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ENGLISH HOUSING SURVEY

English Housing Survey

Technical Advice Note

Housing and Neighbourhood Conditions: 2011-12 Update

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Contents

Introduction

1. This is one of a series of Technical Advice Notes to give users further information about how English Housing Survey (EHS) data are collected and quality assured and how some of the key derived variables are created. This note describes how some of the more complex measures about the housing stock and the surrounding neighbourhood are derived.

2. The EHS collects very detailed information about the overall condition and quality of the housing stock using a detailed physical inspection by trained surveyors. A number of the simpler measures and indicators e.g. presence of damp problems, age of kitchen etc. are either self-explanatory or covered in the glossary to the main reports. This note focuses on measures that are more complex to define and/or model:

   - the Housing Health and Safety Rating System
   - decent homes
   - disrepair
   - accessibility
   - poor quality environments

3. Measures related to energy efficiency, carbon emissions and energy improvements are covered in a separate note.

Housing Health and Safety Rating System

4. This section presents an overview of the Housing Health and Safety Rating System (HHSRS) and how the various hazards are measured and modelled using data from the EHS. It is divided into 3 sections:

   - what is the HHSRS?
   - how does the EHS measure and model Category 1 hazards?
   - data quality and reliability

What is the HHSRS?

5. The HHSRS is the government's evidence based risk assessment procedure for residential properties. It replaced the Housing Fitness Regime on the 6 April 2006 in England. The HHSRS also replaces the Fitness Standard as an element of the Decent Homes Standard. The HHSRS is a means of identifying defects in dwellings and of evaluating

the potential effect of any defects on the health and safety of occupants, visitors, neighbours and passers-by. The system provides a means of rating the seriousness of any hazard so that it is possible to differentiate between minor hazards and those where there is an imminent threat of major harm or even death. The emphasis is placed on the potential effect of any defects on the health and safety of occupants, visitors, and particularly vulnerable people. Altogether 29 hazards are included (Table 1).

Table 1: The 29 hazards covered by HHSRS

Physiological requirements

- dampness and mould growth
- excess cold
- excess heat
- asbestos (and MMF)
- biocides
- carbon monoxide and fuel combustion products
- lead
- radiation
- uncombusted fuel gas
- volatile organic compounds

Psychological requirements

- crowding and space
- entry by intruders
- lighting
- noise

Protection against infection

- domestic hygiene, pests and refuse
- food safety
- personal hygiene, sanitation and drainage
- water supply

Protection against accidents

- falls associated with baths etc
- falling on level surfaces
- falling on stairs etc
- falling between levels
- electrical safety
- fire
- flames, hot surfaces etc
- collision and entrapment
- explosions
- position and operability of amenities etc
- structural collapse and falling elements

6. The HHSRS scoring procedure uses a formula to generate a numerical hazard score for each of the hazards identified at the property – the higher the score, the greater the severity of that hazard. Potential hazards are assessed in relation to the most vulnerable class of person who might typically occupy or visit the dwelling. For example, for falls on stairs and falls on the level, the vulnerable group is defined as persons over 60 years, and for falls between levels it is children under 5 years old.

7. The hazard score formula requires the HHSRS inspector to make two judgements.

    - the likelihood of an occurrence which could result in harm to a vulnerable person over the following 12 months. The likelihood is to be given as a ratio – e.g., 1 in 100, 1 in 500, etc.

- the likely health outcomes or harms which would result from the occurrence. From any occurrence there may be a most likely outcome, and other possible ones which may be more or less severe. For example, a fall from a second floor window could result in a 60% chance of a severe concussion, but there may also be a 30% chance of a more serious injury and a 10% chance of something less serious. The 4 classes of harms and the weightings given to them are listed in Table 2.

Table 2: Classes of harms and weightings used in the HHSRS

Class	Examples	Weightings
Class I	Death, permanent paralysis below the neck, malignant lung tumour, regular severe pneumonia, permanent loss of consciousness, and 80% burn injuries.	10,000
Class II	Chronic confusion, mild strokes, regular severe fever, loss of a hand or foot, serious fractures, very serious burns and loss of consciousness for days.	1,000
Class III	Chronic severe stress, mild heart attack, regular and persistent dermatitis, malignant but treatable skin cancer, loss of a finger, fractured skull, severe concussion, serious puncture wounds to head or body, severe burns to hands, serious strain or sprain injuries and regular and severe migraine.	300
Class IV	Occasional severe discomfort, chronic or regular skin irritation, benign tumours, occasional mild pneumonia, a broken finger, sprained hip, slight concussion, moderate cuts to face or body, severe bruising to body, 10% burns and regular serious coughs or colds.	10

8. From the judgements made by the HHSRS inspector, a hazard score can be generated for each hazard as illustrated below:

Class of Harm Weighting			Likelihood 1 in		Spread of Harm (%)		
I	10,000	÷	100	X	0	=	0
II	1,000	÷	100	X	10	=	100
III	300	÷	100	X	30	=	90
IV	10	÷	100	X	60	=	6
				Hazard Score		=	196

9. To provide a simple means for handling and comparing the potentially wide range of scores and avoid placing too much emphasis on the exact numbers, a series of ten hazard score bands have been devised as shown below. Bands A, B, and C are the most serious and grouped together as presenting a Category 1 hazard; local authorities have a statutory duty to consider some form of action where these are present.

