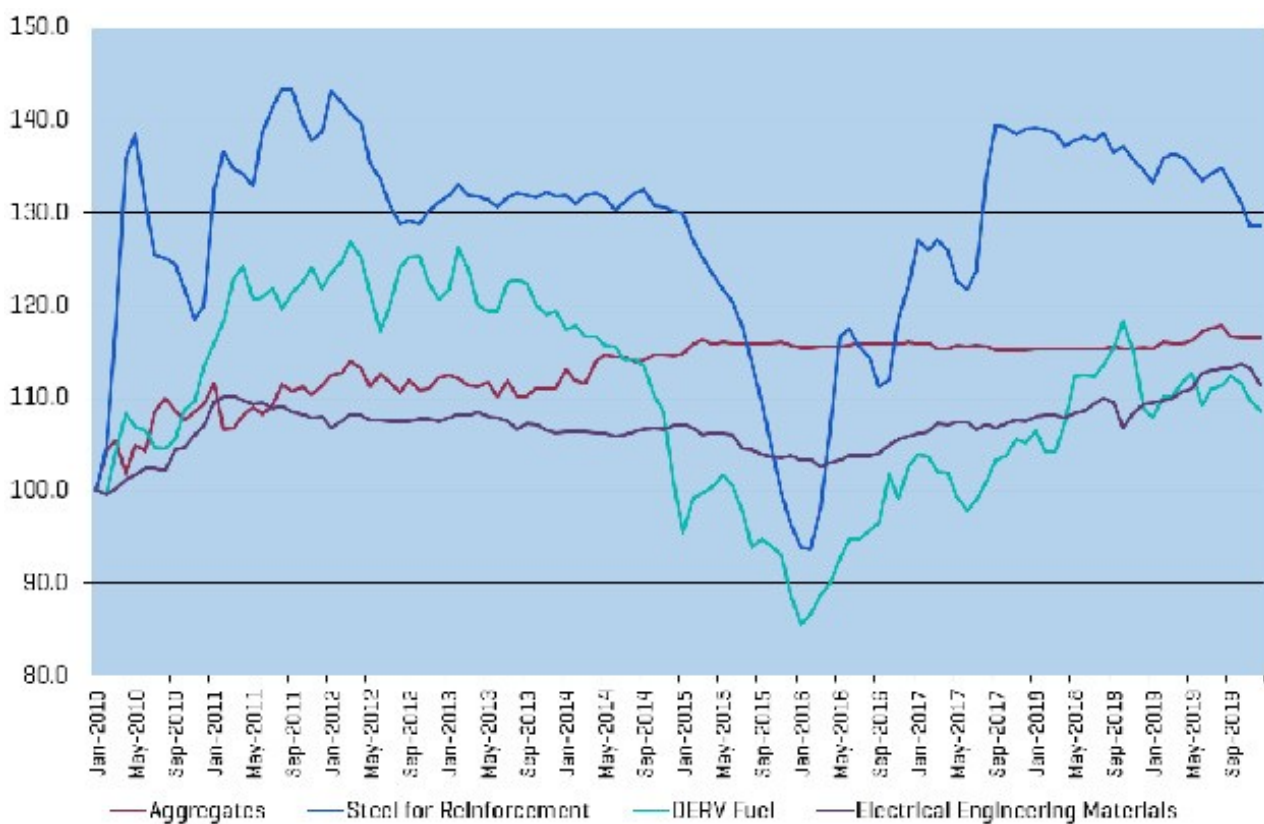


Figure 2: Material cost inflation



## Price Adjustment Formulae Indices

When the formulae method of calculating fluctuations in contracts was introduced in 1973, the PAFI were produced to facilitate its implementation.

The indices were set up under the aegis of the National Economic Development Organisation (NEDO). The series were devised by two committees, one for civil engineering under the chairmanship of J W Baxter, and one for building under J G Osborne. As a result, the PAFI are colloquially referred to as the NEDO indices, the 'Baxter Indices' (civil engineering) and the Osborne indices (building).

The indices were initially calculated by the Property Services Agency (PSA). The responsibility for the indices followed the PSA successor departments responsible for construction price and cost indices and other statistics, latterly the Department for Business, Innovation and Skills (BIS). In 2009, BCIS took over the responsibility for the indices from BIS.

The indices are intended to represent the underlying inflationary pressures, not the actual costs on a particular project. However, the range of indices is intended to allow those underlying inflationary pressures to represent the resources being used on a project.

The indices represent the movement in factory gate prices and nationally agreed wage awards and are for national (UK) application.

They are not intended to represent the effect of market pressures, national or local, on prices from subcontractors, merchants, factors, etc. The management of these is the commercial concern of the contractor.

