

# **Depreciated Replacement Cost – Consistent Methodology?**

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**Key words:** valuation, cost-based, methodology, DRC

## **SUMMARY**

In the UK, Depreciated Replacement Cost (DRC) is a cost-based method of arriving at a value for assets which are normally never exposed to the open market. The DRC value is used primarily as an entry into the balance sheet (financial statements) of occupiers and, in the case of public sector occupiers, as a device for charging the occupier for the benefits of occupation.

It is evident that year-on-year variations in the DRC value has significant financial implications for public sector occupiers and the services they are able to afford to provide. It has therefore been necessary to provide specific guidelines to valuers to ensure that any year-on-year variation in the DRC value is the result of market-based factors and not the result of variation in the valuation methodology.

This paper discusses the issues involved in establishing a more consistent methodology for valuers, including the major topics of land value, costing of buildings, and depreciation in building costs. Recommendations to valuers include comprehensive and continuing discussions with the client and clearly distinguishing DRC from a potential Market Value sale price. Although the details are specific to the UK, the paper raises issues of international application.

# Depreciated Replacement Cost – Consistent Methodology?

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## 1. INTRODUCTION

The use of a cost-based method of valuation is well understood by valuers and appraisers. Such a method is widely used throughout the world, where different market conditions mean that its use is more or less prevalent, for a range of purposes, from the assessment of market value, to values for accounting purposes, the whole of the cost-based concept is currently out for consultation (ISVC, 2006), but this papers reports on research which pre-dates the consultation exercise, and focuses on specific application issues.

In the UK, the use of the cost-based method of Depreciated Replacement Cost (DRC) has evolved so that private and public sector organisations could indicate in their accounts the capital value of specialized assets and, if necessary, be charged for their use, and, in the UK the use of DRC is generally limited to the provision of a capital value of specialized properties<sup>1</sup> for financial statements. Thus, the value produced by the DRC process becomes the base on which the occupier is charged for the use of the premises within the balance sheet, and the level of value, or perhaps more specifically, the consistency year-on-year of the level of value has major implications for the ability of the occupier to manage the business which is run from the premises.

This ability to maintain the funding for the core activity of the occupier is of fundamental concern for public sector occupiers, such as providers of health services and schools, which may be required to cut back on the provision of services to the public if they are required to pay more money to occupy their premises.

This paper outlines the reasons for the research and, in Section 2 the methodology of the Depreciated Replacement Cost is briefly discussed. Section 3 discusses in some detail some of the concerns and the discrepancies highlighted by the initial research. Sections 4 to 7 cover the items within the DRC where there is evidence of inconsistency of treatment (i.e. the land element; assessing the current replacement cost of the building; making deductions to the replacement costs; and methods of write down). Section 8 discusses the DRC calculation in context, Section 8 provides the conclusions.

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<sup>1</sup> Specialized Properties are defined (RICS, 2005, Part 2 Glossary; IVA 1; IVGN 8, 3.2) as: Property that is rarely, if ever, sold in the market, except by way of a sale of the business or entity of which it is part, due to uniqueness arising from its specialized nature and design, its configuration, size, location, or otherwise.

## 1.1 Reasons for the Research

Although DRC is a familiar valuation methodology, recent events within the UK have indicated the need to review its application and to provide guidance to practitioners. These events are discussed below.

### 1.1.1 Fair Value

From 2005, within the European Union, all publicly-quoted companies must publish consolidated financial statements prepared in conformity with the International Financial Reporting Statements (IFRS) and must therefore report “fair value”. It is necessary to alter the International Valuation Standards (IVS) and also those of The Royal Institution of Chartered Surveyors (RICS) accordingly.

“Fair value” is defined in the IVS (IVSC, 2005: glossary, p. 343-4) by reference to the International Accounting Standards, which distinguishes “fair value” from market value in three different scenarios, one of which is: “Fair value may represent the service potential of an asset, i.e. the future economic benefits embodied in the asset in terms of its potential to contribute, directly or indirectly, to the flow of cash and cash equivalents to the entity.”

Thus, “fair value” is not synonymous with “market value”; however there is a recognition that it should be a market-based assessment. The definition cited above recognizes that where the driving concept is “service potential” and if there is no market evidence on which to base a “fair value”, a DRC approach may be used.