Band	Equivalent Hazard Scores
A	5,000 or more
B	2,000 – 4,999
C	1,000 –1,999
D	500 – 999
E	200 – 499
F	100 – 199
G	50 – 99
H	20 – 49
I	10 – 19
J	9 or less

10. DCLG, and others, have published a number of guidance documents for HHSRS practitioners and private landlords. For guidance published by DCLG see: http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/housing/pdf/142631.pdf

How does EHS measure and model Category 1 hazards?

11. The EHS is a multi-purpose national stock condition survey. Surveyors are required to collect a wide range of information in what is a relatively short and non-intrusive property inspection. The survey cannot therefore replicate in full the HHSRS assessment that would be carried out by a local authority environmental health practitioner. The approach used has been developed by the Building Research Establishment working in close co-operation with experts from the University of Warwick who were involved in the development of the HHSRS methodology.

12. Of the 29 HHSRS hazards only three (which occur very rarely in the stock) are not assessed by the EHS. These are asbestos (and manufactured mineral fibres), biocides and volatile organic compounds.

13. The EHS uses three different methods to assess whether any of the 26 Category 1 hazards exist in dwellings:

- 10 hazards fully measured as part of the physical survey for the most common types of hazards. The surveyor first assesses whether the risks presented for each of these 10 hazards are significantly worse than average for the age and type of dwelling concerned. If this is the case, they then score both a likelihood of an incident occurring and the expected range of outcomes. An actual HHSRS score is not computed in the field but where risks are assessed as significantly worse than average surveyors obtain this score later during validation of their survey data prior to submission.
- 12 hazards flagged only when an ‘extreme’ risk is found as part of the physical survey. This approach is used for some of the rarer hazards where surveyors are instructed that ‘extreme risk’ equates to a Category 1 hazard.
- 4 hazards modelled post fieldwork from other data collected on the physical survey form. This approach is used where the surveyor is less able to directly assess the risk from these hazards (see Table 4).

14. Table 3 below shows how information on each hazard is collected. In making their HHSRS assessments surveyors are instructed to ignore the current occupancy and assume a member of the group most vulnerable to the particular hazard occupies the property. A worked example is attached at Annex A.

Table 3: Summary of how EHS collects and models information about HHSRS hazards

Hazard	How assessed	Average HHSRS score	Specified vulnerable age group
Excess cold*	Modelled	926	Age 65 or over
Falling on level surfaces*	Fully measured	181	Age 60 or over
Falling on stairs etc*	Fully measured	134	Age 60 or over
Radiation*	Modelled	91	None
Collision and entrapment	Fully measured	57	Age under 5
Flames, hot surfaces etc*	Fully measured	42	Age under 5
Crowding and space*	Modelled	19	None
Fire*	Fully measured	17	Age 60 or over
Dampness and mould growth*	Fully measured	11	Age under 14
Entry by intruders	Fully measured	11	None
Falls associated with baths	Fully measured	7	Age 60 or over
Noise*	Fully measured	6	None
Falling between levels*	Fully measured	4	Age under 5
Food safety	Flagged if an extreme risk	2	None
Electrical safety*	Flagged if an extreme risk	2	Age under 5
Carbon monoxide and fuel combustion products*	Flagged if an extreme risk	1	Age 65 or over
Personal hygiene, sanitation and drainage*.	Flagged if an extreme risk	1	Age under 5
Explosions	Flagged if an extreme risk	1	None
Position and operability of amenities etc	Flagged if an extreme risk	1	Age 60 or over
Structural collapse and falling elements	Flagged if an extreme risk	1	None
Excess heat	Flagged if an extreme risk	0	Age 65 or over
Asbestos (and MMF)	Not assessed	0	None
Biocides	Not assessed	0	None
Lead*	Modelled	0	Age under 3
Uncombusted fuel gas	Flagged if an extreme risk	0	None
Volatile organic compounds	Not assessed	0	None
Lighting	Flagged if an extreme risk	0	None
Domestic hygiene pests and refuse.*	Flagged if an extreme risk	0	None
Water supply	Flagged if an extreme risk	0	None

Notes:

1) average scores are for all dwellings and taken from Version 2 of the HHSRS guidance. The averages have been calculated for the age range of the population most vulnerable to each type of hazard.

2) the 15 hazards which were scored or modelled for 2006 and 2007 are identified by an asterisk. This group is still used in the current reporting of the 'Decent Homes' HHSRS criterion.

15. In the 2006 and 2007 English House Condition Survey (EHCS), fewer hazards were fully scored and some of the hazards that are now measured or flagged were modelled using other data (see the EHCS technical report from 2007 for full details:

http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/housing/pdf/1617931.pdf).

16. From 2008, reporting of HHSRS covers all of the 26 hazards covered by EHS. The 2006 and 2007 EHCS reports included just 15 hazards (as the survey collected data on fewer hazards at this time), so figures are not strictly comparable. Reporting on decent homes (see decent homes section later in this note), continues to use the 'old' (15 hazards) version of HHSRS for continuity over time.

