Information note 5: Estimating repair costs

On 5th May 2006 the responsibilities of the Office of the Deputy Prime Minister (ODPM) transferred to the Department for Communities and Local Government.

Department for Communities and Local Government
Eland House
Bressenden Place
London SW1E 5DU
Telephone: 020 7944 4400
Website: www.communities.gov.uk

This publication is only available online via the Communities and Local Government website: www.communities.gov.uk

Alternative formats under Disability Discrimination Act (DDA):if you require this publication in an alternative format please email alternativeformats@communities.gsi.gov.uk

Contents

1. Introduction

1.1 This note describes the methodology used to derive estimated repair costs from information provided principally by the surveyors in the Physical Survey on the state of repair, size and type of construction of each dwelling in the survey.

2. Calculating base repair costs

2.1 The EHCS uses 4 types of information to calculate base repair costs:

- Surveyors' assessments of the type of repair needed and its extent (see Appendix A for details).
- The surveyors' description, for external items, of the materials from which the element is constructed.
- Building dimensions and configuration derived from surveyors' measurements and observations.
- Unit prices for different types of job from the 1996 National Schedule of Rates (NSR).

2.2 The surveyor makes the assessment element by element usually surveying the interior first and then the exterior of the dwelling. Internally an assessment of a sample of representative rooms is made - three living rooms plus hall and kitchen and bathroom. The work identified as needed in the sample of rooms is scaled up to reflect the total number of rooms in the dwelling. All the internal facilities and services are surveyed individually.

2.3 For the common areas in blocks of flats surveyors select only part of the common areas to survey and these are taken as representative of the whole of the common areas and scaled up accordingly.

2.4 Externally the surveyor considers each element in turn looking at the building from 2 vantage points (views) which between them encompasses the whole building.

2.5 Surveyors' assessments are based on the following assumptions and instructions:

- dwellings have an indefinite life;
- surveyors to treat work as a programme of actions stretching into the future. Where replacement of elements or major work can be delayed by immediate less drastic repairs, this is to be done;
- to repair rather than replace unless:

    - o this is impossible;
    - o it means that the element will still need replacing within 5 years;
    - o the element needs replacing for other reasons eg element is unsuitable for intended purpose.

- standard of work should result in element being fully functional without any question of modernisation, upgrading or purely cosmetic improvements;
- not to employ economies of scale when deciding on how much of an element to treat.

2.6 The surveyor describes how much work is needed by assessing:

- the proportion of elements needing work from areas;
- the number of units needing work for elements that can be treated as individual entities, eg doors, windows, baths;
- linear metres of work to elements not measurable by area.

2.7 For the last two the quantity given is multiplied by the unit cost for doing the job specified. For the elements where the work is specified as a proportion this is first converted to a quantity from the dimensions taken of the dwelling/building and then the quantity is multiplied by the cost/sqm for the type of work specified. In all cases it is assumed that a like for like replacement is undertaken and the costs selected reflect the materials from which the element is currently constructed, eg a slate roof is always replaced with a slate roof.

2.8 The cost calculated is for the individual dwelling so in the case of flats, the cost of works to the common areas and exterior, recorded for the whole building, is divided by the number of flats and this added on to the interior, amenities and services costs for the individual dwelling. If the work recommended by the surveyor to any element exceeds the cost of totally replacing that element, the latter is used as the cost.

3. Dealing with missing data

3.1 The cases included in the physical survey data base are primarily those for which a full survey was conducted. But even where the form was completed fully the surveyor may have omitted to provide some information needed for the assessment of disrepair.