It is, however, important to remember that DRC is not intended represent a potential sale price (i.e. a value in exchange) and, within the UK, it should still normally be used only within the context of financial reports.

### 1.1.2 Need for Consistency

While the DRC principle is well understood by valuers, there has been an inconsistency of approach which has resulted in concern amongst client public sector organisations which have found that their ability to budget for their core services has been compromised as a result. There is also a perception that the outcome of a DRC produces an excessive notional ‘rent’.

It may also be that the very familiarity with the DRC methodology means that valuers are not investigating if, in fact, there is a market for such properties in their current state. For example, research undertaken by the PSVG indicated that there may be a market for public sector buildings in some areas, in which case the use of the DRC approach may be inappropriate.

The methodology for a DRC valuation is not covered within the RICS’s Red Book – the Red Book is about standards, not methodology, and in any event, the methodology is well

understood in practice. There are sundry valuation text books which give guidance to the process; however, because there is no strict and definitive methodology, there is plenty of scope for valuers to vary how they use the methodology, for different property types and under a wide range of circumstances.

During 2004, the RICS's Public Sector Valuation Group's (PSVG) survey of valuers to revealed a high degree of inconsistency in the use of the DRC methodology and the areas of greatest concern are discussed in more detail in Section 3. This inconsistency in approach to the methodology means that, comparing one year with the next, a variation in the value of the property may result, not because of shifts in market values, but because of the different approaches to the component parts of the valuation used by valuers. Of particular concern was the variation in approach to the valuation of land (refer Section 4 below), the costing of replacement buildings (refer Section 5 below), the depreciation of the buildings to reflect age and obsolescence (refer Section 6 below) and the degree of involvement of the instructing client (refer Section 1.1.3, below).

Differences in value mean that occupying entities are required to pay different sums for the occupation of their premises and, as a result in the public sector, different amounts are available to provide their core services to the public. This has a major and unnecessary impact on the occupier organisation and also on the quality and range of services available to the public. As a result, the PSVG concluded that clearer guidance to valuers would be appropriate in order to ensure a greater degree of consistency, particular on a change of valuer.

### 1.1.3 Client Involvement

There is also evidence of misunderstanding of the nature and limitations of a DRC valuation by the instructing client entity. It is also clear because of the very occupier-specific details on which the DRC relies that the valuer needs to discuss clearly and in-depth all aspects of the valuation, so that both valuer and client are fully aware of what DRC represents, the assumptions which underpin it and how it is to be used.

A DRC valuation is provided on the basis that it may be adjusted to reflect the future service potential of the building (in the case of public sector properties) or to ensure adequate potential profitability (where the property is held in the private sector). The client must clearly understand that the value is not suitable for use in asset management purposes, for estimating repairs, maintenance or renewal costs, nor is it an anticipated sale price.

## 1.2 The Research

The RICS's PSVG commissioned a team from Kingston University to work with them to review the existing guidance to values, the rules (as documented by the Institution's Valuation and Appraisal Manual – the so-called Red Book), and the actual practice of using DRC, as shown by the responses to the Group's questionnaire.

Accordingly, over the last 18 months, the PSVG and the team from Kingston University have consulted and debated the issues and drafted new guidance on the application of DRC to land and buildings (although not for plant and machinery) and it is intended that this guidance will be issued later in 2006, in the form of a brief Information Paper and an expansive Explanation Paper.

This paper provides some detail as to the issues and the outcome of this work.

## 2. DEPRECIATED REPLACEMENT COST (DRC)

Depreciated Replacement Cost is defined (RICS, 2005: Glossary) as “The current cost of reproduction or replacement of an asset less deductions for physical deterioration and all relevant forms of obsolescence and optimization.”

Thus, DRC is a cost-based method of arriving at a value of land and buildings which relies on the principle of substitution and, in the UK, is used in assessing the value of specialize assets: “property that is rarely, if ever, sold in the market, except by way of sale of the business or entity of which it is part, due to the uniqueness arising from its specialized nature and design, its configuration, size, location, or otherwise.” (RICS, 2005, Part 2, Glossary. See also IVA 1, 2005, 3.4)

Of course, such property may well be sold in the open market, but if such a sale assumes that the property will be redeveloped for a different use, then the sale price does not reflect its worth to the occupier. Thus, valuers are required to establish that there is in fact no open market evidence for such specialized properties before adopting a DRC approach.