17. Table 4 summarises the assumptions and data used for the 4 hazards that are modelled from other data.

Table 4: Methods used to model HHSRS hazards using EHS data

Hazard	Category 1 hazard defined as:
Excess Cold	The methodology for modelling excess cold was changed in 2010 following changes to the Standard Assessment Procedure[1] (SAP) methodology (from SAP05 to SAP09). Under the SAP05 methodology a 'threshold value' of 31.49 (equivalent to SAP 35 under the 2001 methodology) was calculated and all dwellings with a rating less than this were categorised as posing a Category 1 excess cold hazard. This SAP01 threshold was originally based on modelling carried out by BRE based on the likelihood of a retired household on means-tested benefits being in fuel poverty. A specific value of SAP05 does not equate to a specific value of SAP09, so an 'equivalent' value of SAP09 was derived (35.79) that ensured that the number and % of dwellings failing on excess cold would be the same under both the SAP05 and SAP09 methodology for the 2010 data set.
Radiation	The dwelling is located in one of the critical 16 post code sectors, based on a radon exposure map of England AND the dwelling was built before 1980.
Lead	The dwelling is located in one of 4 post codes with very soft water (based on the drinking water quality map of England) AND built before 1945 AND with lead piping present either before or after the mains stop cock.
Crowding and space	The occupants per habitable room ratio is calculated. If this exceeds 2 the dwelling has a category 1 hazard regardless of size. If it is equal to 2 and the number of habitable rooms is 2 or more the dwelling also has category 1 hazard.

Data quality and reliability

18. Surveyors working on the EHS have received extensive training and support to help ensure their HHSRS assessments are consistent and robust. This includes residential training involving classroom and field exercises together with e-learning exercises. Refresher programmes are provided annually, together with manuals providing benchmark examples for reference when making their judgements. New surveyors are accompanied in the field and there is on-going close supervision throughout fieldwork. Calibration exercises are being implemented to monitor variability in surveyors' HHSRS assessments over time.

19. While these measures ensure a good level of consistency in judgements, some surveyor variability is to be expected. The EHS

[1] This is the Government's standard procedure for Energy Rating of dwellings.

approach to the HHSRS provides surveyors with a systematic approach with which to make these judgements.

Decent homes

20. This section gives a detailed definition of the four criteria that a dwelling is required to meet to be considered 'decent' under the Decent Homes Standard, and explains how they are applied to the EHS data. A dwelling must meet all of the four criteria listed below to be classed as decent:

A) it meets the current statutory minimum standard for housing
B) it is in a reasonable state of repair
C) it provides reasonably modern facilities and services
D) it provides a reasonable degree of thermal comfort

Criterion A: the dwelling meets the current statutory minimum standard for housing

21. The current statutory minimum standard for housing is the HHSRS. To be decent, the dwelling must be free from Category 1 hazards (see previous section).

Applying the criterion in the EHS

22. The presence of Category 1 hazards is assessed as described in the previous section. For this criterion only the 15 hazards which have been assessed since 2006 are included to ensure consistency over time.

Criterion B: the dwelling is in a reasonable state of repair

23. A dwelling satisfies this criterion unless:

- one or more key building components are old and, because of their condition, need replacing or major repair; or
- two or more other building components are old and, because of their condition, need replacement or major repair.

24. Key building components are those which, if in poor condition, could have an immediate impact on the integrity of the building and cause further deterioration in other components. They are the external components plus internal components that have potential safety implications and include:

- external walls
- roof structure and covering
- windows/doors
- chimneys
- central heating boilers
- electrics

25. If any of these components are old, and need replacing or require immediate major repair, then the dwelling is not in a reasonable state of repair.

26. Other building components are those that have a less immediate impact on the integrity of the dwelling. Their combined effect is therefore considered, with a dwelling not in a reasonable state of repair if 2 or more are old and need replacing or require immediate major repair.

27. The terms ‘old’ and ‘in poor condition’ are also quite tightly defined as below:

- **old**: the component is older than its expected or standard lifetime. The component lifetimes are listed in Table 5
- **in poor condition**: the component needs major work, either full replacement or major repair. The definitions used for different components are as listed in Table 6

Applying the criterion in the EHS

28. Establishing whether dwellings surveyed in the EHS meet this criterion depends on the assessment both of the ages of key and other building components and of their condition.

29. The EHS surveyors record their assessment of the ages of the main external building elements together with key services and amenities. They are also given the shortcut option of recording whether elements are original i.e. the same as the building itself. Where the age of a component cannot be assessed, it is assumed to be original i.e. the same age as the dwelling. In the relatively small proportion of cases where components are recorded as the 'same age as dwelling', it is necessary to calculate the probability that they have exceeded their lifetime. This is because age of dwelling is recorded in relatively wide bands rather than as a single year.

30. For example, windows in houses are assumed to have exceeded their lifetime if they are more than 40 years old (see Table 1 below). Where dwellings were built between 1965 and 1974 and still had the original windows, some of these would have windows that were over 40 years old by 2008. A simple and robust approach is used, assuming that roughly equal numbers of dwellings were built in each year of this age band. Dwellings built between 1965 and 1967 represent 3 years out of the 10 year age band, so all original windows in dwellings built in 1965-1974 are given a probability of 0.3 of being over 40 years old in 2008.

31. For most dwellings, the assessment of whether or not they satisfy the disrepair criterion is clear cut. For the remainder, for each building component which is in poor condition, the probabilities of being beyond the normal lifetime are combined to give a total probability, taking into account the split into major and minor elements. If this total is greater than 0.5, the dwelling is classed as non-decent due to disrepair.