3.2 Imputation to deal with this missing data is carried out in a 4 stage process as below:

a. Dwelling dimensions

Dimensions may be implausible or simply missing. For flats there can be inconsistencies between the size of the module surveyed and the number of dwellings reported in the module. Where possible, errors are identified and corrected by cross correlating data from different parts of the survey schedule and checking against the distribution of dimensions of dwellings of similar type. If this process does not produce an acceptable result, the dimensions are set to the average dimensions for dwellings of that type and age.

b. Missing components of an element within a single view

For example, a roof might be recorded as 5/10th pitched and 5/10th flat but only the work required to the pitched part has been filled in. Here it is assumed that the proportion in need of treatment in the component with no data is the same as that in the components with data.

c. Missing views within an element

This is where an element (eg roof covering) has data in one view, but missing data in the other view. The missing view is treated as needing the same proportion of work as the observed view.

d. Whole missing elements

If work to an entire element (eg windows) is missing, the repair costs for the element is estimated by averaging over those elements for which data is available.

Dwellings which lack repair costs after stage 4 are not used in analysis.

4. Add-ons, uplifts, prelims and modifications to base costs

4.1 In addition to the base costs described above there are more complex factors to account for in calculating realistic repair cost measures. These are:

- preliminaries required before the work can commence;
- access equipment such as scaffolding to get safely to where the work is needed;
- corrections to model the economies of scale.

4.2 In practice the price that is paid for a job to be done will vary in relation to the scale of the contract under which the work is carried out and also the region in which the work is undertaken. In terms of scale, the cost of any one job will depend on how much more work is being done to the dwelling at that time, or whether the work is being carried out to more than one dwelling. For example re-roofing a house in a contract of 50 similar jobs will cost less than if it is done as a one-off. Prices paid vary depending on the region of England and regional price factors are included in the cost model.

How all the cost components are put together depends on how the repair costs are being used. Two measures are constructed for the survey.

5. The two types of cost measure

5.1 Information about repair costs is used for 2 basic purposes:

- a measure of the extent of disrepair so we can investigate whether parts of the stock tend to be in better or worse state of repair than others - standardised costs
- a measure of how much it would cost to carry out the specified work to the dwelling to give some idea of the likely level of investment needed - required expenditure.

5.2 These 2 different cost measures are constructed as follows:

Standardised costs

these are costs in £ per square metre (£/sqm) based on prices for the East Midlands region. It is assumed that all work is undertaken by contractors on a block contract basis. The size of the contract is assumed to be five dwellings.

Required expenditure

these are total costs per dwelling in £ and represent the best estimate of what the specified work would actually cost. These costs take into account regional variations in prices and assume different project sizes for work to houses in different tenures. In the owner occupied and private rented sectors, the contract size for work to houses is taken as one. In the social rented sector, the contract size is taken as 5 unless the house is marked as not on an estate and it is assumed to be a street property with a contract size of one. For flats, the contract size for exterior works is the size of the block regardless of tenure. In all cases it is assumed that the work is carried out by a building contractor who pays due regard to health and safety regulations. These costs should not be used for assessing differences in condition between different tenures or dwelling types as they vary according to dwelling size, tenure and location.

6. Urgent repairs, repairs and replacements and comprehensive repairs

6.1 The extent of the work required in a given timescale depends on the assumptions made by the surveyor about the timing of that work as repair costs are presented with reference to three different time frames.

Urgent repairs

6.2 Where surveyors had recorded that work was needed to an exterior building element, they indicated whether work specified was urgent; defined as works needed to remove threats to the health, safety, security and comfort of the occupants and to forestall further rapid deterioration of the building. This is a measure of serious and immediate problems in the dwelling and includes all interior work.

Repairs and replacements

6.3 All works identified by the surveyor as needing to be done within 5 years, including any urgent work as described above. These do not include replacement of building elements nearing the end of their life where the surveyor recorded that this action could be delayed by more than 5 years, often by short term patch repairs.

Comprehensive repair

6.4 This includes all repairs as specified above together with any replacements the surveyor has assessed as being needed in the next 10 years. Replacement periods are only defined for external elements and are given whether or not any repair work has been identified as needed. The replacement period is given as the number of years before the element needs replacing either following specified repair work or simply as the remaining life expectancy. This measure provides a better basis for identifying work which would form part of a planned programme of repair by landlords.