In outline, a DRC involves the following:

Cost of constructing the building(s) (including fees)	£		
Plus: Cost of the land (including fees)	£		
Total Costs		£	
Less: Allowance for age and depreciation		£	
Depreciated Replacement Cost			£

It is well recognized that where there is an active and free land and property market, that there is no constant or measurable relationship between the cost of the building and its value. However, where there is no effective market for particular property types, other than for their demolition and a redevelopment of the site, both the British judiciary and British valuers accept that a cost-based approach is the only practical method of arriving at a value.

## 3. DISCREPANCIES WITHIN DRC INTERPRETATION

Research undertaken by the PSVG revealed no common approach to the application and interpretation of the elements of the DRC calculation, thereby fuelling the concern that results would be inconsistent, to the detriment (ultimately) of the public services provided. While

none of the approaches used by valuers may be intrinsically wrong, the issue is the fact that the variety of approaches may produce differing answers, thereby challenging the consistency of methodology and outcome sought. The following outline some of the areas where the research indicated that different approaches were taken by valuers.

### **3.1 Value of the Land**

There was a range of responses to the question of how land value is assessed, with some responses being for the lowest value in the location, the market value in the location and the value for the nearest alternative use on a conservative approach. The guidance to valuers on this issue is provided below in Section 4.

### **3.2 Target Life**

There is a perception that certain types of buildings would have a certain length of target life from new. However, the research indicated that some valuers considered that, if well maintained, buildings could effectively have an indefinite life; other valuers consulted building surveyors for their advice.

### **3.3 Replacement Building**

Rather than a building which provided a similar net useable capacity or a building which could provide a similar service capacity, equivalent size replacement is the norm in UK practice, although there was also evidence of identical replacement (often insisted upon by the client). This is discussed further below at 5.1 and 5.2.

### **3.4 Reflecting Obsolescence**

Despite the well-known straight line, reducing basis and S-curve methods, most valuers applied a judgement deduction, and there was some confusion, with some allowing both functional and operational obsolescence as separate items. This too is discussed below at Section 6.

### **3.5 Valuation Date**

Again, there was confusion between an instant build and a contract period as at the valuation date. This issue is discussed further below (5.5)

### **3.6 Examples**

The questionnaire also provided a number of examples of property types, including a hospital, town hall, school and an embassy. While not all of the respondents provided information on how they would approach DRC valuations for all of these property types, it is clear that there were a variety of views as to the appropriate approach, with some respondents querying whether the town hall should be valued using a DRC methodology at all. Some

respondents suggested that the embassy could be valued to market value based on market transactional evidence, with some uplift in the value to reflect the adaptations.

#### **4. VALUING THE LAND ELEMENT**

It is generally assumed that the entire land on which the building stands is valued for the purposes of a DRC, based on market evidence and recognizing any constraints imposed by the existing buildings. However, this may not necessarily be the case.

##### **4.1 Surplus Land**

In certain cases, an organisation may hold more land than the operation and/or building requires. Thus, where part of the site may be sold, without adversely affecting the existing use, such land may be considered as surplus to requirements and valued according to its market value for sale (RICS, Appendix 3.1, 2.1.1). A similar conclusion may be reached for land which is held for the future physical expansion of the organisation but such a conclusion should be agreed with the client beforehand.

##### **4.2 Assumptions Relating to the Use of the Land**

The valuer should assume planning permission for the actual use of the land and buildings. If a market value can not be established for such a use based on the evidence of market transactions for such a use, then the value of the land should be based on the market values of the prevailing uses in the vicinity.