32. Table 5 shows the lifetimes of building components used to assess whether the components are 'old' in the terms of the disrepair criterion. These lifetimes are used to construct the national estimates of the number of dwellings that are decent and those that fail.

Table 5: Component lifetimes used in the disrepair criterion

Building components (key components marked *)	**Houses and bungalows**	**All flats in blocks of below 6 storeys**	**All flats in blocks of 6 or more storeys**
Wall structure*	80	80	80
Lintels*	60	60	60
Brickwork (spalling)*	30	30	30
Wall finish*	60	60	30
Roof structure *	50	30	30
Roof finish *	50	30	30
Chimney *	50	50	N/A
Windows *	40	30	30
External doors *	40	30	30
Kitchen	30	30	30
Bathrooms	40	40	40
Heating – central heating gas boiler *	15	15	15
Heating – central heating distribution system	40	40	40
Heating – other	30	30	30
Electrical system *	modern	modern	modern

33. As age of electrical system is not collected in the EHS, it is considered to be 'old' if it is not modern, i.e. it has lead or rubber covered wiring, there are separate fuse boxes for each circuit, or earthing wires are unsheathed/green covered.

34. Table 6 sets out the definitions used within the disrepair criterion to identify whether building components are 'in poor condition'. For more detailed information on how surveyors are instructed to record disrepair, see the disrepair section of this note.

Table 6: definition of 'poor condition' used in disrepair criterion

	Definition of 'in poor condition' used in EHCS
Wall structure	Replace 10% or more, or repair 30% or more
Wall finish	Replace/ repoint/ renew 50% or more
Chimneys	1 chimney needing partial rebuilding or more
Roof structure	Replace 10% or more or strengthen 30% or more
Roof covering	Replace or isolated repairs to 50% or more
Windows	Replace at least one window or repair/ replace sash or member to at least two (excluding easing sashes, reglazing, painting)
External doors	Replace at least one
Kitchen	Major repair or replace 3 or more items out of 6 (cold water drinking supply, hot water, sink, cooking provision, cupboards, worktop)
Bathroom	Major repair or replace 2 or more items (bath, wash hand basin, WC)
Electrical system	Replace or major repair to system
Central heating boiler	Replace or major repair
Central heating distribution	Replace or major repair
Storage heaters	Replace or major repair

Criterion C: The dwelling has reasonably modern facilities and services

35. A dwelling is considered not to meet this criterion if it lacks three or more of the following facilities:

- a kitchen which is 20 years old or less
- a kitchen with adequate space and layout
- a bathroom which is 30 years old or less
- an appropriately located bathroom and WC
- adequate noise insulation
- adequate size and layout of common entrance areas for blocks of flats

36. The ages used to define the 'modern' kitchen and bathroom are lower than those for the disrepair criterion. This is to take account of the modernity of kitchens and bathrooms, as well as their functionality and condition.

37. There is some flexibility inherent in this criterion, in that a dwelling has to fail on three of these tests to be regarded as failing the modernisation criterion itself. Such a dwelling does not have to be fully modernised for this criterion to be passed: it would be sufficient in many cases to deal with only one or two of the facilities that are contributing to the failure.

Applying the criterion in the EHS

38. The two tests for age of bathroom and kitchen are relatively straightforward to apply using EHS data. The method of assigning age probabilities described above is also used to determine whether kitchens and bathrooms have exceeded their lifetimes as specified in

the modernisation criterion. The probabilities of being non-decent on these two components are added to results on the other modernisation measures in order to determine whether the dwelling should be classed as non-decent.

39. There is some ambiguity inherent in terms such as ‘adequate’ and ‘appropriate’ used for the other four criteria. The EHS (and its predecessor the EHCS) defines these operationally as follows:

- a kitchen failing on adequate space and layout would be one that was too small to contain all the required items (sink, cupboards, cooker space, worktops etc) appropriate to the size of the dwelling.
- an inappropriately located bathroom or WC is one where the main bathroom or WC is located in a bedroom or accessed through a bedroom (unless the bedroom is not used or the dwelling is for a single person). A dwelling would also fail if the main WC is external or located on a different floor to the nearest wash hand basin, or if a WC without a wash hand basin opens on to a kitchen in an inappropriate area, for example next to the food preparation area.
- inadequate insulation from external airborne noise would occur where there are problems with traffic (rail, road or aeroplanes) noise. Reasonable insulation from these problems should be ensured through installation of double glazing.
- inadequate size and layout of common entrance areas for blocks of flats would occur where there is insufficient room to manoeuvre easily, for example where there are narrow access ways with awkward corners and turnings, steep staircases, inadequate landings, absence of handrails, low headroom etc.

Criterion D: the dwelling provides a reasonable degree of thermal comfort

40. The definition requires a dwelling to have both efficient heating and effective insulation.

41. Both of these are defined very precisely in terms of what is present rather than by the overall energy performance of the dwelling.

42. Under this definition, efficient heating is defined as any gas or oil programmable central heating or electric storage heaters / programmable solid fuel, or communal heating or LPG central heating or similarly efficient heating systems. Heating sources which provide less energy efficient options do not meet this criterion.