7. Distributions and average values

7.1 The distributions of any repair cost variables are not statistically normal (Gaussian) and correspond more closely to a log-normal distribution .

7.2 There are a large proportion of cases with zero or very low costs and a very small number with very high costs. The effect of this is that the 'average', as represented by the mean, is closer to the 75th percentile than the median . The mean values can be used, together with the number of dwellings to give some idea of the total repair bill for a group of dwellings but they do not represent the 'typical' case for that group of dwellings. This typical case is best represented by the median value.

8. Indexing of standardised costs

8.1Absolute comparisons between the outputs from the 1991 and 1996 cost models are not possible because surveyors specified less work for a given fault in 1996 than in 1991 (see Appendix B, para. B.26). Change is therefore measured by using relative shifts which look at how the distribution of disrepair has changed between 1991-96. To do this, the distributions are indexed taking the median point as 100 and seeing how the medians in sub-groups compare with this. For example: The mean standardised repair cost for all households in 1991 is £15.48, for those in local authority homes it is £14.65 creating an index of 14.65/15.48*100=95 for this tenure in 1991. In 1996 the mean for all households is £15.86, for those in local authority homes it is £16.51 creating an index of £16.51/15.86*100=104.

8.2As the index for the households in local authority stock has increased from 95 in 1991 to 104 in 1996 this suggests a small deterioration in their position relative to other tenures. It may not in fact have deteriorated in real terms at all as other tenures may simply have improved - it is the fact that other tenures have apparently improved. Indices are calculated in the same way using the median and upper quartile to establish whether conclusions derived from using the mean value hold across the distribution.

9. Sampling errors

9.1 The EHCS main report and supporting tables provides estimates of required expenditure for the stock as a whole or groups of dwellings. Table 1 at Appendix B provides estimates of the 95% confidence intervals for a variety of sub-sample sizes and disrepair costs have been made. For any population the range of repair costs is very large, eg ranging from £0 to several thousand £'s, therefore any average calculated has associated with it a relatively wide margin of error (the standard deviation of the disrepair is between one and two times the mean disrepair). These estimates are set out in the following table which shows, for example, that for an estimated repair cost of £1000 and a sample size of 1000, the true mean lies between £905 and £1095 with 95% confidence.

Appendix A

Types of work included in and excluded from repair costs

Included:

All work to the external fabric of the building: chimneys, roof, roof and soil drainage, windows, doors, dormers, bays, porches, balconies, damp proof course, treatment of inappropriate gradients/levels of ground adjacent to the dwelling.

Additional work to deal with structural instability: e.g. underpinning, tieing in of walls, treatment of fungal or insect infestation, replacement of cavity wall ties etc.

Work to the internal fabric: ceilings, floors, partitions and internal wall surfaces, internal doors and stairs.

Work to amenities and services inside the dwelling: kitchen, bathroom, WC, electrical wiring, plumbing, gas pipes, heating and water heating.

Work to common areas and access ways in flat blocks: floors, walls ceilings, doors, screens, windows, lighting and balustrades.

Work to shared facilities on estates and plant enclosures: all stores and common rooms, communal parking facilities, surfaces and fences and common services.

Work to fences and boundary walls

Excluded

Work to underground drainage

Hidden work to structure or foundations

Work to plant associated with shared facilities e.g. lift motors, communal boilers, washing machines in laundry rooms etc.

Improvement or upgrading work to bring facilities up to a higher standard.

Appendix B

Table 1: Two standard errors(£) for estimated mean repair costs

				Mean Repair Cost £			
Number of cases in sub- sample	100	250	500	1,000	2,000	5,000	10,000
100	30	75	150	300	600	1,500	3,000
250	19	47	95	190	379	949	1,897
500	13	34	67	134	268	671	1,342
1,000	9	24	47	95	190	474	949
2,500	6	15	30	60	120	300	600
5,000	4	11	21	42	85	212	424
10,000	3	8	15	30	60	150	300