There is likely to be a problem in valuing a building for which there is no general demand or market. Thus, valuers are advised to reflect the benefit of planning permission assuming the development for a use or a range of uses prevailing in the vicinity of the actual site, and only if there is a reasonable expectation that such planning permission would be granted in the absence of the specialized use. (*ibid*, 2.1.4)

##### **4.3 Assuming a Notional Replacement Site.**

In the absence of better evidence, or where the building exists on a site of exceptionally high value, it may be appropriate for the valuer to assume a notional replacement site, within the same locality and which is equally suitable for the existing use or the provision of the service to its existing customer-base. Such a site may be smaller than the existing site (assuming that modern substitute buildings which would provide a similar service require a smaller site), and may be in a different, lower value location. However, both the client and the valuer must be satisfied that the notional replacement site is equally convenient for the purposes for which the property is used and for the services delivered. (*ibid.*, 2.16.) Such an approach is particularly appropriate where historically city centre locations were preferred for such uses as prisons and hospitals, but where modern trends are to locate such uses on peripheral sites, perhaps where transport links and car parking provisions are improved.

Thus, the normal principle adopted is that of valuing the actual site on which the building is located, assuming the existing use; and where market evidence is available to support such a valuation, this poses few problems. However, if the building is constructed in an area of exceptionally high land values, then the principle of substitution may be applied and, within the DRC methodology, the valuer assumes that the owner of the building will purchase a cheaper (but equally convenient) site and rebuild the accommodation elsewhere.

## **5. ASSESSING THE CURRENT REPLACEMENT COST OF THE BUILDING**

The general principle is that the value should price a gross replacement cost of a modern substitute building with the same service capacity of the building which is being valued, but assuming modern design, materials, technology and current regulations. Such a building should be assumed to have the design and be constructed of materials appropriate with the activity undertaken in and the service offered by the original building.

### **5.1 Costing the Actual Building**

The general principle may be varied for three situations. Thus, where the building is considered to be adequate in functional, technological and design terms for the purposes of the enterprise and where the building is newly completed, it should be possible to cost an exact replacement.

### **5.2 Protected Historic Buildings**

Where the building itself is of historical significance, (particularly where current regulations are in force to protect the building from alteration or damage), it may be necessary to cost an exact replacement. However, it is for the occupier-client to agree that, in the event of replacing the structure, an exact replacement would in fact be provided. In reality, the occupiers of protected specialized buildings may not reconstruct an exact replacement, but may instead demand a building of 'landmark' quality, in which case such a high quality building should be costed. However, it is only in the wholly and exceptional case where the nature of the building itself makes a vital contribution to the service offered is it appropriate to cost a direct replacement and the client occupier should agree to this approach.

### **5.3 Building Costs**

Where the building is a generic replacement, it is normal and acceptable practice to use standard published building cost data. Where the building is complex and where, exceptionally, an exact replica is to be costed, the valuer may need to consult building costs experts.

It may be that the instructing client has access to relevant building costs, particularly if the client is undertaking or has recently undertaken a programme of construction.



## 5.4 Fees

Fees included should relate only to the costs associated with the hypothetical procurement of the building and an allowance for VAT made only where this is not recoverable. No allowance should be made for developer's profit, consistent with the principle that it is the owner-occupier who would build.

## 5.5 Date of Construction Costs

The valuation date is the date agreed with the client, and at which it is to be assumed that the modern substitute building would be complete and available for use. However, this could assume that the land was purchased some years before, so that notional construction and other necessary works are assumed to have been undertaken to secure a completed building as at the valuation date. Such a scenario means that the date for valuing the land could be some two or three years in advance of the date at which the client is seeking the valuation; and that the costs of construction, finance, fees and other necessary costs would need to be varied to reflect such vagaries as the movement of the finance market, and the terms of the hypothetical contract under which the building had been procured. Such uncertainties, it is argued, add further to the potential for inaccuracies and should be avoided.

However, the assumption of an instant building is illogical; yet it does provide a clear date for costings, and aligns the valuations of both the land and the replacement building to the same date.

The opinion of the PSVG is that the land and the buildings should be valued as at the same date, thus, assuming an instant build. Thus, the PSVG came to something of a compromise situation, but it is one which avoids the difficulties of backdating costs during what could be a long assumed construction period.