43. Because of the differences in efficiency between gas/oil heating systems and the other heating systems listed, the level of insulation that is appropriate also differs:

- for dwellings with gas/oil programmable heating, cavity wall insulation (if there are cavity walls that can be insulated effectively)

or at least 50mm loft insulation (if there is loft space) is an effective package of insulation.

- for dwellings heated by electric storage heaters / programmable solid fuel or LPG central heating a higher specification of insulation is required to meet the same standard: at least 200mm of loft insulation (if there is a loft) and cavity wall insulation (if there are cavity walls that can be insulated effectively).

Applying the criterion in the EHS

44. Assessing whether the EHS sample dwellings pass or fail the decent homes thermal comfort criterion is complex because it involves an array of survey information related to insulation, heating and structural properties. The data collected on the form and the modelling assumptions have been changed and refined since the original 'baseline' figures were published in 2001. For more information on how these changed from 2001 to 2007 see the EHCS 2007 Technical Report: http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/publications/housing/ehcstechnicalreport2007.

45. The 2008 data experienced modelling changes in the assumptions on cavity wall insulation to incorporate the use of the summary section on cavity wall insulation newly collected on the EHS 2008 physical survey form. There were no modelling changes in 2009.

46. The key modelling and form changes affecting thermal comfort since 2010 are:

- where no loft insulation information is available for a room in the roof or a flat roof, appendix S of the SAP 2009 information booklet is used in conjunction with the actual date of construction or, if it is a loft conversion, the date of the loft conversion to determine an estimated amount of loft insulation (the banded construction date is used if the actual construction date is unknown).
- changes in assumptions on cavity wall insulation to incorporate extended use of the summary section on cavity wall insulation collected on the EHS physical survey form following a wording change to the overarching cavity wall insulation summary question.
- homes built after 2002 with cavity walls are assumed to have full cavity wall insulation.

Disrepair

47. This section presents an overview of how repair costs are derived from the EHS and is divided into three sections:

- the different repair cost measures used

- what types of work are excluded and included
- an outline of how the raw data is used to generate the costs

Repair cost measures

48. Information about repair costs is used for two basic purposes:

    - to assess 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. This is termed ‘required expenditure’ or ‘actual costs’.
    - to assess whether parts of the stock are in a better or worse state of repair than others. This is measured through ‘standardised costs’.

49. These two different cost measures are constructed as follows:

    - required expenditure: an estimate of what the specified work to the individual dwelling would actually cost. These costs therefore take account of variations in prices across the country and assume different project sizes for work to dwellings, depending on their type and tenure. In the owner occupied and private rented sector, the contract size for work to houses is taken to be one. In the social rented sector, the contract size is taken as the number of dwellings on the estate unless the house is not on an estate and therefore 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. This measure assumes that all work is carried out by contractors who operate in accordance with health and safety regulations. The costs do not include any VAT or mark up for profit. These costs should not be used for assessing differences in condition between different tenures or dwelling types because they vary according to dwelling size, tenure and location (note: on the EHS database these costs are shown as ‘actual costs’). When making such comparisons among different dwelling characteristics, it would be more appropriate to use ‘standardised repair costs’ as explained below.
    - standardised repair costs: an index of disrepair that expresses costs in pounds per square metre (£/m2) based on prices for a mid point in the range of prices in England). The same assumptions about contract size are made for houses in all tenures (contract size = 5 dwellings) and are then divided by the total floor area of the dwelling. The resulting index can be used to compare the relative levels of disrepair for dwellings of different sizes, in different tenures and different locations.

50. The extent of work required to a dwelling depends on the judgements made by the surveyor about the urgency of that work. The two different measures of required expenditure and standardised costs are therefore presented with reference to three different time scales:

- urgent repairs: a measure of serious and immediate problems in the dwelling, and includes all interior work. Where surveyors record that work is needed to an exterior building element, they indicate whether work specified was urgent. To be classed as 'urgent', the ***problem must meet at least one of the following criteria:***
    - o it threatens the immediate safety of occupants or passers-by or is a health hazard
    - o it is currently promoting noticeable and rapid deterioration in other parts of the building
    - o it is at present causing difficulty or discomfort to the occupants (or would do so if the dwelling were occupied)
    - o the security of the building is threatened (*variables on database = cstactux and cststdux*)
- basic repairs: all works that the surveyor has identified as necessary to carry out within five 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 has recorded that this action could be delayed by more than five years; often by short term patch repairs. (variables on data base= cstactbx and cststdbx)
- comprehensive repairs: all repairs as specified above together with any replacements that the surveyor has assessed as being needed in the next 10 years. For all exterior elements, whether repairs are needed or not, surveyors record 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. (variables on data base = cstactcx and cststdcx)

What types of work are included and excluded?

51. The costs described above include all of the following types of work:

- all work to the external fabric of the building - chimneys, roof, roof and soil drainage, windows, doors, dormers, bays, porches, balconies, damp proof course and treatment of inappropriate gradients/levels of ground adjacent to the dwelling
- additional work to deal with structural instability: e.g. underpinning, tying in of walls, treatment of fungal or insect infestation, replacement of cavity wall ties, etc
- work to the internal fabric - ceilings, floors, internal and partition 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 blocks of flats - floors, walls, ceilings, doors, screens, windows, lighting and balustrades
- work to shared facilities on estates - stores and common rooms, communal parking facilities, surfaces and fences and common services. Note that this only covers any shared facilities that might be used by the occupants of the survey dwelling and which, for large estates, are located within 100 metres of the survey module.