The indices are currently published online as four series:

- building
- specialist engineering
- civil engineering
- highways maintenance

The indices used in civil engineering contracts (civil engineering, specialist engineering and highways maintenance) underwent an industry review in 2015 involving clients, contractors, subcontractors, materials suppliers, consultants, the government, the Office of National Statistics and BCIS.

## Part 2: Implementing index-linked inflation clauses

### Indexed linked inflation adjustment

Indexed linked inflation adjustment clauses provide a simple and transparent method of calculating and reimbursing fluctuations in the underlying costs on a project. They allow contractors to price and manage a contract knowing that they do not need to price in the risk of inflation.

Such clauses can be used on all types of procurement but will be applied differently depending on the contract:

- On design and build and traditional lump sum contracts, the agreed tender price will be adjusted for inflation in valuations for stage payments.
- On target cost contracts, the target cost is adjusted for inflation.
- On framework and term contracts, the value of the individual contracts is adjusted.

When index linked contracts were first introduced in the 1970s, lump sum contracts based on bills of quantities were the norm and the practice was to allocate all the bill items to an index so that the inflation adjustment in each stage payment reflected the mix of work carried out in that period.

From the start, however, an alternative method was adopted by some clients where the mix of indices was used to calculate a single index based on predetermined weightings. This method has become the standard approach with the contract identifying the indices to be used and their weighting and this is applied in each valuation.

Other clients have adopted the unfortunate practice of applying single, non-construction indices such as the Retail Prices Index (RPI). However, this creates a double risk to the contractor. The introduction of these risks will result either in risk premium being built into the initial price or pressures on the contractor due to insufficient provision for inflation.

This practice usually results from funders or regulators reimbursing based on RPI or similar and this inflation mechanism being passed straight down the layers of the supply chain. The perception is that this does not subject funders and regulators to any risk, regardless of the fact that each link in the supply chain also incorporates an element of risk into their rates.

## Considerations when implementing indexation

1. Define clearly the work that is subject to review in line with the index.
2. Ensure that the mix of indices represents the work being undertaken. The indices selected will affect the price change recorded and should be chosen carefully to best represent the work subject to indexation and the intention of the parties.
3. Ensure that the reference to the chosen indices is clear and unambiguous. The indexation clause of a contract should identify the indices selected by its complete title, index number and any identifying codes.
4. Check the availability and frequency of the index.
5. State the base date for the updating.
6. State the frequency of price adjustment. The indexation clause should specify whether price adjustments are to be made at fixed intervals (such as monthly, quarterly, semi- annually, or annually), at stages or at the beginning or end of the contract.
7. Specify the date the price adjustment calculations are to be made and what index is to be used. This is normally the latest version of the index available on the date specified.
8. Be clear on how to deal with the changing status of the indices, e.g. provisional, firm, etc. Some contracts allow for the inflation to be recalculated later on when provisional indices become firm. For simplicity, some do not.
9. State how to implement revisions to the index, changes to the index base date, discontinuation, etc. With the PAFI, revisions are rare, and the indices will continue to be calculated on superseded series. When series are discontinued, advice is given on the use of newer series to continue the discontinued series through to the end of a contract.
10. Define the method for calculating the inflation adjustment. The normal method is to calculate the percentage change from the base date for each index and multiply it by the weighting in the contract to give an overall percentage change.
11. Define the number of decimal places to be used in the calculation.



## Case Study: Cross Rail

Crossrail is one of the biggest transportation projects in Europe. Crossrail is the new high frequency, convenient and accessible railway for London and the South East.

The project value is £18bn. Crossrail trains will travel from Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east via 21km of new tunnels under central London. It will link Heathrow Airport, the West End, the City of London and Canary Wharf.

The project will include the upgrade of 28 existing surface stations (11 of which are major reconstructions), 21km of new sub-surface twin-bore railway, the upgrade of 90km of existing surface network and the construction of 9 sub-surface stations.

### Contracting arrangements

Crossrail Limited (CRL) adopted the NEC3 suite of contracts (amended as appropriate) as the standard form of contract for delivering their requirements. The choice of NEC option was largely determined by the scope of work, the maturity of the design and the nature of the risks. Most contracts were let on either Option A or B (lump sum) or Option C (target price).

For NEC3 Option C contracts, the incentive mechanism provides an equitable share of savings and provides a real incentive to control costs to deliver within the target price.

CRL's procurement strategy for contracts of a certain construction duration and commodity mix was to request the contractors not to price for the risk of inflation but instead confirm that the employer would be allocated the risk. This procurement strategy had two effects:

1. initial tender returns that excluded contractors' inflation allowances based on broad assumptions over long periods of time and
2. an agreed contractual and accurate method to measure the impact of inflation during the contract and to amend the 'total of the prices' accordingly.

This procurement strategy considered that the achievement of best affordable value would be supported by a sensible and fair allocation of risks between the parties to the contracts. Requiring contractors to take responsibility for risks which they cannot assess or manage would be likely to result in either high risk premiums or commercial pressures caused by insufficient provisions.

With the trend of decreasing and flat line inflation in the early years of the contract, it could be argued that this procurement strategy and risk allocation has saved CRL in the initial contract award values.

*“At Crossrail we have administered NEC3 Contracts with secondary Option X1 clauses using the BCIS PAFI. By using the BCIS indices we have been able to procure contracts where inflation is identified as an employers’ risk which could otherwise have been priced by our tier 1 contractors at a potentially high risk premium. The biggest benefit of using the PAFI is that it promotes a collaborative commercial arrangement between the project manager and contractor by setting out in the contract tender process exactly how the impact of inflation will be measured and how the contractor will recover costs through the administration of a periodic price adjustment”.*

Robert Stockwell, CRL

## Inflation risk management

The procurement strategy provides that the NEC3 contracts with secondary Option X1 (price adjustment for inflation) are let on lump sum Options A and B and target Option C. The calculation of the price adjustment formula varies depending on which form of contract is applied (A, B, C, D or E). The NEC3 contract provides the calculation to be applied using the indices, proportions and base date information as set out in the contract data of each Option X1 contract. With all data and calculations being clearly defined in the contract data, and agreed between the parties as part of the contract negotiation process, this leaves limited opportunity for the inflationary measure (price adjustment) to be open to interpretation and promotes a collaborative commercial arrangement between the project manager and the contractor.

The secondary Option X1 was applied to a number of stations, systems and civil engineering contracts, where the commodity mix and contract duration was deemed to represent the best opportunities for CRL to take on the cost risk associated with inflation.

CRL has used the PAFI published by BCIS. Each contract has a different mix and weightings of the indices modelled to the works that are to be delivered. The index series that are used have been selected from:

- PAFI Building Series 3
- PAFI Civil Engineering 1990 Series
- PAFI Specialist Engineering Series 3.

## Choosing the indices and weightings

Each contract was procured with its own unique set of data used to measure the impact of inflation to ensure an accurate price adjustment is applied, resulting in the contractor recovering the full entitlement of budget to match the cost impact of the inflation incurred.

The indices to be used in the measurement, the proportions that those indices would represent, any non-adjustable percentage and the base date were allocated based upon the type of activities to be carried out in delivering the scope of works and the proportion that these activities represent versus delivery of the

scope of works as a whole. These were then agreed between the parties as part of the contract negotiation and document execution.

## Implementation in contract admin systems

To make sure that each of the 14 contracts that CRL procured with secondary Option X1 were administered consistently across the programme, CRL specified, designed and developed a contract management application providing an online tool where all data and calculations are stored and reports generated. This limited the individual user to entering data only and ensured that there was no opportunity for differing interpretations of the contractual requirements. This application was also designed in such a way that it interfaced directly with the existing cost management system. This ensured accurate and consistent reporting of budgets and performance throughout the business.

The indices are downloaded from the BCIS Online service as a CSV file and imported into the application directly (note: these indices can also be downloaded as XML files). The application then applies the necessary calculations, taking into consideration the form of contract (A, B or C), and provides the relevant inflationary measure (price adjustment formula) for each contract. This is then applied to the 'price of the work done to date', taken from the periodic assessment of the contractor's application, to provide the periodic price adjustment.

This in turn provides an accurate adjustment to the contractor's 'total of the prices' for the impact of inflation. It is therefore paramount that when 'implementing a compensation event' (ICE), it is assessed at base date values. This means that any aspect of the agreed quotation making up the ICE that is not already priced at the contract base date must be deflated back to the contract base date set out in the contract data. If ICEs are not implemented at base date values, there is the potential that the contractor will receive an assessment of inflation twice (over recover), once with the ICE and again when the periodic price adjustment is applied. Again, the application developed by CRL provides this calculation for the user in accordance with the details set out in the NEC3 suite.

## Conclusions

On a project the size and complexity of Crossrail, implementing a centrally administered application controlling the assessment and process of any budgetary requirement has proved invaluable. With thanks to Robert Stockwell, programme cost manager of CRL, and Sue White, BCIS head of indices, for their help preparing this content paper.

## More information

You can subscribe to PAFI on the [RICS website](#).

For more information, contact BCIS executive director **Joe Martin**.



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