## 6. DEDUCTIONS TO THE REPLACEMENT COST

Recognising that the buildings which are to be valued using a DRC approach are unlikely to be newly constructed, an allowance is made from the "as new" costs. This allowance reflects the effects of age, obsolescence on the building and the efficiency of use and thus on value. The extent to which age (as a matter of principle) can depreciate the value of a building is a debateable point; however, allowances for obsolescence (which to some extent will reflect elements of age) are more clearly identified.

Baum (1991) categorises depreciation thus:

- incurable – in which no amount of capital investment can rectify the position (for example, building structural flexibility); and
- curable – where capital investment can bring the building to a state in which the degree of obsolescence is mitigated (e.g. standards of finishes and services).

Depreciation which is caused by curable obsolescence should be reflected in the estimated future life of the building, as future investment or ‘retro-fitting’ could extend the life of the building. However, obsolescence is, intrinsically, unpredictable and the period of time between revaluations of the property may see significant changes in the level of both obsolescence and depreciation.

Allowances for depreciation are normally made for physical obsolescence, functional obsolescence and economic obsolescence.

### **6.1 Physical Obsolescence**

Physical obsolescence reflects the “wear and tear over the years, which might be combined with a lack of maintenance.” (RICS, 2005, Appendix 3.1, 2.3.1). It is recommended that the valuer compare the reduction in value of buildings of a similar age for which there is a market with new buildings in that same market. Thus, physical depreciation is not viewed in absolute terms, but within a context.

### **6.2 Functional Obsolescence**

This reflects the advances in technology which allow for a more efficient delivery of services and goods from a building of different designs and specifications. Similarly, changes in legislative or regulatory requirements may affect the ability of a building to perform appropriately. As well as affecting the design and specification, such changes may affect the actual size of the building, requiring the valuer to cost a larger or smaller structure.

Thus, the valuer needs to establish with the occupier client, the extent to which the building’s disabilities and the disabilities caused by economic factors affect the efficient use of the building by the occupier.

### **6.3 Economic Obsolescence**

Economic obsolescence results from “the impact of changing external macro- and micro-economic conditions on the property” and should not include internal factors which affect the profitability of the occupying business, the writing down of such factors to reflect the profitability of the business being a matter for the occupier.

Within economic obsolescence, the prospect of extending the life of the building by capital investment should be considered, as well as the fact that lack of maintenance can accelerate the rate of depreciation.

## **7. METHODS OF WRITE DOWN**

Depreciation should be allowed on a systematic and consistent basis, using market evidence as far as this is possible. However, it is recognised that this is very much a matter of valuer judgement. Valuers should estimate rates of depreciation, and the remaining economic life for

existing buildings and other improvements, “by a process of market observation” and “in comparison with new or recent replacement buildings and other improvements” (IVGN 8 (2005, 5.7) and based on their observations of market transactions. Thus, valuers should take a reflective approach to weigh up the evidence presented by both the building and its context.

There are three main methods of writing down for depreciation: straight line; reducing balance and the S-curve.

### **7.1 Straight Line**

The straight line basis is the most commonly adopted method for calculating depreciation because of its transparency and relative ease of application and calculation (RICS, 2003: 35-6). It involves using the remaining economic life, over the original economic life ratio and applying this to the current cost of the replacement of the new asset: thus:

Depreciation Cost of Buildings = Gross replacement cost \* (Estimated remaining life/Estimated total life)

This approach is criticised as being very simplistic, because it is based on the assumption that the value of the asset erodes evenly over time. Clearly the formula is correct at two points, the very beginning and the very end of the economic life of the building, but there is no evidence that it is correct at any intermediate point – which is when a valuation is required.

### **7.2 Reducing Balance**

The reducing balance basis of depreciation assumes a constant percentage rate of depreciation, albeit from a reducing base. The general application of the reducing balance basis to buildings, whereby the asset value is reduced by a fixed proportion of itself results in a sagging depreciation value curve over the total useful economic life of the asset, which is arguable more appropriate with reasonable expectations of declining value over time than the straight line method. However, this method can be criticised as being unrealistic because it assumes a constant percentage rate of depreciation, despite the reducing base.

### **7.3 S-Curve**

The method reflects depreciation in a building by relating the estimated unexpired useful life to the total useful life. The expiry time is used as a yardstick for measuring the ‘wearing away’ of value over the life of the building. The S-curve represents the way in which buildings depreciate because it provides an age/life solution to quantifying depreciation and is based on empirical research (refer, for example, Connellan, 1997: 215-225). Whereas straight-line depreciation uses a simplistic age/life fraction applied to asset value, the S-curve method approaches the problem in terms of depreciating its rental value over the life of the building and capitalising that rent at the valuation date at an appropriate investment yield for the unexpired useful life.

The valuer should recognise that the choice of write-down method has a significant effect on the resulting valuation and an appropriate method should be chosen in the light of the outcome and the client informed accordingly.

## **8. DRC IN CONTEXT**

Traditionally within a cost-based valuation, there is a stage at which the valuer considers whether in fact the application of costs has produced a realistic value for the property. Such a “stand back and look” stage reflects the effectiveness of the translation of costs into value, the appliance of an appropriate depreciation method, and the context within which the valuation is provided. The valuer is expected to discuss the reasonableness or otherwise of the resultant figure with the client occupier.

## **9. CONCLUSIONS**

While the DRC methodology is well understood by valuers, there has been an inconsistency of approach which has resulted in concern amongst client public sector organisations which have found that their ability to budget for their core services has been compromised as a result.

There has also been evidence that some client occupiers have assumed that the “value” produced using a DRC methodology is equivalent to a sale price and reconsidered their need for the property in the light of what should have been recognised as a value in occupation rather than a value in exchange. This too has caused occupiers unnecessary concern.

In addition to the revised need to provide a “fair value” and the recognition that, under certain circumstances, a DRC methodology can be used to produce a “fair value”, these circumstances have prompted the RICS Public Sector Valuation Group, in conjunction with Kingston University, to research a more definitive set of guidelines for valuers.

There is no intention to remove from valuers the freedom to reflect all necessary aspects of value within the DRC – indeed, to do so would be totally inappropriate. However, having identified the major areas of discrepancy – the value of the land; the costing of the buildings; the deductions for age and obsolescence; and the method of write down – the research has produced the guidelines outlined in this paper which are intended to help the valuer and the client steer a middle line between prescribing the method in detail (and thereby ensuring total consistency of use and outcome) and allowing complete freedom over all assumptions which has, in the past, led to inconsistent valuations.

The proposals bring the DRC process closer to the real world. It is likely, for example, that if a 19<sup>th</sup> century city centre hospital were to be replaced, the city centre site would be sold for a commercial use and the hospital re-located in a site which is in a cheaper peripheral location, allowing improved vehicular (both private and public) access and parking, but still serving the sale general area. The use of notional replacement site guides the valuers towards a more commercial awareness and a consistency of approach.

Similarly, there was evidence from the research that even occupiers of protected buildings which are of international renown would be prepared to replace an identical structure should they be deprived of their buildings. Indeed, it has been hard to provide an example of such a building whose owner would be prepared to provide an identical replacement. Again, this reflects the reality of how such an occupier would deal with a potential replacement situation.

Not all of the proposals are entirely logical, however. For example, the use of the valuation date as the date at which the land is valued and also the date at which the building is assumed to be both procured and completed is not reflected in reality, and can be justified only as being 'the lesser of two evils' when compared to the variability of the potential alternative, which is to backdate the assumed purchase of the land, the procurement process, and the funding of the construction etc..

Underlying the DRC valuation process is the assumption that the market can provide some information, which will support the valuer, such as the market value of land and the costs of construction. This allows the DRC valuation to be market-based, even if it does not produce a market value – this is well understood by valuers. However, the research recommends that valuers and clients work closely together during the valuation process. Valuers need to understand as much as possible about the client organisation which can inform the valuation, such as its occupational needs in relation to how well they are fulfilled by the building and the location; any relevant or emerging changes in the policy of the client organisation which will affect the role of the building within the client's service provision; whether there is any construction or other market data which the client organisation may have and which may be relevant to the DRC.

Clients need to have confidence that their occupational needs are fully and appropriately reflected within the DRC, as well as understanding clearly the significance of a DRC value – that it is a value in use not a value in exchange.

It is with the intention of improving the service which valuers provide to their clients that this work has been provided to the profession.

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