52. The costs **exclude**:

- work to fences and boundary walls
- 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.
- shared facilities not used/useable by the dwelling itself
- VAT, professional fees, overheads or profit.

53. It is also important to remember that repair costs are based on a snapshot of the housing stock at the time of the survey and no provision is made for any routine regular maintenance that would (or should) be carried out e.g. servicing of boilers, lifts etc. or clearing of gutters.

Calculating repair costs

54. The EHS uses 4 types of information to calculate base repair costs:

1) The surveyors' assessments of the type of repair needed and its extent

2) The surveyor's description of the materials from which the element is constructed (for external elements only)

3) Building dimensions and configuration derived from surveyors' measurements and observations

4) Unit prices for different types of job from the 1996 National Schedule of Rates (NSR), adjusted for inflation using the Building Cost Information Service (BCIS) national price index.

55. The surveyor assesses each element in turn; usually surveying the interior first, and then the exterior of the dwelling. Internally an assessment of the main rooms is made (the main living room, main bedroom plus hall, 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 of the internal amenities and services are surveyed individually.

56. For the common areas in blocks of flats, surveyors select only part of the common areas to survey – the main entrance, stairway and corridor/deck used by the survey dwelling. These are assumed to be representative of the whole of the common areas and scaled up accordingly.

57. Externally the surveyor assesses each element in turn, looking at the building from two vantage points ('views') which between them encompass the whole building.

58. In assessing the type and extent of work needed, surveyors follow a sequence of decisions that are made explicit on the survey form:

- identify whether there is a fault
- determine the nature of the action
- determine the scale of the action
- determine the timing of the action (for exterior elements only)

59. These assessments will depend on a large number of factors. What standard of repair should be aimed for? Will the work be spread over time or is it all to be done straightaway? How long must the building remain in good condition once the work is done? How much is it worth spending on the building? According to how these questions are answered, the final repair cost can vary considerably. EHS therefore sets fairly stringent ground rules and assumptions for surveyors to follow.

60. In making their assessments, surveyors are instructed to assume that dwellings have an indefinite life – repairs are recorded even where it is felt to be uneconomic.

61. When determining the nature of the action required, they are instructed to treat the work as a programme of actions stretching into the future which means to repair rather than replace unless:

- this is impracticable
- it means that the element will still need replacing within 5 years
- the element needs replacing for other reasons, e.g. it is unsuitable for its intended purpose. Here, the standard of work should result in the element being fully functional without any allowance for modernisation, upgrading or purely cosmetic improvements.

62. In deciding how much of the element requires the specified action, they are instructed not to employ economies of scale. The quantity of work required is recorded in different ways for different types of elements:

- in tenths, for elements treated as areas, e.g. walls, roofs, or lengths e.g. roof features. The building measurements and other information enable us to calculate the total number of square

metres of each element in each view or room e.g. external walling at the rear, ceiling in the kitchen etc. and these are then multiplied by the proportions indicated by the surveyor to obtain an actual quantity

- in number of units needing work, for elements which can be treated as individual entities, e.g. doors, windows, baths
- in square or linear metres for work to elements where there is insufficient data to estimate the total quantity within the building e.g. flooring in common areas

63. For the last two, the quantity given is multiplied by the unit cost for the job specified. For elements where the work is specified as a proportion, this is first converted to a quantity (m^2 or linear metres) from the dimensions taken of the dwelling/building and then this quantity is multiplied by the unit price (per m^2 or per m) 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, e.g. a slate roof is always replaced with a slate roof.

64. The cost calculated is for the individual dwelling. Therefore for 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 is added on to the interior, amenities and services costs for the individual dwelling.

Dealing with missing data

65. The cases included in the physical survey database are those where a full survey was conducted, but even where the form was completed fully the surveyor may have omitted to provide some information needed to calculate repair costs. Such omissions are, however, increasingly rare, particularly after the introduction of the digital pen technology.

66. Where data is missing costs are imputed using data for dwellings of a similar age and type:

- if the surveyor has clearly indicated that repairs are needed to an element, but not what those repairs are, then an average cost for that element is taken from dwellings of a similar age and type where repairs are needed to that same element.
- if the surveyor has not indicated whether repairs are needed to an element, then an average cost for that element is taken from all dwellings of a similar age and type.

Add-ons, uplifts, preliminaries and modifications to base costs

67. Once the ‘base’ costs have been calculated as above, additional sums are added to account for preliminaries and access equipment:

- preliminaries: items required before the work can commence e.g. site hut, security fencing
- access equipment: includes the costs for scaffolding, cradles and other equipment needed to work safely at height.

68. There are also factors added to account for ‘uplifts’ or economies of scale which are calculated differently for the ‘required expenditure’ and ‘standardised costs’ versions as described above. Finally, the country is divided into nine continuous geographic areas possessing a broad level of cultural homogeneity each of which is assigned a separate price factor to represent the differing costs of labour and materials in that area. These price factors are then are used to further refine the ‘required expenditure’ costs.

69. It is important to remember that costs do not include any VAT, professional fees, overheads or profit.

Accessibility

70. EHS collects a good deal of information on whether dwellings possess certain features or attributes to make them more accessible and useable for people with disabilities. In reporting, it focuses on the four aspects that roughly equate with the requirements of Part M of the Building Regulations:

1. **Level access to main entrance:** there are no steps between the pavement (or any gate) and the entrance door. The path also has a gradient of less than 1:20,

2. **Flush threshold to main entrance:** the threshold to the main entrance door has no obstruction greater than 15mm. This prevents the threshold from being a trip hazard and allows a wheelchair user to easily enter through the main door.

3. **Width of internal doorways and circulation space conforms to Part M**: complies with requirements of Building Regulations.

4. **WC at entrance level**: any WC at entrance level as EHS does not indicate whether it is wheelchair accessible.

71. A home is considered to be fully 'visitable' if it has all of the four features listed above. All these features are assessed directly by the surveyors during the physical survey according to a set of detailed guidelines which are detailed in the table below.

<table>
<tr><th>Criterion</th><th>Definition</th></tr>
<tr><td>Level access to main entrance</td><td>Surveyors record the number of steps from the front gate/ pavement to the entrance to the dwelling. A 'step' is any planned change in level, excluding the width of the cill at the bottom of the door. Surveyors will only record level access where there are no steps between the gate / pavement and the entrance door to the dwelling for a wheelchair to negotiate. The path must also have a gradient of less than 1 in 20.</td></tr>
<tr><td>Flush threshold</td><td>This is only recorded as present if a wheelchair can be wheeled straight into a dwelling with no step to negotiate or obstruction higher than 15mm. For houses, this will usually be a specified adaptation. For flats, it is the entrance doorway into the flat itself that is assessed. Purpose-built flats are much more likely to have been built with a flush threshold to the entrance door or the flat. Flats on upper or basement floors can be assessed as having a flush threshold if the journey from the entrance to the module to the inside of the dwelling can be negotiated using a suitable lift and there is no step or obstruction higher than 15mm. If the lift is not working, the flat will still have a flush threshold.</td></tr>
<tr><td>The width of internal doorways and hallways conforms to Part M</td><td>This is only recorded as satisfactory if the doors and circulation space serving habitable rooms, kitchen, bathroom or WC comply with Part M regulations, as follows:
<table>
<tr><th>Doorway clear opening width (mm)</th><th>Corridor/passageway width (mm)</th></tr>
<tr><td>750 or wider</td><td>900 (when approach head-on)</td></tr>
<tr><td>750</td><td>1200 (when approach not head-on)</td></tr>
<tr><td>775</td><td>1050 (when approach not head-on)</td></tr>
<tr><td>800</td><td>900 (when approach not head-on)</td></tr>
</table></td></tr>
<tr><td>WC at entrance level</td><td>The WC must be located on the same level as the entrance to the house or flat and must be located inside the dwelling.</td></tr>
</table>

72. The survey also collects a range of additional data, which can be modelled to provide additional information on the accessibility of the dwelling:

- car parking – size and proximity to dwelling

- living room at ground floor or entrance level or space to provide one
- bedroom at ground floor or entrance level or space to provide one
- space for turning wheelchairs in kitchens, dining areas and living rooms
- bath/shower at entrance level
- main entrance covered

73. This information was last analysed and reported on in the EHCS 2007 Annual Report and further technical details can be found in Chapter 11 of the EHCS 2007 Technical Report (http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/publications/housing/ehcstechnicalreport2007).

Poor quality environments

74. 'Neighbourhood' or 'local environment' problems from the survey are based on the professional surveyors' assessments of problems in the immediate environment of the home on a scale of 1 ('no problems') to 5 ('major problems'). These assessments are based on observed problems (in some cases verified with the resident) rather than any specialised measurement instruments or recourse to other environmental data.

75. The survey assesses three types of problems contributing to a poor quality environment:

Upkeep: the upkeep, management or misuse of the private and public space and buildings (specifically, the presence of: scruffy or neglected buildings; poor condition housing; graffiti; scruffy gardens or landscaping; litter, rubbish or dumping; vandalism; dog or other excrement; nuisance from street parking; condition of road/pavements and street furniture);

Traffic and transport: road traffic and other forms of transport (specifically the presence of: intrusive motorways and main roads; railway or aircraft noise; heavy traffic; and ambient air quality);

Utilisation: abandonment or non residential use of property (specifically, vacant sites; vacant or boarded up buildings; intrusive industry; or non conforming use of a residential area).

76. A home is regarded as having a significant problem of a given type if it is assessed to have codes 4 or 5 on the scale in respect of any of the specific environmental problems assessed and grouped under that type.

Annex A

Sample worked example for HHSRS assessments taken from EHS surveyor training manual

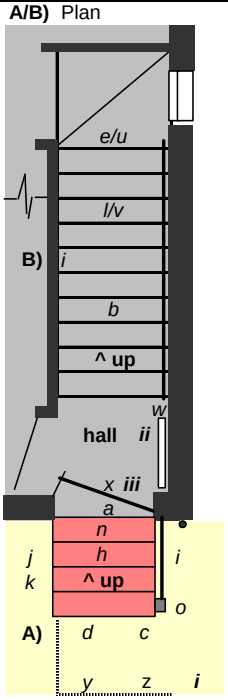
FALLS ON STAIRS ETC

HHSRS VERSION 2

Vulnerable group	Persons aged 60 years or over		**Multiple locations**	**Yes**	No
Related hazards	None		**Secondary hazards**	**Yes**	No

A) Front door steps

A/B) Plan



B) Main stairs

C) Steps at gate

DESCRIPTION OF HAZARD/S

Dwelling: 1930s, Semi-detached house

A) **Front door steps:** These are of smooth painted concrete and have no top 'landing'. The bottom riser is high and uneven (300 mm max). There is a wobbly tubular steel handrail on one side but no guarding at all, despite the narrow width. There is no external porch light and little street lighting.

B) **Main stair:** The main internal stairs have two winders at the top and are moderately steep. There is a handrail only along the outside wall of the straight flight. There is a projecting radiator in the small hall and some glass in the front door close to the foot of the stairs.

C) **Steps at gate:** The steps close to the front gate are of rough spalling concrete. They have high uneven risers and a narrow tread. There is a crude rotten timber handrail but no guarding.

LIST OF RELEVANT MATTERS

LIKELIHOOD		**A**	**B**	**C**
a	Tread lengths	1	1	2
b	Riser heights	3	1	2
c	Variation in T&Rs	3	1	2
d	Nosing length	-	-	-
e	Poor friction quality	3	-	1
f	Openings - in stairs	-	-	-
g	Alternating treads	-	-	-
h-i	Lack/height handrails	3	2	2
j-l	Lack/height guarding	3	-	1
m	Stair width	2	-	-
n	Length of flight	-	1	-
o-q	Inadequate lighting etc	3	-	3
r	Door/s onto stairs	-	-	-
s	Inadequate landing	3	-	-
t	Construction/repair	2	-	3
u	Thermal efficiency	2	-	1

OUTCOMES		**A**	**B**	**C**
a	Length of flight	-	1	-
b	Pitch of stairs	-	2	-
c	Projections etc #	-	2	3
d	Hard surfaces #	2	1	2
e	Construction/repair	2	-	3
f	Thermal efficiency	3	-	2

# **Secondary hazards**		**A**	**B**	**C**
i	Concrete kerb	2	-	-
ii	Projecting radiator	-	2	-
iii	Glass in front door	-	1	-
iv	Condition of paths	3	-	2

Key			
3	Seriously defective	1	Not satisfactory
2	Defective	-	Satisfactory/NA

COMPLETION OF SECTION 23 OF EHCS FORM

LIKELIHOOD

Falls on stairs

Worse than average (Y) N

Likelihood of a person over 60 having a fall

	1800	1000	560	Average 320	Pre 1919 180	100	56	32	(18)	<10

Justification The main stairs are assessed as giving the same likelihood of a major fall as the average for inter-war houses, (i.e. around 1 in 320), the limited handrail provision cancelling out any benefits of the broad winders. However, the added presence of the front access steps - particularly dangerous in icy weather and at night - substantially increases the overall annual probability of such a fall - to 1 in 18.

OUTCOMES

Likely outcome if a person over 60 should fall

	0.1	0.2	0.5	1	2.2	4.6	10	21.5	31.6	46.4	100
Class 1 Extreme %						(4.6)					
Class 2 Severe %							(10)				
Class 3 Serious %								(21.5)			

Justification The stairs are designed to be carpeted but the resulting lower harms are offset by the small hall, projecting radiator and single glazing in the door, albeit this is not at low level. However, the presence of the external front door steps and steps near the front gate, both flanked by rough tarmac and a concrete kerb, significantly increase the risk of a fatal or severe fall occuring, particularly in cold weather or at night.

Look-up table

Likelihood Class 1 Outcome	1 in 1800	1 in 1000	1 in 560	1 in 320	1 in 180	1 in 100	1 in 56	1 in 32	1 in 18	1 in 10 or less
0.1%						E-	E	D	C	B
0.2%						E-	E	D	C	B
0.5%						E	E	D	C	B
1.0%						E	D-	D	C	A-
2.2%				E	E-	E	D	C	B-	A
4.6%				E-	E	D	C	B-	B	A
10.0%			E-	E	D	C	B-	B	A	A
21.5%		E	E	E	C	B	B	A	A	A
31.6%		E	D	C	C	B	A	A	A	A
46.4%	E	E	D	C	B	B	A	A	A	A
100%	D	C-	C	B	A	A	A	A	A	A

ACTION REQUIRED

Justification Replacing the steps to the front door and at the gate will be picked up under Section 18. This will bring the property's rating back to average for its age and type.

Action required to remove hazard

Action required ?	Action	Described elsewhere?	Quantity
Y	Install handrail	Y N	Metres:
Y	Install balustrade	Y N	Metres:
Y	Cover dangerous balustrade/guarding	Y N	Metres:
Y	Repair/replace internal staircase (S5)	Y	
Y	Redesign staircase (design, not condition)	Y N	Number:
Y	Repair/replace external/common staircase (S9)	Y	
Y	Repair/replace external steps (S18)	(Y)	
Y	Cover slippery stairs	Y N	Flights:
Y	Repair/replace/provide additional lighting (S5, S9)	Y N	Number:
Y	Remove obstacle	Y N	Number: