adroit economics ltd

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DCLG Housing Standards Review - Evidence Report: Cost Benefit Analysis: methods, sources, assumptions

Prepared by Adroit Economics

For and on behalf of

DCLG

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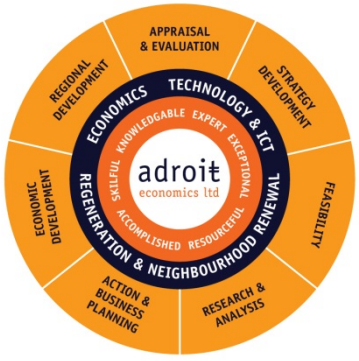

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1. Introduction

1.1 EC Harris in association with Adroit Economics were commissioned by the Department for Communities and Local Government (DCLG) in 2013/14 to assist in preparing the Impact Assessment (IA) of DCLG's proposed changes to the Housing Design Standards. The objective of the exercise for DCLG was to streamline/ simplify the standards thereby enabling significant cost savings to the house building industry, at a time when the industry was in recession and to respond to the wider urgent need for increased new house building.

1.2 EC Harris's role was to assess the unit costs to industry of applying current standards and the unit cost changes likely to derive from the proposed revisions. Adroit's role was to scale these unit costs up to the level of the house building industry and to estimate the costs and benefits of::

- Current policy – termed the 'counterfactual'
- Proposed policy – termed 'policy'

This report

1.3 This report sets out the approach, methods, sources and assumptions we have used. It is a reference document only and should be read in conjunction with the Impact Assessment executive report, EC Harris's cost report and EC Harris's local authority local plan survey report .

1.4 If you have any questions or require further information, please do not hesitate to contact us.

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2. Proposed policy changes

2.1 Housing design standards sit outside of and largely separate but parallel to both building control policy and planning policy. Planning policy often requires compliance with one or more housing design standards, in addition to compliance with building regulations.

2.2 Housing design standard's policy is complex and can best be understood by dividing it into the following broad policy themes (standards)

- Access
- Security
- Space
- Energy
- Water
- Code for Sustainable Homes (CfSH)

2.3 There is an added layer of complexity and indeed confusion because:

- Some of the standards overlap/ interlink. In particular complying with a variety of standards across energy, accessibility, water and security can contribute to credits towards getting a Code for sustainable homes certificate. In addition, one theme can have an impact on another – e.g. requirements for accessibility can have an impact on the space required within a property
- Some are national standards that are relatively consistent across the country where they are applied but others are bespoke to certain local authority administrative areas. For example, the Greenwich Wheelchair Housing Design Guide is an enhancement of the London Wheelchair Housing Design Guide and other authorities have adopted this but have made their own modifications to the requirements for wheelchair housing, resulting in a large number of varying wheelchair standards.

2.4 Proposed policy, in summary, is as follows:

- Access - simplified into two categories that local authorities can choose to include within plans as an alternative to existing minimum building regulation requirements which are to be retained
- Security - "simplified to one standard that can either be applied by local authorities if they choose or will be a mandatory requirement in building regulations for all new homes"
- Space – introduction of a single standard for each housing type which local authorities can choose to include within their plans to set a minimum internal size for new dwellings
- Energy – the policy is to move towards energy efficiency requirements being delivered through the building regulations rather than as a separate standard.
- Water – to include one standard for higher water efficiency that local authorities can choose to include in their plans
- Code for Sustainable Homes – to end the use of Code for Sustainable homes.

3. House building projections

3.1 Our first step in preparing to undertake the cost benefit analysis was to estimate the likely number of new houses that would be built in England over the next 10 years. To do this, we did the following:

- Formulated an appropriate typology of housing types and tenure
- Reviewed past trends and available forecasts regarding both quantum and mix of types of new house building
- Arrived at 3 scenarios for a 10-year house building projection – referred to as high, medium (or central) and low house building rates.

House Building Rates

3.2 The IA process started when the housing market was still in deep recession, but in the first half of 2014, house prices have been rising (particularly in London and the Southeast) and the reported rate of commencement of building on new schemes, coupled with planning applications have escalated, all suggesting a revival and a potential new housing boom, to which the Bank of England is already reacting with various announcements about future measures to control demand. All of this makes estimating the rate of future house building complex.

3.3 Team members, in discussion with DCLG officials, have reviewed a range of evidence and projections, and arrived at a reasoned view on future house building rates, but because of uncertainty, we have opted to model a low, medium and high future house building scenario. These scenarios are intended for use only as part of the development of this Impact Assessment and do not represent official predictions of supply.

Assumptions used in this cost-benefit analysis

Agreed projection method

3.4 The method we will use is to apply an assumed percentage increase to the latest previous year's completions figure, shown in table 3.1.

Table 3.1

Housing Completions in 2013	109,660
Source: Table 244 DCLG Live Tables	

House building rates – agreed rates

3.5 All the IAs adopt the following year-on-year house building rates

Table 3.2

House Building Rates			
New Housing Building	Annual Growth Rates	High	8.0%
New Housing Building	Annual Growth Rates	Medium (central)	5.0%
New Housing Building	Annual Growth Rates	Low	3.0%
Source: Adroit Economics.			

3.6 The assumptions are indicative and for this appraisal purpose only. These rates have been applied year-on-year with no variation. This is appropriate for long-term appraisal given

uncertainty and is consistent with previous appraisal analysis. These rates have been applied to both private and affordable tenures. We concluded that the rate would be the same for affordable tenures as for private.

Evidence reviewed

3.7 The decision to adopt these rates was based on review of past trends, available published analysis and projections and discussion amongst the team and with DCLG officials. Below is a summary of our considerations.

Past trends

3.8 The long run average between 1970 and 2013 is around 177,000[1] new units per annum.

Private forecasts

3.9 We have reviewed several private forecasts, for example by CPA[2], Savills[3] and Bank of America/ Merrill Lynch. These show 136,000-156,000 pa by 2015-16 up to 167,000-177,000 by 2017-18 for new homes in England.

Housing starts, new orders in construction

3.10 There is evidence that homebuilding is now increasing significantly following the credit crunch. Completions statistics are a more accurate indicator of actual build out than housing starts statistics, but starts are an important general indicator of trend and have increased sharply over the last 12 months[4]. New orders are another important lead indicator of trend and have also increased sharply for new housing[5].

House building projections used in the cost benefit analysis

3.11 The following tables show the house building rate estimates by location, tenure and type, adopted for all IAs, based on the mid-growth scenario (a year-on-year increase of 5% on current completions of 109,660 (2013 provisional figure)):

The figures for all new housing

3.12 Applying the mid-growth (central) scenario (of 5% increased pa) suggests that:

- In the start year (2014), there will be a total of 115,000 new units[6]
- This rises to just under 150,000 by year 5 (2019)
- And to 187,000 by the end of the cost benefit period (year 10).
- The total increase over the period 2014-24 is 1.635 million

3.13 These would appear to be relatively conservative given the latest data on house building

- The latest figures on housing starts (See above for data source)

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[1] https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building

[2] http://www.constructionproducts.org.uk/news/press-releases/display/view/association-forecasts-renewed-optimism-for-construction/

[3] See What Next for House building Graph 5.1 http://www.savills.co.uk/research_articles/141558/172709-0

[4] https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building.

[5] http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-330933

[6] This figure is significantly less than the figure for 2013 in the previous analysis (see para 3.12 in tbe Consultation IA)

- The forecast from Savills (agents) discussed above, suggests 135,000 for 2014-15 and 167,000 2017-18

Table 3.3

House building estimates pa (mid-growth scenario 5% pa increase)				
	2015	2019	2024	Total in period 2014 to 24
All	115,143	146,955	187,556	1,635,812
Private	91,497	116,776	149,039	1,299,878
Affordable	23,636	30,166	38,500	335,785

Mix of types of houses built

3.14 To estimate the breakdown of estimated future completions into types of unit, we assumed that the current distribution applies to each subsequent year

Table 3.4

Proportion of each housing type built			
Location	***Tenure***	***Type of Dwelling***	***Percentages 2012/13***
England	All	1 Bedroom Apartment	8%
England	All	2 Bedroom Apartment	22%
England	All	2 Bedroom House	12%
England	All	3 Bedroom House	31%
England	All	4 Bedroom House	23%
England	All	Other	4%
Total			**100%**
Source: Source: Table 254 DCLG Live Tables			

Changing mix over time

3.15 Regarding **build mix** we have used the most recent 2012/13 numbers from Table 254 of the DCLG house building stats (20 Feb 2014 update) and assume that this is constant. The reason for this is that at the England level the rates are close to the long term average over the entire series. The proportion of new dwellings built as flats was increasing before the credit crunch but have now fallen back.

4. Survey of local authority planning departments

4.1 A survey of local authorities was undertaken to ascertain which local authorities were applying standards. One third of local authorities was considered an appropriate sample size for the survey, spread proportionately across different regions and areas of England

Developing the Questionnaire – data capture sheet

4.2 The survey is a critical part of the IA providing for the first time, robust evidence of what's happening on the ground and what's likely to happen. The aim was to capture as much information as possible, but taking account that this needs to be balanced against the information that can be feasibly and reliably captured from a largely desk-based website review approach, and that can be recorded in a systematic fashion, to enable scale-up.

4.3 The team developed a first draft survey data capture sheet (template) which was piloted.

Piloting the survey

4.4 We undertook a 2-stage pilot process

- We commenced with an initial web-based pilot of 8-10 local authority websites, picked at random, to test and refine the questionnaire
- We then undertook a second larger web-based pilot of a further c.20 authorities' websites, to capture a sufficient body of data in order to test the scale up process
- The full survey was then undertaken comprising
  - = Initial desk-based review of the websites of a third of English local authorities
  - = Followed by a telephone call of a smaller sample to clarify key points

Sample frame

4.5 The survey uses a basic sample frame, with the option of post-survey coding

4.6 The sample frame that was used, centres on two variables, geography and environment, with a simple 2-way spit of each, providing a 2 by 2 sample frame matrix, as follows

- London/SE & rest of England
- Urban & Rural

4.7 In addition, the survey team monitored the mix of authorities in each of the four categories to ensure a reasonable spread of types (large city, small town, suburban, largely rural).

4.8 The questionnaire also included a column for comments to capture empirical data

Achieved sample size and statistical significance

4.9 There are 330 local authorities in total. The survey covered plans of 109 (non-London) local authorities plus the London plan which equals at total of 110 plans reviewed. Of the 33 authorities under the London plan we surveyed 23, which brings the total of individual local authorities surveyed to 132. Both figures (110 and 132) represent sufficiently statistically significant samples, given the nature of the topic, from which to draw robust conclusions regarding policies that are relevant to all local authorities.

- The sample of 110 plans (109 non-London plans plus the London plan), at a confidence level of 95% gives a confidence interval of +/-7.4%

- The sample of 132 plans (109+23 surveyed in London), at a confidence level of 95% gives a confidence interval of +/- 6.6%

Table 4.1

		Number of LAD	New Dwellings in Sample
Urban	LSE	31	11,390
Rural	LSE	28	8,650
Urban	Rest of England	25	8,530
Rural	Rest of England	25	6,430
	Total Sample	**109**	**35,000**
	Total Population	326	107,180
		33%	33%

Scale-up

4.10 We scaled up the survey findings, to estimate the situation for England as a whole, as follows:

- The results for each local authority were entered into a single excel tab
- Authorities were sorted into types and the survey metrics were totalled/averaged as appropriate
- We used a combination of two primary metrics – number of houses completed in each local authority area as at the latest available data (Table 253 House building: permanent dwellings started and completed, by tenure and district, 2012/13) and population in each local authority area (2012)

4.11 Account was taken of the extent to which policy was implemented i.e. the proportion of local authorities with a policy that apply this at the planning application stage. EC Harris carried out two additional surveys to help assess this:

- A survey of a sample of planning applications
- A survey of professionals asking their opinion on the extent to which policy was applied on the ground.
- Further details and the results are set out in Section 14 of the EC Harris survey report.

The survey was particularly useful regarding showing past trends

4.12 The analysis of local policies also provides us with a guide to the change in the level of adoption of standards. The following table illustrates the % of plans that contain each of the policies broken down by the year in which the planning policies were adopted.

Table 4.2

	SBD		LTH		WHDG		Code		Space		Water				
Date at which core strategy/local plan was adopted	**No of plans with policy**	**%**			**No of plans with policy**	**%**	**No of plans with policy**	**%**	**No of plans with policy**	**%**	**No of plans with policy**	**%**	**No of plans with policy**	**%**	**Total No of Plans reviewed**
pre 2000	1	13 %	1	13 %	0	0%	1	13 %	2	25 %	0	0%			8
2000-4	1	10 %	2	20 %	1	10 %	4	40 %	0	0%	1	10 %			10
2005-9	9	24 %	13	35 %	2	5%	21	57 %	9	24 %	3	8%			37
2010-11	9	26 %	17	50 %	10	29 %	22	65 %	14	41 %	4	12 %			34
2012-14	3	15 %	12	60 %	4	20 %	14	70 %	10	50 %	5	25 %			20
	23	**21 %**	**45**	**41 %**	**17**	**16 %**	**62**	**57 %**	**35**	**33 %**	**13**	**12 %**			**109**

5. Access Standard

Policy

5.1 Accessibility design standards are primarily concerned with ensuring that new homes meet a broad range of needs including for older and disabled people. Minimum requirements are currently included in Part M (Access to and use of buildings) of the Building Regulations.

Counterfactual

- There are two main standards accessibility design standards – the Lifetime Homes Standard (LTH), and the Wheelchair Housing Design Guide (London) which forms the basis for a range of guidance on wheelchair housing such as the Greenwich or Exeter Wheelchair Housing Design Guides.
- There is also a British Standard - BS9266 design of accessible and adaptable general needs housing: code of practice – which under the counterfactual is a potential replacement to LTH, and which proposes a further increase in standards.
- LTH as well as existing as a standalone requirements of some planning policies can also form part of meeting the requirements for Code for Sustainable Homes

Policy

5.2 The aim of the proposed policy is to simplify the guidance into the following three categories

- Category 1: existing minimum standards in the building regulations – dealing with accessibility requirements to make new dwellings Visitable. These are the same as the existing regulations.
- Category 2: similar to the existing Lifetime Home Standard and referred to as accessible and adaptable housing. This will be an optional requirement which local authorities can choose to adopt.
- Category 3: A replacement for the Wheelchair housing Design Guide, referred to as Wheelchair user housing. This will be an optional requirement which local authorities can choose to adopt.

5.3 Within the wheelchair user standard, the default options will be to design for future adaptability – which means houses would need to be able to accommodate wheelchair access but all of the equipment (such as the lift, which is the most expensive element) would not need to be installed at the time of initial build. Local authorities will however be able to require some properties to be fully fitted out, but typically only where allocation policies make the likelihood of occupation by a wheelchair user high at the point of completion

Impact logic chain

5.4 The objective is to calculate the cost savings (both build cost and process cost savings) of proposed policy over current policy.

5.5 The calculation takes account of the following

Counterfactual cost calculation

5.6 The counterfactual cost calculation comprises the following steps:

- The number of new houses for each house type likely to be built over the next 10 years.

- The proportion of these that are likely to comply with current policy (current policy comprises current standards and proposed changes such as the introduction of BS9266). The local authority planning policy and planning application survey provides the bases for estimating current compliance.
- The extra over industry standard build cost of compliance and the process costs specific to this standard (EC Harris have provided unit cost estimates)

Policy cost calculation

5.7 The proposed policy cost calculation comprises the following steps:

- We start with the same estimate of the number of new houses likely to be built each year over the next 10 years
- An estimate of the proportion that are likely to be built to the specified proposed standards
- The phase out of current policy and the phase in of compliance with proposed policy. The extra over industry standard build cost of compliance with the proposed standards and the process costs specific to this standard (EC Harris have provided unit cost estimates)

Cost-benefit analysis - sequence of calculations, key sources and assumptions

5.8 The following table provides further detail of the sequence of calculations, showing the sequence of calculations, the key sources and assumptions. Below the table are further details and explanation of these.

Table 5.1

Cost-benefit analysis - sequence of calculations, key sources and assumptions		
	Sequence of calculations	***Key sources and assumptions***
1	New Build Housing Growth Assumptions (%)	Common to all IAs
2	New Build Housing Mid Growth Rate Forecasts (numbers)	Applies new build growth rates to existing stock (common to all IAs)
Counterfactual costs		
3	Assumptions_ counterfactual unit costs	▪ From ECH cost report ▪ Unit cost per dwelling type ▪ Cost is extra over industry standard ▪ For the following standards that currently apply: Life Time Homes (LTH), BS9266, Wheelchair Housing Design Guidance (WHDG), Greenwich WHDG), Future Adaptability ▪ Car Port costs ▪ Process costs for the following standards: LTH, WHDG/GWHDG
4	Transition assumptions	▪ Phase out/phase in assumptions – see transition phasing table below for details and explanation
5	counterfactual assumptions take up of accessibility standards	▪ Assumptions regarding the % of new housing of each house type that is built to each of the standards
6	policy scenario assumptions take up of accessibility standards	
7 - 11	counterfactual housing numbers ▪ LTH ▪ WHDG ▪ BS9266	▪ Calculation of the number of each house type that complies with each of the standards ▪ The calculation is based on the assumed % adoption by house type

	▪ GWHDG ▪ Future Adaptable Housing	
12 - 16	counterfactual cost calculations ▪ LTH ▪ WHDG ▪ BS9266 ▪ GWHDG ▪ Future Adaptable Housing	▪ Calculation of the cost of compliance with current standards ▪ Calculation is based on number of each housing type that complies with each standard multiplied by the unit cost of each standard
Policy costs		
17	Assumptions_policy unit costs	▪ From ECH cost report ▪ Unit cost per dwelling type ▪ Build cost is extra over industry standard for the proposed following standards: Category 1, 2 & 3 ▪ Process cost for each of the three categories – distinguishing between development size (small, medium and large) – see table below
Costs associated with winding down of existing standards		
18-22	policy_ housing numbers ▪ LTH ▪ WHDG ▪ BS9266 ▪ GWHDG ▪ Future Adaptable housing	▪ Calculation of the number of new houses for each housing type that comply with each of the existing standards multiplied by the phase out assumptions
23-27	policy cost calculations ▪ LTH ▪ WHDG ▪ BS9266 ▪ GWHDG ▪ Future Adaptable housing	▪ Costing of existing accessibility standards under the policy scenario – these will be permitted to continue for a transitional period ▪ Calculation of the cost of the existing standard ▪ The calculation is based on the number of new houses per housing types that comply with each standard multiplied by the extra over build cost and the process cost specific to the standard
Costs of phasing in proposed standards		
28-30	policy housing numbers ▪ Category 1 ▪ Category 2 ▪ Category 3	▪ Calculation of the number of new houses for each housing type that comply with each of the proposed standards multiplied by the phase in assumptions
31-33	policy cost calculations ▪ Category 1 ▪ Category 2 ▪ Category 3	▪ Costing of proposed standards– these will be phased in over a transitional period ▪ Calculation of the cost of the proposed standard ▪ The calculation is based on the number of new houses per housing types that comply with each standard multiplied by the extra over build cost and the process cost specific to the standard
Results		
34	Results	▪ Total build and process costs for (i) the counterfactual and (ii) the proposed policy ▪ Net balance over a 10 year period ▪ Presented as a Net Present Value@3.5% and as an Equivalent Annual Net Cost
Source Data		
		▪ EC Harris Data on Unit Costs ▪ Housing Stock Profile ▪ Policy Survey Findings

Transition assumptions – timing of phasing counterfactual out and policy in

5.9 The transition for the new accessibility standards are expected to be impacted by the overlap between the CfSH standard and the stand alone accessibility standards within local authority plans. Therefore there are two types of phases

- The Proposed Category 2 accessibility standard is expected to be a direct replacement for LTH and Category 3 will replace the WHDG therefore the transition between the current standard and proposed standard is mainly related to the transfer of standards between recipients (i.e. from the planning department to the building control department).
- However, housing expected to be built to LTH as part of the CfSH will be phased out over 4 years with no replacement in policies

Table 5.2

Transition Assumptions – Phasing of Transition								
		Year	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***
LTH Code	current standards	Proportion of those expected to be built to LTH as part of achieving credits for Code under the policy scenario	100%	80%	30%	10%	0%	0%
LTH Non Code	current costs	Proportion of LTH currently required in plans expected to be built to LTH	100%	100%	90%	25%	5%	0%
Level 2 – passport Non-Code	policy costs	Proportion of LTH currently required in plans expected to be built to Category 2	0%	0%	10%	75%	95%	100%

Compliance with current policy – assumptions

5.10 The number of dwellings expected to be built to each of the accessibility standards has been estimated based on the review of local plans, planning applications and a survey of professionals.

Lifetime Homes (LTH)

5.11 Based on the ECH survey of local plans[7], an estimated 41% of local authorities have plans requiring LTH which impacts on 39% of new dwellings in England. Of the dwellings that are covered by a LTH policy, the ECH survey of industry professionals estimates that 80% of these dwellings will be built to LTH[8]. Therefore, in 2014 we estimate that 31% of new dwellings are being required to be built to LTH (i.e. 80% x 39%).

5.12 The survey of local plans also indicates that a further 34% of new dwellings in England are built in authorities that 'encourage' LTH within policy. Table 5.3 in this report illustrates the increasing trend among local plans to include a LTH policy. For instance in 2005-9, some 35% of plans adopted included the standard but this had increased to 60% by 2012-14

Table 5.3

Proportion of Local Plans containing requirement for LTH by year the plan was adopted			
Date at which core strategy/local plan was adopted	Plans that include LTH Policy	Plans reviewed	% of plans with LTH policy
pre 2000	1	8	13%
2000-4	2	10	20%
2005-9	13	37	35%
2010-11	17	34	50%
2012-14	12	20	60%
Total	45	109	41%

5.13 A standard along these lines was first introduced in the early 1990s with the first set of documents published in 1997[9]. This suggests that there has been a long run increase of around 2% per annum, with a particular step change when they were introduced into the London plan in the early 2000s.

5.14 There is clear evidence of an ageing population in the UK, which will increase the demand/need for accessible housing. Moreover, the increasing long run fiscal pressure on health spending and long-term social care due to an ageing population means that it will be important to enable more people to stay in their homes (for longer) to reduce health service costs

Social Impacts and Benefits of Accessible and Adaptable Housing, and Wheelchair Accessible Housing

There are an estimated 10 million disabled people in the UK, including around 605-720,000 wheelchair users. There is a direct correlation between age and disability, with older people more likely to have

[7] Tables 14a and 15 in the EC Harris survey report
[8] Tables 14 in the EC Harris survey report
[9] http://www.lifetimehomes.org.uk/pages/history.html

mobility problems and so benefit from any features of their home that make it more accessible both inside and outside. With the population forecast to significantly age the need to keep people in their homes for a long as possible is vital to keep costs down for local authorities and the government. The population of older people in England is growing much faster than any other age group. According to ONS figures from 2010 the population of England as a whole is projected to increase by 8.4% to 2020 and by 15.7% to 2030, but the numbers of those aged 65 and over are projected to grow at over four times the rate of those aged under 65 and by 2030.

This means that the number of over 65s is forecast to increase from 10 million to 15.5 million in 20 years' time, with the number nearly doubling by 2050 to 19 million. The number of very old will grow faster, currently there are 3 million people aged over 80 and this is projected to double to 6 million by 2030 and 8 million by 2050. Currently 1 in 6 of the UK population is aged 65 and over, by 2050 1 in 4 people will be aged 65 and over. There are now more people in the UK aged 60 and above than there are under 18 and more pensioners than there are children under 16[10]

OBR analysis has estimated that, thanks primarily to an ageing population, without corrective action, government net debt will increase over an extended period to reach 99% of GDP by 2062/63 and rising11.

Non-interest spending could increase by 4% of GDP or £60bn by 2062/63, due to age-related spending pressures including health and long-term social care costs. The analysis estimates that health spending will increase from 7.0% of GDP in 2017/18 to 8.8% in 2062/63 and long-term social care costs will increase from 1.3% of GDP in 2017/18 to 2.4% of GDP in 2062/63.

Of particular concern is that the OBR analysis demonstrates a risk that the fiscal pressures could be substantially greater even than their central estimate if a number of key outcomes are less favourable than their central assumptions. This increases the important of a range of policy levers to help manage costs and especially mitigate the risk of escalating fiscal pressures due to an ageing population.

5.15 This will maintain the momentum for local authorities to introduce accessibility standards as these pressures grow. We have therefore estimated an ongoing increase in plans of 1.7% per annum which seems reasonable and consistent with evidence of the long run trend and ongoing pressures.

5.16 We assume that pressures for accessible housing would be the same for both the current standards where local authorities have an option to introduce lifetime homes into plans and for the new optional policy take up where local authorities have a comparable option to introduce the new Level 2 standard. The underlying pressures will not change. The assumption is therefore of the same increase in standards requirements over time for both options.

5.17 The current analysis therefore assumes that 31% of homes will be built to lifetime homes standards in 2015, increasing up to 47% in 2024.

5.18 Assuming that half of authorities that currently encourage LTH translate this into a requirement, means that by 2024 a total of 56% of new dwellings will be built in authorities with a LTH requirement

5.19 In addition we have added in the number of dwellings expected to be built to Code Level 5&6 as a proxy for Code housing that will require LTH, as per the cost modelling undertaken by ECH.

[10] [10] http://www.ageuk.org.uk/Documents/EN-GB/Factsheets/Later_Life_UK_factsheet.pdf?dtrk=true

[11] "Ageing Population to put pressure on public finances" Fiscal Sustainability Report 2013

5.20 Finally, the expectation is that under the counterfactual, the proposed BSI standard BS9266 will gradually replace some LTH with a total of 5% of LTH being built to BS9266 by 2024[12]

Table 5.4

Assumptions about the proportion of dwellings built to LTH and BS9266		
	2014	2024
Housing in authorities with LTH policy	39%	56%
proportion of housing in these areas required to be LTH	80%	80%
proportion of dwellings delivered to LTH via policy	31%	45%
Code Level 5&6 (LTH)	0%	3%
LTH and BS9266	31%	48%
adoption of BS9266	0%	5%

Wheelchair Housing Design Guide (WHDG)

5.21 Based on the ECH survey of local plans, 17% of local authorities have a WHDG standard or equivalent (see Table 8 in the ECH Local Authority Policy Survey). Based on the number of dwellings built in these local authorities and the proportion of housing that the standard applies to, we estimate that 2.3% of new dwellings in England are required by policy to be built to a WHDG standard. Of the dwellings that are covered by a WHDG policy, the ECH survey of industry professionals estimates that 79% of these dwellings will be built to WHDG (see Table 14 in the Local Authority Policy Survey). We have assumed that the remaining 21% of new dwellings covered by policy will be built to be adaptable in the future.

5.22 The survey of local plans also indicates that a further 0.7% of new dwellings in England are built in authorities that 'encourage' WHDG within policy. These have been introduced recently and past trends together with ongoing fiscal pressures outlined above have led us to estimate an increase over the appraisal period to 20% by 2024"

5.23 The ECH survey of local plan found that 10% of authorities with a wheelchair accessibility standard have developed a bespoke standard which is an enhanced version of the WHDG. These have been introduced relatively recently and it is assumed that the number of authorities with bespoke standards will double over the period.

[12] See for example Shaping Neighbourhoods, Accessible London Achieving an Inclusive Environment, Draft Supplementary Planning Guidance Para 2.11.5. . http://www.london.gov.uk/sites/default/files/Accessible%20London%202014%20SPG%20Draft%20march%20low%20res%20.pdf

Table 5.5

Assumptions about the proportion of dwellings built to WHDG and Bespoke WHDG and Future Adaptable housing		
	2014	**2024**
% of new dwellings built in local authorities with a WHDG policy	2.30%	3.00%
proportion of these required by local authorities	79.00%	79.00%
% of WHDG housing that is delivered as future adaptable housing	21%	21%
% of WHDG meeting Bespoke WHDG standards	*10.00%*	*20.00%*
WHDG	1.64%	1.90%
Bespoke WHDG	0.18%	0.47%
Future adaptability	0.5%	0.6%

6. Security Standard

Policy

6.1 The proposal is to simplify current policy to one standard for target hardening of new dwellings (making the building fabric more resistant to attempted forced entry) that can either be applied by local authorities if they choose or be a mandatory requirement in building regulations for all new homes.

Counterfactual

- There is one main security standard – Secured by Design (SBD) Part 2 that is being considered (secured by design part 1 deals with the layout and opportunities to design out crime outside of the immediate construction of the home).
- Secured by Design can be used to achieve credits towards a Code for Sustainable Homes certificate.
- For grant funded affordable housing, Secured by Design Part 2 is treated as mandatory

Policy

- The policy is to introduce a single Optional or Mandatory Requirement which provides a robust level of security for doors and windows.

Impact logic chain

6.2 The objective is to calculate the cost savings (both build cost and process cost savings) of proposed policy over current policy while maintaining high quality security standards.

Table 6.1

Summary of costs and benefits modelled		
Standard	***Counterfactual***	***Policy***
Security	Costs ▪ Build cost (above industry standard) ▪ Process cost – specific to the standard Benefits ▪ Value of reduced burglaries	Costs ▪ Build cost savings ▪ Process cost – specific to the standard Benefits ▪ Value of reduced burglaries

Counterfactual cost calculation

6.3 The calculation takes account of the following

- The number of new houses for each house type likely to be built over the next 10 years.
- The proportion of these that are likely to be built to comply with SBD. The local authority planning policy and planning application survey numbers provide the basis for estimating current compliance. EC Harris have also analysed where it is cost effective to adopt Secured by Design Part 2 in the Code for Sustainable Homes and an allowance is included for Code level 5 and 6 homes likely to adopt the standard

- The extra over industry standard build cost of compliance and the process costs specific to this standard (EC Harris have provided unit cost estimates)

Policy cost calculation

6.4 The cost of proposed policy cost calculation comprises the following steps:

- We start with the same estimate of the number of new houses likely to be built each year over the next 10 years
- An estimate of the proportion that are likely to be built to the specified proposed standards, depending on whether it is optional or mandatory.
- The phase out of current policy and the phase in of compliance with proposed policy
- The extra over industry standard build cost of compliance with the proposed standards and the process costs specific to this standard (EC Harris have provided unit cost estimates)

Cost-benefit analysis - sequence of calculations, key sources and assumptions

6.5 The following table provides further detail of the sequence of calculations, showing the sequence of calculations, the key sources and assumptions. Below the table are further details and explanation of these.

Table 6.2

Cost-benefit analysis - sequence of calculations, key sources and assumptions		
Sequence of calculations	***Sequence of calculations***	***Sequence of calculations***
1	New Build Housing Growth Assumptions (%)	Common to all IAs
2	New Build Housing Mid Growth Rate Forecasts (numbers)	Common to all IAs
3	Assumptions_counterfactual SBD %	Estimated % of compliance – derived from the survey
4	Assumptions_transition rates	Assumed phase out/in assumptions - % per year
5	Assumptions_policy SBD %	Estimated % dwellings built to standard when winding down current standard
6	Assumptions_policy Level 2 %	Estimated % dwellings built when introducing proposed standard
7	Assump_SBD Unit Costs	From ECH cost report ▪ Unit cost per dwelling type and size of development ▪ Cost is extra over industry standard ▪ Additional cost for dwellings with garages ▪ Process Costs by size of development
8	Assump_Level 2 Security Unit Costs	From ECH cost report ▪ Unit cost per dwelling type and size of development ▪ Cost is extra over industry standard ▪ Process Costs by size of development
9	Calc_Counterfactual	Multiplies the unit costs by the number of dwellings for each dwelling type to estimate the counterfactual

		• Build costs • Process costs
10	Calc_Policy SBD	Calculation of the number of new houses for each housing type that comply with the existing standard multiplied by the phase out assumptions
11	Calc_Policy Level 2	Calculation of the number of new houses for each housing type that comply with the proposed standards multiplied by the phase in assumptions
12	Benefits	Calculating the estimated benefits of security policy based on • Evidence about the reduction in burglary rates in dwellings with SBD • Number of dwellings • Cost per burglary
13	Results	▪ Total build and process costs for (i) the counterfactual and (ii) the proposed policy ▪ Net balance over a 10 year period ▪ Presented as a Net Present Value@3.5% and as an Equivalent Annual Net Cost

.

Further details of the calculations

Assumed compliance with current policy

6.6 The following tables estimate the extent of compliance of new house building to existing policies requiring Secured by Design Part 2. The rates are derived from the local authority survey indicating that 17% of new private dwellings are built in authorities with a requirement for SBD in policy. The survey of industry professionals estimates that 74% of these requirements are actually built to SBD.

6.7 In terms of the future, a further 19% of new dwellings are built in authorities where SBD is encouraged in policy and it is assumed that these are introduced as a requirement by 2024. ECH's planning policy survey has been analysed to identify discernable trends in policy adoption. The results, shown in Table 4.2, regarding SBD show that in the period 2000-2004, 10% of authorities had a policy. This increases to 26% for the period 2010-11, but falls back again to 14% for the period 2012. It should be noted this analysis, and especially the last number, is based on a small sample.

6.8 In addition to policies in local plans, SBD can also contribute towards credits towards the Code for sustainable Homes. Based on the ECH cost work, this is assumed to relate to all of the Code Level 5 and 6 dwellings and a third of Code 3&4 homes.

6.9 It is assumed that based on a requirement for HCA funding that all affordable housing is built to SBD.

Table 6.3

SBD Take-up assumptions		
	2014	**2024**
Private Dwellings		
Proportion of Private Dwellings built in Local Authorities with SBD policy	17%	36%
% of dwellings built to SBD	74%	74%
Estimate of number of private dwellings built to SBD as a result of policy	**13%**	**27%**
Code Level homes requiring SBD	10%	13%
Proportion of private dwellings requiring SBD	**23%**	**40%**

Affordable Dwellings		
Proportion of Affordable dwellings requiring SBD	**100%**	**100%**

Assumed transition phasing

6.10 We have modelled the following transition phasing relative to the counterfactual

Table 6.4

Year	2014	2015	2016	2017	2018
Proportion of those built to SBD in Code	100%	80%	30%	10%	0%
Proportion of code housing built to proposed standard	0%	0%	0%	0%	0%
Proportion of SBD currently required in plans	100%	100%	90%	25%	5%
Proportion of SBD currently required in plans built to new standard	0%	0%	10%	75%	95%

7. Space Standard

Policy

7.1 The proposal is the introduction of a single standard for each housing type which local authorities can choose to include within their plans which would set a minimum size of property.

Counterfactual

- The GLA Housing SPG sets out a minimum size for new dwellings in London based on dwelling type, number of bed spaces and number of floors.
- A number of other local authorities across the country have the same or similar space standards
- For affordable housing that qualifies for grant funding, there has been a requirement to meet HQI space standards, which sets a minimum range for dwellings sizes and also provides an incentive to build beyond the minimum range.

Policy

- The policy is to simplify the range of existing space standards to one set of space standards based on property type, number of rooms/bed spaces and number of floors
- This standard will be optional for local authorities
- For affordable housing there will be no minimum space standard but bids will be assessed against a benchmark for the size of each dwelling type.

Impact logic chain

7.2 The objective is to calculate the cost savings (both build cost and process cost savings) of proposed policy over current policy.

Table 7.1

Summary of costs and benefits modelled		
Standard	***Counterfactual***	***Policy***
Space	Costs ▪ Additional sqm built above industry standard ▪ Build cost (above industry standard) ▪ Process cost – specific to the standard Benefits ▪ None, although we do model the proportion of the change in cost is expected to be passed on in the form of higher prices, which purchasers will pay. This provides a form of monetary value of the benefit	Costs ▪ Additional sqm built above industry standard ▪ Build cost increase / savings ▪ Process cost – specific to the standard Benefits ▪ None, although we do model the proportion of the change in cost is expected to be passed on in the form of higher prices, which purchasers will pay. This provides a form of monetary value of the benefit

7.3 The calculation has been undertaken separately for private and affordable housing and takes account of the following

Counterfactual cost calculation

7.4 The counterfactual cost calculation comprises the following steps:

- For private sector dwellings
  - For each dwelling type, estimate the distribution of dwellings in the absence of standards across the range of sizes in sqm based on data from the EHS
  - Calculate the number of dwellings in areas that have space standards that would be built below the standard in the absence of a space standard
  - Calculate the additional sqm that is required to bring these dwellings up to the space standard
  - Calculate the process cost for builders and recipients based on number of dwellings built to existing standards
- For affordable dwellings
  - All affordable housing is assumed to be required to be built to a space standard and therefore there is no space distribution in the absence of standards for affordable dwellings therefore under the counterfactual we estimate the distribution of dwellings by size
  - for each dwelling type estimate the distribution of dwellings across the ranges of sizes in sqm based on data from HQI on the % of dwellings built in specific ranges
  - Estimate the number of affordable housing built in these ranges

Policy cost calculation

7.5 The cost of proposed policy cost calculation comprises the following steps:

- For private sector dwellings
  - For each dwelling type, estimate the distribution of dwellings in the absence of standards across the range of sizes in sqm based on data from the EHS
  - Calculate the number of dwellings in areas that are expected to have the proposed space standards that would be built below the standard in the absence of a space standard
  - Calculate the additional sqm that is required to bring these dwellings up to the proposed space standard
  - Deduct the additional sqm to reach the existing space standard from the additional sqm required to reach the proposed space standard to estimate the change in total sqm of building required
  - Multiply the net change in sqm by the average build cost per sqm
  - Apply the % of additional build costs recovered through house prices to estimate the net additional build cost
  - Calculate the process cost for builders and recipients based on number of dwellings built to proposed standards
  - Estimate the net additional build costs and process costs
- For affordable dwellings

- Model the impact of replacing the HQI size range with a minimum size benchmark –
- Calculate the change in sqm that will result in dwellings being built closer to the benchmark size
- Multiply the change in sqm by the unit cost per sqm
- Apply the % of additional build costs recovered through house prices to estimate the net additional build cost
- Assume the process costs are the same for HQI and for proposed benchmark – therefore no net change in process costs
- Estimate net additional build costs

Cost-benefit analysis - sequence of calculations, key sources and assumptions

7.6 The following tables provides further detail of the sequence of calculations, showing the sequence of calculations, the key sources and assumptions. Below the table are further details and explanation of these.

Space – private

Table 7.2

Structure of cost benefit analysis – Space (private)		
	Sequence of calculations	***Key sources and assumptions***
1	Housing Growth Assumptions	▪ Common to all IAs
2	Assumptions Dwelling Total	▪ Common to all IAs
3	Assumption - % of dwellings where existing standard are applied	▪ Estimated % of dwellings by type where space standards are currently applied
4	Assumption - % of dwellings where proposed standard are applied	▪ Estimated % of dwellings by type where proposed space standards will be applied
5	Assumption - no of dwellings where standard is applied	▪ Calculation of number of dwellings where space standards are currently applied
6	Assumption - no of dwellings where proposed standard will be applied	▪ Calculation of number of dwellings where space standards will be applied
7-11	assumption - % of private dwellings by size • 1 bedroom flat • 2 bedroom flat • 2 bedroom house • 3 bedroom house • 4 bedroom house	▪ Industry preferred size distribution of dwellings by type ▪ Derived from local authority survey and analysis of English Housing Survey data showing the size ranges to which each house-type is currently built
12-16	calculation number of dwellings that would be built below current standard • 1 bedroom flat • 2 bedroom flat • 2 bedroom house • 3 bedroom house • 4 bedroom house	▪ Calculation impact of space standards ▪ Multiplying the number of dwellings in areas with existing space standards that would typically be built below the current space standard by sqm below standard ▪ Multiplying the number of dwellings in areas with proposed space standards that would typically be built below the proposed space standard by sqm below standard ▪ Calculating the difference in overall sqm built
17	Counterfactual process costs	▪ Multiplying the cost per dwelling of process costs by number of units
18	Policy process costs	▪ Multiplying the cost per dwelling of process costs by number of units

19	Results - value of space saving of proposed change in minimum space standard	Results • Applying transition % to additional build costs and process costs

Table 7.2b

Structure of cost benefit analysis – Space (affordable)		
	Sequence of calculations	***Key sources and assumptions***
1	Housing Growth Assumptions	▪ Common to all IAs
2	Assumptions Dwelling Total	▪ Common to all IAs
3	Assumption % of Dwellings with Space Standards	▪ Estimated % of dwellings by type where space standards are currently applied
4	Assumptions number of dwellings with space standards	▪ Calculate number of dwellings by type where space standards are currently applied
5	Assumption counterfactual size of dwellings built to HQI standards % ▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	▪ size distribution of affordable dwellings by type ▪ Derived from HQI data showing the size ranges to which each house-type is currently built
10	Assumption counterfactual - size of dwellings built to HQI standards - number ▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	▪ Calculating the number of dwellings that are in each size band by dwelling type
15	Assumption_policy - size of dwellings built to Proposed Space Benchmark % ▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	▪ Calculating the estimated size distribution of affordable dwellings based on new space standard ▪ Estimated assuming a reduction in the % of dwellings that will be built above the proposed space benchmark
20	Assumption_policy - size of dwellings built to Proposed Space Benchmark - number ▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	▪ Calculating the number of dwellings that are in each size band by dwelling type based on proposed standard
25	Calculation - policy - difference in numbers built by size from counterfactual ▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	▪ Calculating the change in number of dwellings built at each size band ▪ Estimate the change in sqm built
30	Assumption_additional cost per sqm	▪ EC Harris cost per sq. meter

	▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	
35	Calculation_value of change in dwelling sizes ▪ 1 bedroom flat ▪ 2 bedroom flat ▪ 2 bedroom house ▪ 3 bedroom house ▪ 4 bedroom house	▪ Multiplying change in sqm by the EC Harris unit build costs per sqm
40	Results	▪ Results ▪ Applying cost recovery calculations ▪ Applying transition assumptions

Detail of the calculations

Development - house sizes – distribution of private sector housing by size

Analysis of English Housing Survey Data

7.7 DCLG provided us with the latest available data on house building in England from the English Housing Survey (EHS) data for 1 and 2 bed apartments, 2, 3 and 4 bed houses. We analysed the data to show the distribution of sizes of each house-type, for:

- Private housing only
- Recent private housing – defined as post 2000.

7.8 Some of the key distribution charts are shown below. The distribution profiles are not dissimilar from the size distributions found in a RIBA study[13]

[13] http://www.architecture.com/Files/RIBAHoldings/PolicyAndInternationalRelations/HomeWise/CaseforSpace.pdf

Using a 10 meter size band

Table 7.4

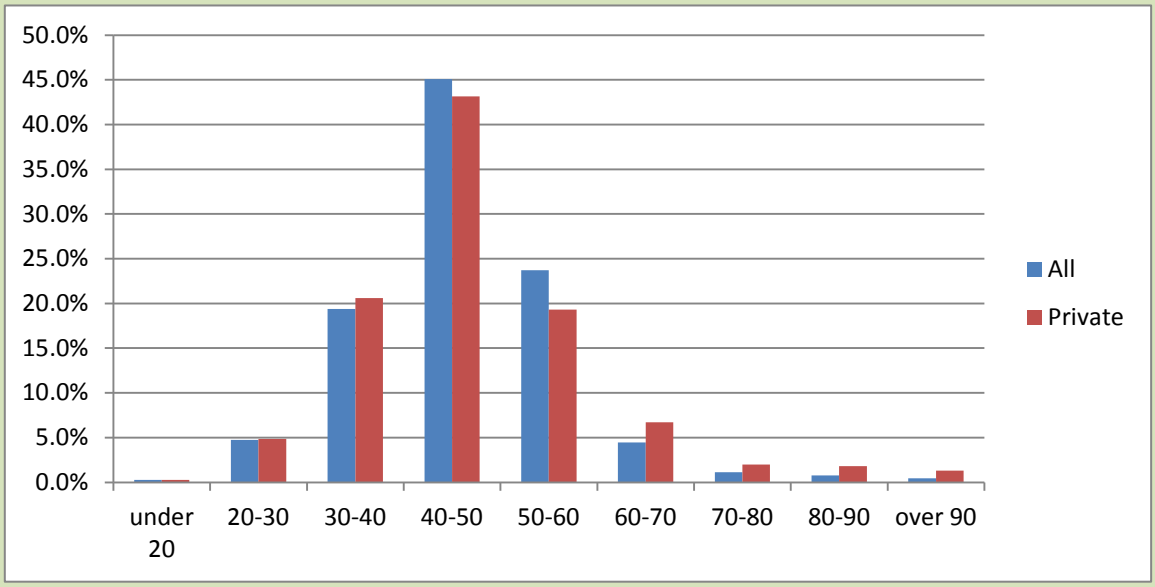
Three-bed houses, private, post 2000

Source: Adroit/DCLG analysis of English Housing Survey data

Using different meter size bands (to capture the range)

Table 7.5

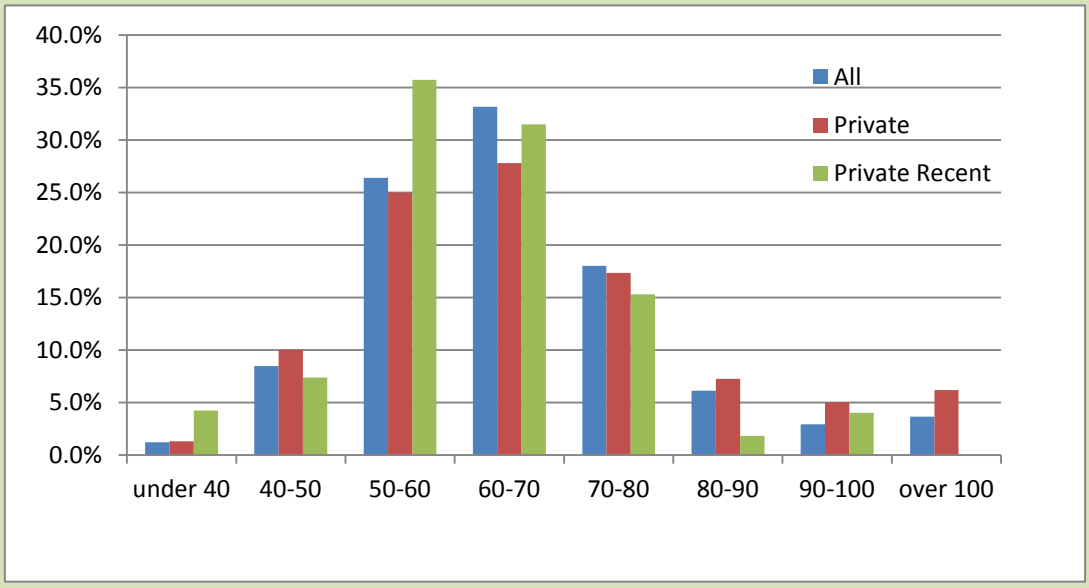
One bed flat - private



Source: DCLG/Adroit analysis of English Housing Survey data.

Table 7.6

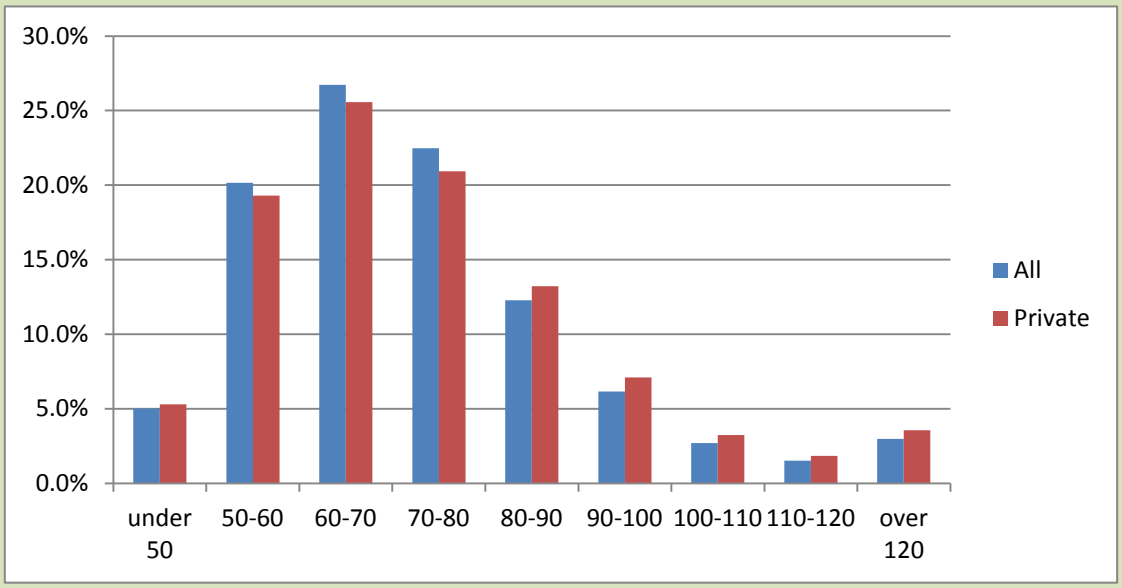
Two bed flat – (recent = post 2000)



Source: DCLG/Adroit analysis of English Housing Survey data.

Table 7.7

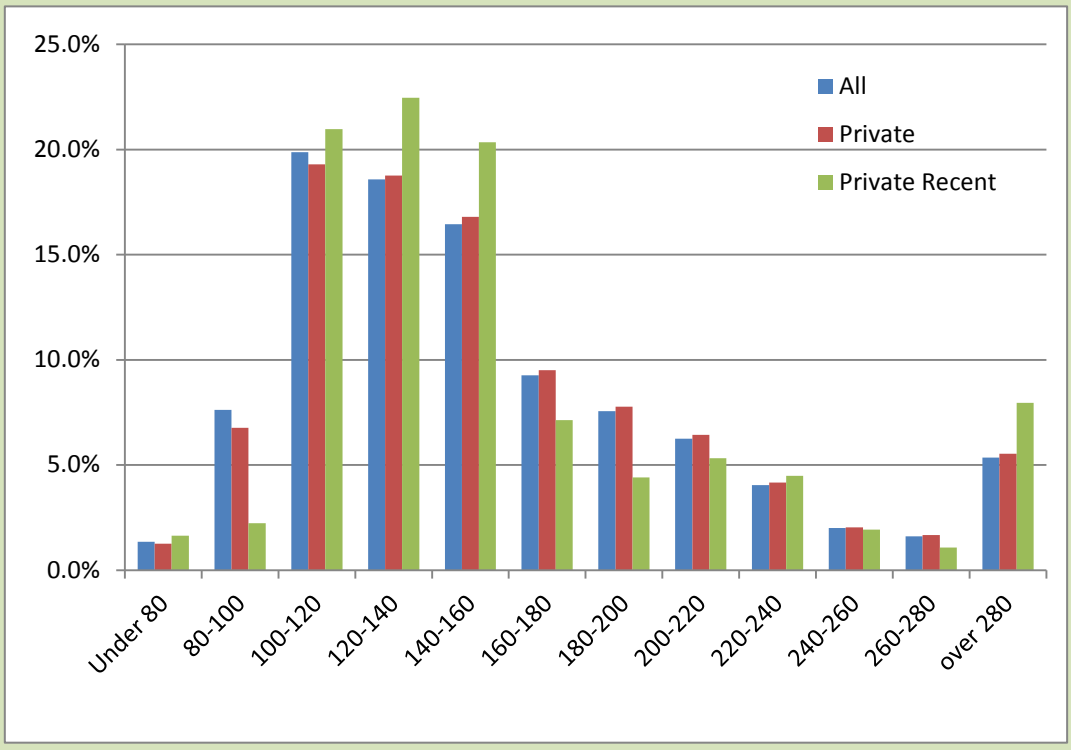
two bed house – private



Source: DCLG/Adroit analysis of English Housing Survey data.

Table 7.8

Four bed plus houses – (recent = post 2000)



Source: DCLG/Adroit analysis of English Housing Survey data.

HQI

7.9 Statistics have been provided by HCA on the size of dwelling built as part of the house quality Indicators (HQI). The data indicates the range of sizes of affordable units, the proportion of affordable dwellings that fall within the HQI minimum size range, the proportion that are up to 10% above and 10%+ above the minimum range, the mode unit size and the mean unit size.

7.10 After discussions with DCLG officials about the likely impact of the replacement of HQI we have estimated that there will be a reduction over 10 years of 25% building 1-10% over the minimum and 50% of those building 10+ over the minimum[14].

Table 7.9

No ppl	2	3	4	3	4	5
unit type	1BF	2BF	2BF	2BH	2BH	3BH
Number of units	4275	6575	1576	3029	7846	9685
Minimum HQI range (m^2)*	45-50	57-67	67-75	57-67	67-75	75-95
Within minimum HQI range	42.69%	76.67%	81.15%	62.56%	43.41%	83.91%
1-10% above min	35.63%	18.92%	15.04%	29.15%	54.26%	11.54%
10%+ above min	21.64%	4.23%	3.49%	8.19%	2.26%	4.54%
Mean unit size	51.1	64	71.5	65.4	75	89
Mode unit size group	45-49.9	57-66.9	67-75	57-66.9	75-84.9	85-89.9
Number in modal group	1825	5041	1276	1895	4257	3657
% in modal group	42.69%	76.67%	80.96%	62.56%	54.26%	37.76%

7.11 This HQI data has been used to develop a size distribution of affordable units

Assumptions regarding proportion of new house building where current space standards are applied

7.12 Our assumptions regarding the proportion of new house building where current space standards are applied are:

- Current space standards are applied to 100% of new house building in London because of the London plan
- Current space standards are applied to 100% of affordable new house build including outside of London
- The only subset of new build with variable space standard compliance is private tenure outside of London – the % compliance figures are derived from ECH's local authority survey analysis which identified local plans with space policy (and with proposed space policy) and which identified compliance (a) through a review of a sample of planning applications/ permissions and (b) through an EC Harris survey of the views of professionals in the sector regarding likely enforcement trends

7.13 From the survey of local authority policies, 33% of local authorities include a space standard policy (Table 10 of the local authority policy survey). The survey also found that 10% apply the standard only to affordable housing. Therefore, we have estimated that outside of greater London (where all dwellings are subject to a minimum space standard), 9% of new private dwellings were built in areas that had a minimum size space standard. This is based on the following:

- 33% of local authorities have a space standard
- 10% of local authorities only apply the space standard to affordable dwellings with 22% applying to all dwellings.
- 13% of new private dwellings are built in London, which are covered by a space standard
- The result is that 9% of private dwellings outside of London are subject to a space standard

7.14 The survey of professionals indicates that these standards are enforced in 82% of cases. Therefore, is it estimated that 7% of new dwellings outside of London are subject to minimum space standards.

7.15 Based on the trend in table 4.2, where 24% of plans in 2005-9 including a space standard increasing to 50% in 2012-14, this evidence suggests that the proportion built to a space standard will continue to increase.

7.16 Under the policy scenario, with the standard becoming a national standard, the analysis assumes that those local authorities that currently apply space standards (based on the survey of local plans), will continue to do so and that a small number of additional authorities, each year, will start to apply space standards (assumed to increase by 1% per annum). The assumed increased is show below.

7.17 The metrics are the same for all house types.

- 7% in 2014
- 14% by 2024

Further evidence of space standards being adopted

7.18 Examination of cross tenure space standard policies identified within the EC Harris survey or suggested by respondents to the 2013 consultation indicates that it is the London model or higher which is likely to predominate going forward, applied on a cross tenure basis. The proposed space standard adopts a slightly different approach to generating the size for each type of dwelling including lower figures for some dwelling types which in turn will generate a saving (see proposed policy details below).

Proposed space standard policy

7.19 The following table shows the proposed space standard requirements for Gross Internal Area.

Table 7.10

Proposed minimum gross internal floor areas and storage (m^2)					
number of bedrooms	number of bedspaces	1 storey dwellings	2 storey dwellings	3 storey dwellings	built-in storage
studio	1p	39 (37)*			1.0
1b	2p	50	58		1.5
2b	3p	61	70		2.0
	4p	70	79		
3b	4p	74	84	90	2.5
	5p	86	93	99	
	6p	95	102	108	
4b	5p	90	97	103	3.0
	6p	99	106	112	
	7p	108	115	121	
	8p	117	124	130	
5b	6p	103	110	116	3.5
	7p	112	119	125	
	8p	121	128	134	
6b	7p	116	123	129	4.0
	8p	125	132	138	

Transition assumptions

Table 7.11

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2015
Transition	Current	100%	95%	70%	15%	0%	0%	0%	0%	0%	0%	0%
	Policy	0%	5%	30%	85%	100%	100%	100%	100%	100%	100%	100%

Process cost

7.20 One of the primary cost savings regarding process derived from the proposed policy is that house builders will have the option of approving design-types which they can then apply

across England, wherever the national space standard is adopted. We have taken the proportion of dwellings built by large house builders as the basis for estimating the number of dwellings that will be approved by type.

7.21 This results in the assumption that 73% of dwellings required to meet a space standard will be approved by type and 27% approved on an individual basis.

7.22 The following table illustrates the ECH cost of approval per dwelling on an individual basis.

Table 7.12

house builder	**Size of Development**	House builder	recipient
London	Small	36	5
London	Medium	8	2
London	large	8	2

7.23 For those dwellings approved by type, we have assumed that each of the 21 large house builders approves 39 design types every three years at a cost of £416 per approval for the house builder and £92 per type approved for the recipient as per EC Harris costs.

Table 7.13

Type process costs		
	House Builder	**Recipient**
No of large house builders in England	21	21
Assume an average of design types	39	39
Total number of approvals every 3 years	819	819

Cost recovery calculations

7.24 A proportion of the cost of building larger private dwellings will be recovered by the house builder through higher sales prices. The following model was developed by EC Harris to estimate the proportion likely to be recovered.

7.25 This has been accounted for in the cost benefit analysis. We have adopted the 3m squared additional size as an average metric and this has been applied to the final cost figure calculated in the analysis. Size increases are likely to be around the 3 square meter mark, based on analysis of distribution of sizes of homes built.

Table 7.13

Area change			Values					Costs		Recovery
Area change (m2)	Base area (m2)	Standards Area (m2)	Base value (£)	Base value (£/m2)	Standards Value (£)	Standards Value (£/m2)	Value Increase (£)	Cost increase - build (£)	Cost increase - all in (£)	Percent cost recovered
1	91	92	£ 255,000	£ 2,802	£ 255,750	£ 2,780	£ 750	£ 632	£ 834	90%
2	91	93	£ 255,000	£ 2,802	£ 256,500	£ 2,758	£ 1,500	£ 1,264	£ 1,668	90%
3	91	94	£ 255,000	£ 2,802	£ 257,000	£ 2,734	£ 2,000	£ 1,896	£ 2,503	80%
5	91	96	£ 255,000	£ 2,802	£ 258,000	£ 2,688	£ 3,000	£ 3,160	£ 4,171	72%
10	91	101	£ 255,000	£ 2,802	£ 260,000	£ 2,574	£ 5,000	£ 6,320	£ 8,342	60%

8. The Code for Sustainable Homes

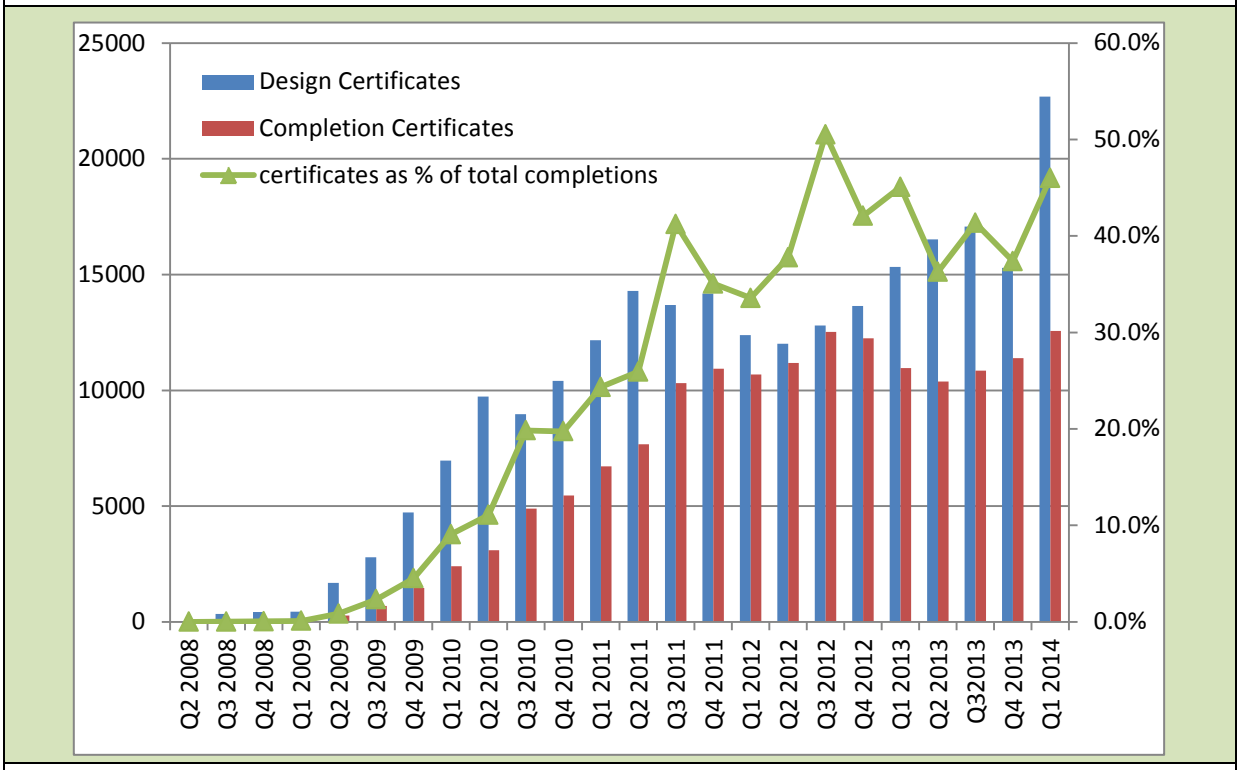
8.1 The proposal is to phase out the Code for Sustainable Homes (CFSH). Mandatory elements of existing code policies such as water efficiency and energy will be subject to transitional measures which will see these requirements 'passported' in planning policy to the nearest equivalent optional requirement. This section deals with the current evidence around take-up of CFSH and the projection of future take-up.

Overall Trends in Code for Sustainable Homes

8.2 There are two certificates awards for CFSH, one at design stage and one and completion. The chart below illustrates the number of certificates being issued per quarter – highlighting that there has been a clear upward trend in award of design certificates, although the number of completion certificates in recent years has been affected by the credit crunch and the reduction in new dwelling completions.

Table 8.1

Historic Take Up of CFSH



Source: ECH survey

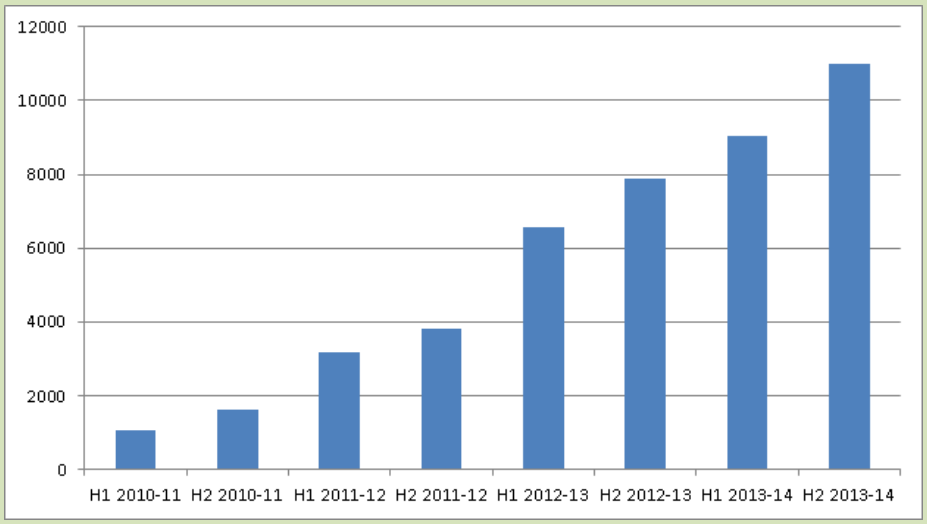
8.3 Comparing post-construction Code statistics with English housing completions shows that the proportion of English homes completed to the Code increased from 19% in 2010-11 up to 46% in Q1 2014.

8.4 A significant number of affordable dwellings are built to CFSH as part of grant requirements. Therefore it is useful to look at trends specifically for private dwellings. For new private

dwellings, the overall proportion built to CFSH is lower than for public dwellings, but the number of new private dwellings receiving CFSH post construction certificates has been increasing each quarter.

Table 8.2

CfSH Private Trend

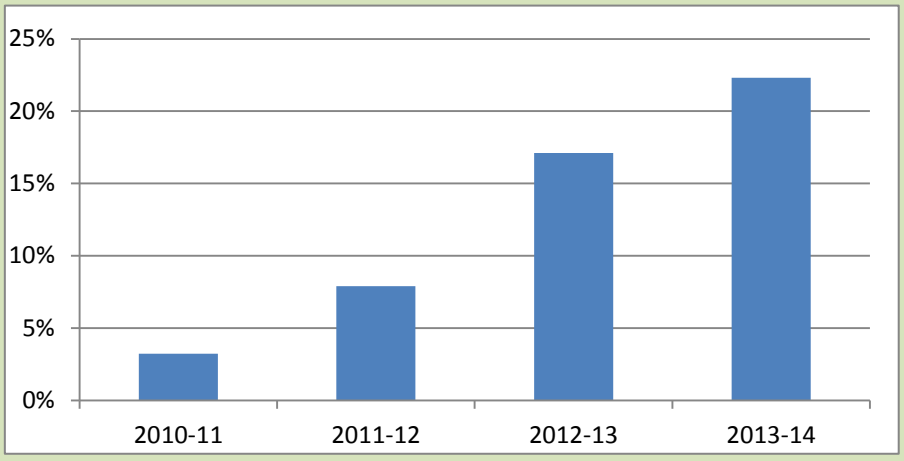


Source: ECH survey

8.5 Presenting these figures as a proportion of the total number of new private dwellings indicates that the proportion of private dwellings being built to CFSH is increasing significantly, with 22% of private dwellings being built to CFSH during 2013-14.

Table 8.3

Proportion of dwellings built to Code for Sustainable Homes



Source: ECH survey

8.6 This evidence has been supplemented by the EC Harris Survey of planning policy which evidences a steady increase in local plans requiring new homes to be constructed to a level of the Code. The Survey shows that by 2014 some 58% of local authorities include the Code as a firm policy standard and 74% include the Code as a Firm or Aspirational standard.

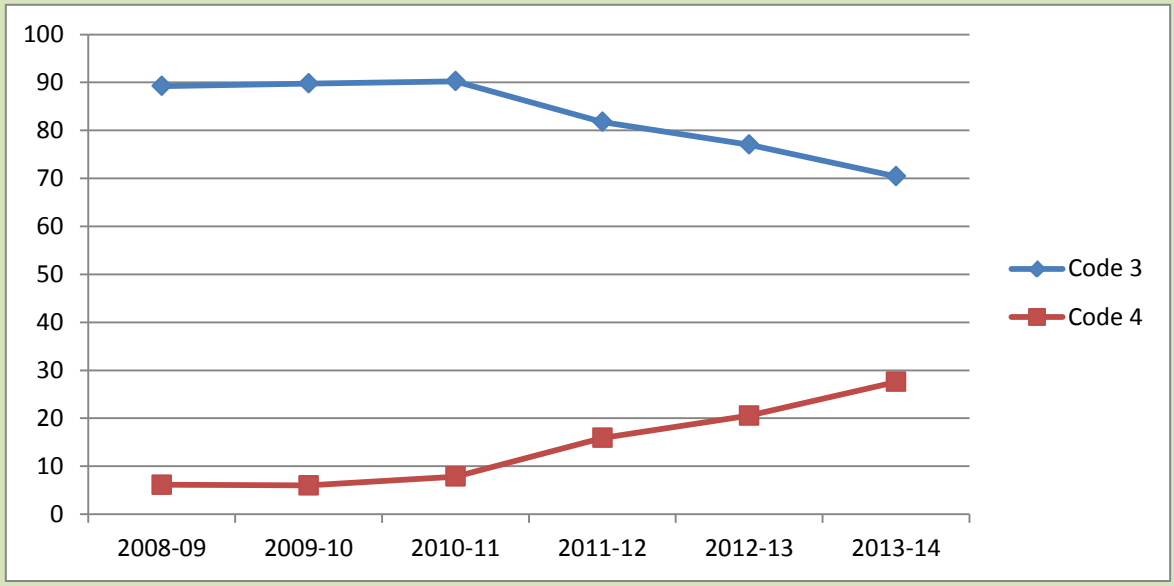
8.7 We have forecast future CFSH take-up based on the trend between Q3 2011 and Q1 2014 which is the point at which the initial growth in Post Construction stage certificates peaked as a proportion of dwellings built. During this period, the proportion of dwellings receiving completion certificates has increase by 0.44 percentage points per quarter. Applying this trend to the forecast indicates that the proportion of dwellings receiving CFSH completion certificates will increase from 46% in 2014 to 61.5% in 2024.

Code for Sustainable Homes Levels

8.8 As well as an increase in the overall number of CFSH certificates there has also been a significant trend towards higher levels of CFSH, with a particular increase in Code Level 4 Homes. Chart below illustrates specifically the trend change of homes being built to Code Levels 3 and 4.

Table 8.4

Proportion of Code homes built to Code Levels 3 and 4



Source: ECH survey

8.9 Based on this evidence, this impact assessment assumes that there is a 5% increase pa in the proportion of Code homes built to level 4, the average annual increase over the period 2009-14, and a comparable drop in the proportion built to Code 3.

8.10 The Survey also showed evidence of a higher proportion of plans with aspirational Code targets, including around 4% of authorities already, encouraging/ seeking these levels of large developments. A further 18% of the authorities surveyed stated a future policy within their plan relating to increasing standards of sustainability, including common references to Code levels 5 and 6. One local authority surveyed already references Code level 5 in its plan for greenfield sites.

8.11 Based upon the Survey evidence of existing policies alongside current and future aspirations in local authorities, though taking into account the substantial cost differential associated with Code Levels 5 and 6, it is assumed that there would be a modest increase in the proportion of homes being required to be built to Code Levels 5 and 6. For the purposes of this Assessment it is assumed that 3% of Code homes are built to Code level 5 and 2% to Code level 6 by 2024.

8.12 The proportion built to the lower levels, especially Code level 3 is anticipated to fall away as the higher Code levels become more common, which is consistent with the trend already evidenced in the chart above.

Table 8.6

Assumptions about proportion of dwellings built to each level of CFSH		
	2014	**2024**
Level 1	0.3%	0.0%
Level 2	0.5%	0.0%
Level 3	71.5%	20.0%
Level 4	27.6%	75.0%
Level 5	0.1%	3.0%
Level 6	0.0%	2.0%

8.13 These assumptions have been used across each of the following standards that are impacted by the CFSH. Sections 9-11 focus on the assumptions around how specific elements of the CFSH (water, energy and other aspects) will be taken forward under the policy scenario.

9. Water Standard

Policy

9.1 The proposal is to provide one standard for a higher level of water efficiency of 110 litres per person per day that local authorities can choose to include in their plans instead of meeting the minimum requirements of 125 litres per person per day already in the Building Regulations.

Counterfactual

- The majority of water standards required in planning policies come from the Code for sustainable homes, which includes credits for water standards
- Different levels of the Code required different water standards – compliance with the relevant level of water efficiency is mandatory at each code level.
- A number of local authorities also have bespoke water standards for new dwellings

Policy

- The policy is to simplify water standards into one optional standard for use in areas with water stress.

Impact logic chain

9.2 The objective is to calculate the cost savings (both build cost and process cost savings) of proposed policy over current policy.

Table 9.1

Summary of costs and benefits modelled		
Standard	***Counterfactual***	***Policy***
Water	Costs ▪ Build cost (above industry standard) ▪ Process cost – specific to the standard Benefits ▪ None	Costs ▪ Build cost savings ▪ Process cost – specific to the standard Benefits ▪ None

9.3 The calculation takes account of the following

Counterfactual cost calculation

9.4 The counterfactual cost calculation comprises the following steps:

- Estimating the number of dwellings built to each Code Level
- Estimate additional number of dwellings that are built in local authorities with a water standard
- Calculate the built cost for achieving the water standard for each dwelling type and each code level

- Calculate the process costs of achieving the water standards for each development type

Policy cost calculation

9.5 The cost of proposed policy cost calculation comprises the following steps:

- Estimating the number of dwellings that will be built to the proposed water standard
- Calculating the cost of building to the proposed water standard for each dwelling type
- Calculate the process costs of achieving the water standards for each development type

Cost-benefit analysis - sequence of calculations, key sources and assumptions

9.6 The following table provides further detail of the sequence of calculations, showing the sequence of calculations, the key sources and assumptions. Below the table are further details and explanation of these.

Table 9.2

Cost-benefit analysis - sequence of calculations, key sources and assumptions		
	Sequence of calculations	***Key sources and assumptions***
1	New Build Housing Growth Assumptions (%)	▪ Common to all IAs
2	New Build Housing Mid Growth Rate Forecasts (numbers)	▪ Common to all IAs
3	Counterfactual_% of Houses Built to Code Levels	▪ Estimating % dwellings that will be built to code levels (same assumptions as other standards that are based on the Code) ▪ Estimating % of dwellings that will be built to other water standard
4	Transition Assumptions	▪ Phase in of new policy and phase out of old standards and 'passport' across from old standards to new
5	Policy % of houses built to code levels and new water standard	▪ Estimating % of dwellings by type that will be built to new water standards
6	Assumption Counterfactual Dwelling Numbers built to all code/water standards	▪ Estimating the number of dwellings that will be built to current water standards at each code levels under counterfactual
7-12	Assumptions_ counterfactual_ dwellings built to ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Calculating number of dwellings by type built to water standards under each code level
13	Assumption_Policy Dwelling Numbers built to all code/water standards	▪ Estimating total number of dwellings built to proposed water standards
14-17	Assumptions_policy_dwellings built to: ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Phase out assumptions of existing standards under policy scenario – number of dwellings
18	Assumptions_policy Water Standard Numbers	▪ Phase in assumptions about number of dwellings built to proposed water standards
19	Assumptions_Water Standard Costs per dwelling	▪ Unit costs for each water standard by code level and dwelling

		type
20 - 23	Calc_Counterfactual water costs: ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Calculating total build costs for current water standards over industry standards
24	Calc_counterfactual water process costs	▪ Calculating process costs for current water standards based on development size
25	Calc_counterfactual_total build costs	▪ Summing build costs across all dwellings with current water standards
26 - 29	Calc_Policy water costs ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Calculating build costs for current water standards during phase out of existing standards under policy scenario
30	Calc_policy Code water process costs	▪ Calculating process costs of current water standards during phase out period of existing standards
31	Calc_policy Water Standard costs	▪ Calculating cost of proposed water standards multiplying number of dwellings with proposed standard by unit cost
32	Calc_policy code water total build costs	▪ Summing build costs across all dwellings with proposed water standards
33	Results	▪ Presented as a Net Present Value@3.5% and as an Equivalent Annual Net Cost

Details of the calculations

9.7 The CFSH forecasts presented in Section 9 have been used to estimate the level of take-up of water standards In addition, 5% of local authorities that do not have a CFSH policy do have a water standards policy, therefore this additional 5% has been added to the CFSH figures.

9.8 In total therefore we assume that 51% of dwellings in 2014 are built to a water standard and 66.5% in 2024.

9.9 The level of CFSH has an impact on the cost of water standards, with only dwellings built to Level 3 or above incurring a cost in excess of current Building Regulations and the distribution of new dwellings across the CFSH is based in the figures in section 8.

Transition

9.10 It is assumed that as CFSH is phased out dwellings that would have been built to Levels 5 & 6 will be built to the proposed standard (which is equivalent to code Level 3 or 4).

Table 9.3

	2014	2015	2016	2017	2018
Levels 5 and 6 Code	100%	80%	30%	10%	0
Proposed standard	0%	20%	70%	90%	100%
Levels 3 and 4 Code	100%	95%	70%	15%	0%
Proposed standard	0%	5%	30%	85%	100%

10. Energy Standard

Policy

10.1 The proposal is to move to a system where dwelling energy efficiency is delivered through the Building Regulations and ultimately zero carbon policies for new dwellings.

Counterfactual

- The current energy standard relates to dwellings built to the various levels in Code for Sustainable Homes
- The cost is in addition to the typical energy related build costs within building regulations
- From 2016, the additional cost of code related energy building in relation to building regulations will fall as zero carbon homes build standard policy is introduced into building regulations.

Policy

- The policy is to phase out the energy standard related to code for sustainable homes and not to introduce a new standard in addition to building regulations. However, local authorities with a current plan requirement to build to Code level 4 will be able to passport the carbon compliance requirement (known in the Code as credit ENE1) into their policy until such time as the zero carbon build standard policy is introduced.

Impact logic chain

10.2 The objective is to calculate the cost savings (both build cost and process cost savings) of proposed policy over current policy.

Table 10.1

Summary of costs and benefits modelled		
Standard	***Counterfactual***	***Policy***
Energy	Costs ▪ Build cost (above industry standard) ▪ Process cost – specific to the standard Benefits ▪ Value Cost Savings	Costs ▪ Build cost savings ▪ Process cost – specific to the standard Benefits ▪ Value carbon saving

10.3 The calculation takes account of the following

Counterfactual cost calculation

10.4 The counterfactual cost calculation comprises the following steps:

- Estimate the number of dwellings built to each level of Code by type
- Estimate the number of these dwellings that will be built to zero carbon from 2016 onwards

- Applying assumptions about transition from code to code net of zero carbon. The zero carbon policy is not being introduced in this Impact Assessment, though it is being taken into account under the Do Nothing option counterfactual which reduces the extra over cost of local plans exceeding the regulatory minimum..
- Calculate the energy costs associated with Code for each dwelling type by multiplying unit costs by number of dwellings
- Calculate the energy costs associated with code net of Zero Carbon costs from 2016 onwards by multiplying unit costs by number of dwellings
- Calculate the energy related code process costs based on number of dwellings and costs by development size
- Sum build costs with process costs

Policy cost calculation

10.5 The cost of proposed policy cost calculation comprises the following steps:

- Start with same estimates as counterfactual
- Apply assumptions for transition to zero carbon homes
- Apply estimates of passport of Code 4 ENE-1 during transition to zero carbon homes
- Apply estimates of Code for Sustainable Homes phase out over time (apply cost energy costs in excess of code 4 ENE-1

Cost-benefit analysis - sequence of calculations, key sources and assumptions

10.6 The following table provides further detail of the sequence of calculations, showing the sequence of calculations, the key sources and assumptions. Below the table are further details and explanation of these.

Table 10.2

Structure of cost-benefit analysis for Energy costs (Counterfactual)		
	Sequence of calculations	***Key sources and assumptions***
1	New Build Housing Growth Assumptions (%)	▪ Common to all IAs
2	New Build Housing Mid Growth Rate Forecasts (numbers)	▪ Common to all IAs
3	Transition	▪ Phase in assumptions for Zero Carbon homes
4	assumptions development size	▪ Number of dwellings by development size
5	assumptions code level %	▪ Proportion of dwellings built to code
6	assumptions all code numbers	▪ Number of dwellings built to code
7-12	assumptions number of dwellings ▪ Code level 1 ▪ Code level 2 ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Number of dwellings built to each of the code levels ▪ Includes transition to zero carbon homes in building regs

13-16	number of dwellings ▪ Code level 3 (zero carbon) ▪ Code level 4 (zero carbon) ▪ Code level 5 (zero carbon) ▪ Code level 6 (zero carbon)	▪ Number of dwellings built to code energy standard and also to zero carbon standard
17	assumptions code housing by development size	▪ Number of houses built in different size development by code level
18	assumptions process costs	▪ Unit process costs from EC Harris
19	assumptions energy costs	▪ Unit energy costs from EC Harris
20	assumptions energy costs net of zero carbon	▪ Unit energy costs net of Zero Carbon costs
21-24	calc code energy costs ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Multiplying unit energy costs by number of dwellings
25-28	calc code energy costs net of zero carbon ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Multiplying unit energy costs net of zero carbon by number of dwellings
29	calc - counterfactual build costs	▪ Summing build costs across all types with energy standard
30	calc - energy process costs	▪ Multiplying unit process costs by number of dwellings with energy standards
31	results	▪ Presented as a Net Present Value@3.5% and as an Equivalent Annual Net Cost

Table 10.3

Structure of cost-benefit analysis for Energy (Policy Scenario)		
	Sequence of calculations	***Key sources and assumptions***
1	New Build Housing Growth Assumptions (%)	▪ Common to all IAs
2	New Build Housing Mid Growth Rate Forecasts (numbers)	▪ Common to all IAs
3	Transition	▪ Phase out of Code Energy, Phase in assumptions for ENE 1 while transition to Zero Carbon homes
4	assumptions development size	▪ Number of dwellings by development size
5	assumptions code level %	▪ Proportion of dwellings built to code
6	assumptions all code numbers	▪ Number of dwellings built to code
7-12	assumptions number of dwellings ▪ Code level 1 ▪ Code level 2 ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Number of dwellings built to each of the code levels ▪ Includes transition to zero carbon homes in building regs ▪ Includes phase out of Code ▪ Includes interim carry across of ENE 1
13	number of dwellings building to ENE1	▪ Number of dwellings built to ENE 1 standards for transition
14	number of dwellings built to code by size of development	▪ Number of dwellings build with energy standard by size of development
15	number of dwellings built to ENE 1 by size of development	▪ Number of dwellings build with ENE 1 standard by size of development
16	Code Process Costs per Unit	▪ EC Harris unit costs for energy code
17	ENE 1 Process Costs per Unit	▪ ENE 1 process costs per unit (EC Harris)
18	Additional Costs to Build to Energy Standards per Unit	▪ EC Harris unit build costs to ENE 1
19-22	Calculations_ energy built costs ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Calculating energy build costs for code housing during phase out of Code ▪ Multiplying number of dwellings by unit costs
23	Calculations_ENE1 energy built costs	▪ Calculating build costs to ene 1 during interim period before ZC ▪ multiplying number of dwellings by unit costs
24	total build costs for energy standards	▪ Summing ENE 1 build costs
25	Calculation_Code Energy Process Costs	▪ Calculating process costs for code energy
26	Calculation_ENE1 Energy Process Costs	▪ Calculating process costs for ENE 1 energy dwellings
27	results	▪ Presented as a Net Present Value@3.5% and as an Equivalent Annual Net Cost

Details of the calculations

10.7 The Code for Sustainable Homes forecasts presented in Section 9 have been used to estimate the level of take-up of energy standards.

10.8 The level of Code for Sustainable Homes has an impact on the cost of energy standards, with only dwellings built to Level 4 or above incurring a cost in excess of current Building Regulations and the distribution of new dwellings across the Code for Sustainable Homes is based in the figures in section 8.

10.9 Within the counterfactual, the introduction of zero carbon homes into building regulations from 2016 reduces the net additional cost of the Code for Sustainable Homes energy standard relative to building regulation. The table below illustrates the assumptions of the transition from code 4 energy costs to the zero carbon standard.

Table 10.4

	2016	2017	2018	2019	2020	2021	2022
All Code 4 ENE build costs	100%	90%	65%	45%	25%	10%	0%
ZC Build Standard	0%	10%	35%	55%	75%	90%	100%

10.10 Under the policy scenario it is assumed that as the Code for Sustainable Homes is phased out dwellings that would have been built to Code level 4 energy standard, will be allowed to passport the carbon compliance element (ENE1) of this standard to the new policy. At the same time the Zero Carbon build standard is also being introduced, the combined impact of these changes are presented in the table below.

Table 10.5

	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
All CSFH Energy Costs	100%	80%	30%	10%	0%	0%	0%	0%	0%
ENE1 – CFSH Level 4 passport	0%	20%	70%	80%	65%	45%	25%	10%	0%
ZC Build Standard	0%	0%	0%	10%	35%	55%	75%	90%	100%

10.11 Average process costs per new dwelling vary by size of development as well as dwelling type. The assumptions about the proportion of dwellings built in different size developments derived from planning data has been weighted according to the findings of the policy survey for authorities that apply code standards only to large developments.

Table 10.6

	% of all dwellings by development size	Weighting for Code Dwellings based on policy survey	% of code dwellings by development size
Small Development	21%	-1.60%	19.7%
Medium Development	34%	0.70%	34.5%
Large Development	45%	0.90%	45.8%

10.12 The following section deals with the remaining elements of CFSH which are not covered under Water, Access, Security or Energy.

11. Other requirements of the Code for Sustainable Homes

Policy

11.1 The proposal is to wind down the code including other requirements than those covered by the other themes in this report e.g. water, access, energy, security which have been dealt with elsewhere

Counterfactual

- In addition to the costs considered under the other themes (energy, water, security, access and space) there are costs related to requirements in Code for Sustainable Homes to achieve the credits for each level such as ecology, materials and waste.

Policy

- The policy is to wind down the Code for Sustainable Homes and not replace these additional requirements with alternative standards

Impact logic chain

11.2 The objective is to calculate the cost savings (both build cost and process cost savings) of proposed policy over current policy.

Table 11.1

Summary of costs and benefits modelled		
Standard	***Counterfactual***	***Policy***
Code	Costs ▪ Build cost (above industry standard) ▪ Process cost – specific to the standard Benefits ▪ None	Costs (during phase out of Code) ▪ Build cost savings ▪ Process cost – specific to the standard Benefits ▪ None

11.3 The calculation takes account of the following

Counterfactual cost calculation

11.4 The counterfactual cost calculation comprises the following steps:

- Calculate the number of dwellings built to each level of code by dwelling type
- Multiply number of dwellings by unit cost for each level and dwelling type
- Calculate process costs by multiplying unit costs by number of dwellings

Policy cost calculation

11.5 The cost of proposed policy cost calculation comprises the following steps:

- Calculate the number of dwellings built to each level of code by dwelling type

- applying phase out assumptions to number of dwellings
- Multiply number of dwellings by unit cost for each level and dwelling type
- Calculate process costs by multiplying unit costs by number of dwellings

Cost-benefit analysis - sequence of calculations, key sources and assumptions

11.6 The following table provides further detail of the sequence of calculations, showing the sequence of calculations, the key sources and assumptions. Below the table are further details and explanation of these.

Table 11.2

Structure of cost-benefit analysis for Energy (Policy Scenario)		
	Sequence of calculations	***Key sources and assumptions***
1	New Build Housing Growth Assumptions (%)	▪ Common to all IAs
2	New Build Housing Mid Growth Rate Forecasts (numbers)	▪ Common to all IAs
3	Transition	▪ Transition assumptions for phasing out code
4	assumptions development size	▪ Assumed number of dwellings by size of development
5	assumptions code level %	▪ Assumed % of dwellings built to code
6	assumptions all code numbers	▪ Assumed number of dwellings built to code
7-12	assumptions - counterfactual numbers ▪ Code level 1 ▪ Code level 2 ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Assumed number of dwellings built to each code level under the counterfactual
13	assumptions - counterfactual numbers of code dwellings by development size	▪ Calculated number of dwellings built to code under the counterfactual by size of development
14-19	assumptions – policy numbers ▪ Code level 1 ▪ Code level 2 ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Assumed number of dwellings built to code under the policy scenario by level
20	assumptions - policy numbers of code dwellings by development size	▪ Calculated number of dwellings built to code under the policy scenario by size of development
21	assumptions build costs	▪ Assumed unit build costs from EC Harris
22	assumptions process costs	▪ Assumed unit Process costs from EC Harris ▪ Including recipient costs
23-28	calc - counterfactual ▪ Code level 1 ▪ Code level 2 ▪ Code level 3	▪ Calculating build costs for each standard under counterfactual ▪ multiplying unit costs by number of dwellings

	▪ Code level 4 ▪ Code level 5 ▪ Code level 6	
29-34	calc - policy ▪ Code level 1 ▪ Code level 2 ▪ Code level 3 ▪ Code level 4 ▪ Code level 5 ▪ Code level 6	▪ Calculating build costs for each standard under policy scenario ▪ multiplying unit costs by number of dwellings
35	calc - total build costs	▪ Calculating total build costs for counterfactual and policy
36	calc counterfactual process costs	▪ Calculating counterfactual process costs
37	calc - policy process cost	▪ Calculating policy process costs
38	results	▪ Presented as a Net Present Value@3.5% and as an Equivalent Annual Net Cost
	source data	

Details of the calculations

- The cost of CFSH net of the other standards included in the assessment (i.e. water, energy, security and LTH) has been calculated using the same assumptions about the take-up of CFSH under the counterfactual scenario as presented in Section 8.
- The phase out of the proportion of dwellings built to CFSH during transition is presented in the table below. There will be no standards introduced to replace these elements of the CFSH which go beyond the building regulation.

Table 11.3

	2014	2015	2016	2017	2018
Dwellings built to CFSH standards	100%	80%	30%	10%	0%

12. Process costs (general)

12.1 Process costs derive from the time (and hence time cost) of those involved in house building taken to comply with procedures, assessments and administration arising from compliance with each standard. Process costs occur under current policy (counterfactual) and proposed policy will generally result in reduced process costs from simplification, standardisation and unification of standards.

12.2 Standardisation and unification will particularly benefit volume house builders working across a large number of authorities, but smaller firms operating in a limited geographic area will also benefit. For example, a practitioner's view is that such firms may still undertake work in a number of counties and planning authorities. For instance, an architect or developer working in Sussex might work in East Sussex, West Sussex, Mid-Sussex, Kent, and Surrey. This could involve 30 or more planning authorities, in theory all potentially with their own version of space, access, and sustainability standards which whilst similar in some respects will all differ in the way they are described and assessed for compliance. These will need to be reviewed each time a new project is commissioned, and quality assurance checks will need to be undertaken to make sure that the nuances of different authority requirements are properly met.

12.3 Each local authority will also update its requirements and standards at different times, requiring further review and consideration. In effect, the designer or developer has to reassess their approach in meeting a similar or identical objective (e.g. making homes more accessible) at the start and at critical points during the process of design and construction. The result is that there is a recurring process burden when moving from operation in one authority area to another which can be significantly reduced by moving to a consistent national framework of standards.

12.4 Process costs (counterfactual, proposed and net savings) have been calculated in two places in our analysis

- Process costs specific to compliance with each standard are included in the cost-benefit assessment for that standard
- General process costs over and above those associated with compliance with each specific standard are calculated in a separate additional 'general' process cost, cost benefit assessment (***covered in this section***). These costs are associated with the need for construction firms to hire dedicated compliance officers or to devote some of the time of existing staff to general compliance requirements.

Table 12.1

Process costs identified fall into three key categories:	
▪ Costs directly attributed to an individual standard and incurred by the developer / contractor and their professional team (for example surveys required under the Code for Sustainable Homes or design time taken dealing with Lifetime Homes).	*Calculated within each standard cost benefit*
▪ Wider costs incurred by industry in dealing with the range and complexity of current housing standards (for example house builders' time amending standard house types for different wheelchair housing standards or manufacturers' time producing differing product ranges).	*Calculated in general process cost benefit*

▪ Costs incurred by those required to approve or check compliance with standards (for example Architectural Liaison Officers in relation to Secured by Design). In many situations, such as planning and building control, these costs will be recovered directly from the developer.	*Calculated within each standard cost-benefit*

12.5 Recipient costs (planning officer/ building control officer processing time) have been calculated in the cost benefit assessment relating to each standard.

Process cost calculation

12.6 The cost of general compliance officer time across the house building industry has been calculated by multiplying the number and size of house builders by the number/ amount of compliance offer time required per firm (estimated by EC Harris) by the value of time (based on 'the blended hourly rate[15]). The cost benefit analysis then calculated to year-on-year costs of the counterfactual and proposed.

12.7 We have assumed that the cost remains fixed per year over ten years. The reasoning behind this is as follows:

- General compliance officer time has been assumed not to vary depending on volume of new house building
- We have estimated that the process techniques are already optimised based upon the latest technology and there is little scope for further real reductions

Details of the calculation

Proportion of construction industry that focusses on house building

12.8 We had to combine several data sets to identify the number of construction firms involved in house building, as opposed to other forms of construction:

- ONS data showed the total number of all construction firms in GB
- We estimated the number involved in house building by referring data showing the value of work done – this enabled us to estimate the share that related to house building
- We then estimated the proportion of construction firms involved in house building that were in England

Estimating the number of firms involved in house building

12.9 This analysis suggests that 28.4% of construction sector, based on value of work done, focusses on residential development

[15] An average of (i) EC Harris estimates of charge out rates and (ii) ASHE+30%

Table 12.2

Private contractors: Value of work done[1,] by trade of firm and type of work - Great Britain							
	New Housing		Other New Work				
				Excluding infrastructure			All New Work
Trade of firm	Public	Private	Infrastructure	Public	Private Industrial	Private Commercial	
Construction of buildings	2,299	7,166	2,401	3,908	499	6,424	22,698
Civil engineering	357	2,549	8,031	2,791	645	3,558	17,932
Specialised construction activities	1,353	6,427	3,526	4,080	2,457	12,477	30,321
Total main trades	**4,010**	**16,142**	**13,958**	**10,779**	**3,602**	**22,459**	**70,950**

Estimating the proportion of residential construction firms that are in England

12.10 We estimated the proportion of GB house builders that are in England as follows.

Table 12.3

Estimating the number of house builders in England					
Size of firm (by number employed)	Residential house builders (GB)	All England construction firms	All GB construction firms	England as % of GB Total	house builders in England (estimate)
					Businesses
1	9,573	81,310	90,647	90%	8,587
2 to 3	7,275	55,416	62,008	89%	6,502
4 to 7	3,294	25,131	28,875	87%	2,867
8 to 13	1,229	9,846	11,455	86%	1,056
14-24	734	5,152	6,078	85%	622
25-34	235	1,529	1,815	84%	198
35-59	285	1,497	1,796	83%	238
60-79	91	446	530	84%	77
80-114	72	346	417	83%	60
115-299	125	402	483	83%	104
300-599	34	124	145	86%	29
600-1,199	11	47	55	85%	9
1,200+	13	52	59	88%	11
All firms	**22,971**	**181,298**	**204,363**	89%	20,360
				London share	17%
				England share	83%

12.11 Table 12.4 shows the resulting cost of employing compliance staff under the counterfactual and under the proposed policy.

Table 12.4

		Current Position				New Proposal		
house builders in England (estimate)	**Size of firm (by number employed)**	**Firm size category**	**Cost pa per firm**	**Cost of employing compliance staff**		**Cost pa per firm**	**Cost of employing compliance staff**	**Cost Saving**
				£m			£m	£m
8,587	1	Micro (1-4)	1,287	11.1		858	7.4	3.7
6,502	2 to 3	Micro (1-4)	1,287	8.4		858	5.6	2.8
2,867	4 to 7	Micro (4-7)	4,290	12.3		2,574	7.4	4.9
1,056	8 to 13	Micro (4-7)	4,290	4.5		2,574	2.7	1.8
622	14-24	Small	12,870	8.0		8,580	5.3	2.7
198	25-34	Small	12,870	2.5		8,580	1.7	0.8
238	35-59	Small	12,870	3.1		8,580	2.0	1.0
77	60-79	Medium	64,350	4.9		34,320	2.6	2.3
60	80-114	Medium	64,350	3.8		34,320	2.1	1.8
104	115-299	Medium	64,350	6.7		34,320	3.6	3.1
29	300-599	Medium	64,350	1.9		34,320	1.0	0.9
9	600-1,199	Large	343,200	3.2		171,600	1.6	1.6
11	1,200+	Large	343,200	3.9		171,600	2.0	2.0
20,360				**74.4**			**44.9**	**29.4**

Valuing construction industry personnel time – the blended hourly rate method

12.12 There are several ways of valuing process and transition time of construction industry personnel:

- Hourly charge out rate – we have used rates provide by EC Harris that reflect the industry average
- Wage rates + 30% - wage rates are provided by the ASHE dataset. The 30% is added on to reflect profit. Wages plus profit is a proxy for Gross Value Added (GVA)
- A blend between the two (an average).

12.13 The guidance suggests the latter method, hence we have adopted the blended hourly rate for this cost benefit analysis

Table 12.5

Blended hourly rates for calculating process/transition costs with the ASHE data uplifted to 2014 prices.			
	Hourly Rate	ASHE + 30% (2014)	**Blended Hourly Rate**
Architect	80	24	**52.00**
Building Control Surveyor	70	23	**46.00**
Building Surveyor	70	23	**46.00**
Quantity Surveyor	90	25	**57.00**
Construction Energy Assessors	70	26	**48.00**
Building Service Engineer	70	23	**46.00**
Civil Engineer	70	24	**47.00**
Mechanical Engineer	70	28	**49.00**
Construction Manager	90	25	**57.00**
Project Manager	90	23	**57.00**
Town Country Planner	100	23	**61.00**
Skilled Trades	20	15	**18.00**

Cost per year per firm

12.14 EC Harris estimated the compliance officer time by firm size and we calculated the cost per year per firm by applying the blended hourly rate on an FTE basis

Current

Table 12.6

Firm size	Dedicated person research (full time equivalent)	Cost per year per firm
Micro (1-4)	0.015	1,287
Micro (4-7)	0.05	4,290
Small	0.15	12,870
Medium	0.75	64,350
Large	4	343,200

Proposed standards

Table 12.7

Firm size	Dedicated person research (full time equivalent)	Cost per year per firm
Micro (1-4)	0.01	858
Micro (4-7)	0.03	2,574
Small	0.1	8,580
Medium	0.40	34,320
Large	2	171,600

Process cost savings (pa)

12.15 The following tables show process costs (general) associated with current and proposed policy

Table 12.8

Current and future process costs (£)	
Current (counterfactual)	£74.4m
Proposed policy	£44.9m
Process cost savings	£29.4m

13. Transition costs

13.1 Transition costs derive from time (and hence time costs) of:

- Firms involved in house building, (construction firms and professional firms – architects, engineers etc.) to change systems/ internal processes
- Individuals involved in house building (skilled trades, professionals) to read and understand the new guidance.

Table 13.1

Types of transition cost	Calculation
Time taken for industry professionals to familiarise themselves with the new standard.	Calculated for all types of professionals, including building control and local authority planners and for skill trades
Costs of training events in relation to the new standards.	*No calculated, assumed to be included in the above and below*
Purchase of revised guidance.	Assumed all electronic so no cost
Updating of internal processes and procedures	Calculated for professional services firms and for house builder firms

Calculation of transition costs

13.2 We have calculated transition costs as follows:

- We estimated the number of construction firms involved in house building, the number of professional firms involved in house building and the number professionals/skilled trades involved in house building
- EC Harris has estimated the average time required by each firm and each professional/ trades person to adjust to the new guidance.
- There will be transition costs associated with current policy (the counterfactual) however because of periodic changes to guidance. Hence we needed to calculate both the counterfactual transition costs and proposed policy transition costs and hence the difference. EC Harris has accounted for this by estimating the net additional cost (the extra over cost)
- Transition costs are one off, hence they are not repeated. The cost benefit analysis has assumed that the majority of the transition costs occur in year one, with a small % in years two and three, to reflect phase in assumptions.

Detail of the transition cost calculations

Construction firms involved in house building – transition costs

13.3 The following table shows the calculation used to estimate transition costs associated with construction firms involved in house building

Table 13.2

Size of Firm (by number employed)	Number of House Builders	Hours	Rate	Total per Firm	Blended hourly rate	Total per firm	Total for industry
1	8,587	0	£52	£0	52.00	-	-
2 to 3	6,502	0	£52	£0	52.00	-	-
4 to 7	2,867	0	£52	£0	52.00	-	-
8 to 13	1,056	0	£52	£0	52.00	-	-
14-24	622.1731	0	£52	£0	52.00	-	-
25-34	197.9697	7.5	£52	£390	52.00	390	77,208
35-59	237.5529	7.5	£52	£390	52.00	390	92,646
60-79	76.57736	15	£52	£780	52.00	780	59,730
80-114	59.74101	15	£52	£780	52.00	780	46,598
115-299	104.0373	15	£52	£780	52.00	780	81,149
300-599	29.07586	22.5	£52	£1,170	52.00	1,170	34,019
600-1,199	9.4	37.5	£52	£1,950	52.00	1,950	18,330
1,200+	11.45763	37.5	£52	£1,950	52.00	1,950	22,342
	20,360					Total	432,022

Professional person transitions cost

13.4 The following table shows the calculation used to estimate transition costs associated with professional persons involved in house building

Table 13.3

	Hours	Blended Hourly Rate	Total per person	Approx. number of persons	Total for industry
Architect	8	52.00	416	5,681	2,363,138
Building Control Surveyor	8	46.00	368	230	84,664
Building Surveyor	4	46.00	184	3,787	696,858
Quantity Surveyor	4	57.00	228	2,676	610,095
Construction Energy Assessors	5	48.00	240	279	66,872
Building Service Engineer	4	46.00	184	942	173,352
Civil Engineer	2	47.00	94	7,394	695,053
Mechanical Engineer	4	49.00	196	inch	
Construction Manager	4	57.00	228	inch	
Project Manager	4	57.00	228	inch	
Town Country Planner	5	61.00	305	5,595	1,706,514
				Total	6,396,546
Skilled Trades	1.5	18.00	27	169,349	4,572,421
				Total	**10,968,966**

Professional firms involved in house building transition costs

13.5 The following table shows the calculation used to estimate transition costs associated with professional persons involved in house building

Table 13.4

Profession Type	Resource	Rate	Total	Approx. Nr. Of Firms (focussing on house building)	Source	Blended hourly rate	Cost per firm	Total for industry
Architects	30	£80	£2,400	847	RIBA	52.00	1,560	1,321,733
Planners	30	£100	£3,000	230	RICS	61.00	1,830	421,019
Surveyors	15	£70	£1,050	3,408	RICS	57.00	855	2,914,158
Engineers	15	£70	£1,050	200	RICS	47.00	705	140,770
Management	15	£90	£1,350	Incl	RICS	57.00	855	
							Total	**4,797,680**

Conclusions

13.6 Table 13.5 brings the above analysis together and shows the estimated total transition costs

Table 13.5

Conclusions – total transition costs	
Construction firm transition costs	432,022
Professional firm transition costs	4,797,680
Professional person transition costs	10,968,966
Total	**16,198,669**

Small firm's analysis

13.7 The following table shows the amount and proportion of transition costs that fall on small and on small and medium sized firms, both house builders and professional firms.

Table 13.6

Small firms analysis - transition costs				
	House Builder firm transition costs	Professional firm transition costs	**Total**	% of total[16]
Small firms (under 59) [17]	169,854	4,729,275	**4,899,129**	93.7%
Small firms (under 299)	357,331	4,785,913	**5,143,245**	98.3%

[16] % of total transition costs that fall on house builder and professional firms – (excludes transition costs that fall on professional persons)

[17] The employment size definition of small and SME that we have used does not quite match the EU definition of 50 and 250. Instead it relates to the house builder size band data. No size breakdown is available for professional firms on this basis, so we have assumed the same proportions of small and SME for house builders, also applies to the professional firm size breakdown.

14. Sensitivity & Scenario Analysis

Sense checking

14.1 We have sought as a team to identify and analyse hard evidence where ever possible to support the cost-benefit analysis modelling, but we have had to accept that hard evidence is not always available. We have therefore used the following data-typology as a guide to the team

- Robust statistically significant evidence
- Some evidence but not statistically significant
- Key stakeholder/ industry representative views
- Anecdotal evidence
- Evidence gaps – we have sought to minimise these, but where they occur, these have been noted and the team has made a reasoned assumption which (i) we have sense checked amongst the team and (ii) with key industry and other stakeholders where possible

Sensitivity analysis and scenario modelling

14.2 Sensitivity analysis has been undertaken for a wide range of variables, throughout the process of developing the cost benefit models for each standard. This allowed the team to identify the most critical variables and assumptions and to revisit these to check the robustness of the supporting evidence/ calculations

14.3 Scenario modelling has been undertaken to produce three estimates – a high, central and low. The following tables show the assumptions adopted for each of the key variables for each of these three scenarios.

House building rate scenario assumptions

14.4 Table 14.1 shows the house building rate assumptions adopted for each of the three scenarios

Table 14.1

House building rate scenario assumptions			
	Low Scenario	**Central**	**High Scenario**
House building Growth p.a.	3%	5%	8%

Transition Timing Scenario Assumptions

14.5 Table 14.2 shows the transition timing assumptions adopted for each of the three scenarios

Table 14.2

Transition timing assumptions adopted for each of the three scenarios

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
CFSH	Low	100%	80%	30%	10%	0%	0%	0%	0%	0%	0%	0%
	Central	100%	80%	30%	10%	0%	0%	0%	0%	0%	0%	0%
	High	100%	80%	30%	10%	0%	0%	0%	0%	0%	0%	0%
Standards in plans	Low	100%	95%	70%	15%	0%	0%	0%	0%	0%	0%	0%
	Central	100%	95%	70%	15%	0%	0%	0%	0%	0%	0%	0%
	High	100%	95%	70%	15%	0%	0%	0%	0%	0%	0%	0%
New National Standards	Low	0%	5%	30%	85%	100%	100%	100%	100%	100%	100%	100%
	Central	0%	5%	30%	85%	100%	100%	100%	100%	100%	100%	100%
	High	0%	5%	30%	85%	100%	100%	100%	100%	100%	100%	100%

CFSH Scenario Assumptions

14.6 Two variables have been modelled in the scenario analysis for CFSH – take-up of the standard and the proportion of dwellings built at different levels of the standard

- The low scenario assumes that take-up of the standards does not change over time, whereas, under the high scenario, take-up is projected to increase at a faster rate than the central scenario.
- The low scenario assumes a greater proportion of dwellings will be built to Code Level 3 relative to the central scenario and a correspondingly lower proportion built to code level 4, 5 and 6
- The high scenario assumes a lower proportion of dwellings will be built to Code Level 3 relative to the central scenario and a correspondingly higher proportion built to code level 4, 5 and 6

14.7 Tables 14.3 and 14.4 show the scenario assumptions adopted for proportion of dwellings built to code and the level of code, respectively

Table 14.3

Scenario Take Up Assumptions - CFSH												
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
% of dwellings built to CFSH	Low	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
	Central	46%	46%	47%	49%	51%	53%	55%	56%	58%	60%	62%
	High	46%	48%	51%	53%	56%	58%	60%	63%	65%	68%	70%

Table 14.4

Scenario Assumptions - Level of CFSH												
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Level 1	Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Central	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	High	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Level 2	Low	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Central	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	High	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Level 3	Low	72%	70%	66%	63%	59%	56%	52%	49%	45%	42%	37%
	Central	72%	70%	64%	59%	54%	48%	43%	37%	31%	26%	20%
	High	72%	66%	59%	53%	46%	40%	33%	27%	20%	14%	7%
Level 4	Low	28%	30%	33%	37%	40%	43%	46%	50%	53%	56%	60%
	Central	28%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%
	High	28%	34%	39%	45%	51%	56%	62%	68%	74%	79%	85%
Level 5	Low	0%	0%	0%	0%	0%	1%	1%	1%	1%	2%	2%
	Central	0%	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
	High	0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%
Level 6	Low	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%
	Central	0%	0%	0%	1%	1%	1%	1%	1%	2%	2%	2%
	High	0%	0%	1%	1%	1%	2%	2%	2%	2%	3%	3%

Accessibility Scenario Assumptions

14.8 A number of variables have been modelled for the scenario analysis of the access standards – take-up of LTH, BS9266, WHDG and Bespoke WHDG

- The level of enforcement of standards is assumed to be the same across all scenarios
- For the low scenario under each variable we have assumed no change from the 2014 level of take-up
- For the high scenario under each variable, we have assumed an increasing take-up above the central scenario assumptions.

14.9 Tables 14.5 and 14.6 show the take up assumptions modelled

Table 14.5

Access Take-up Assumptions												
LTH / Cat 2		**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
LTH/Cat 2 (dwellings in areas with LTH policy)	Low	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
	Central	39%	41%	42%	44%	46%	48%	49%	51%	53%	54%	56%
	High	39%	42%	46%	49%	53%	56%	59%	63%	66%	70%	73%
LTH /Cat 2(enforcement)	Low	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	Central	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	High	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
LTH (delivered through CFSH 5&6)	Low	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%
	Central	0%	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
	High	0%	0%	1%	1%	2%	2%	3%	4%	4%	5%	6%
BS9266 (as % of LTH)	Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Central	0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%
	High	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%

Table 14.6

WHDG / Cat 3		**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
WHDG/Cat 3 (dwellings in areas with WHDG policy)	Low	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
	Central	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%
	High	2%	3%	3%	3%	3%	4%	4%	4%	4%	5%	5%
WHDG (enforcement)	Low	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%
	Central	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%
	High	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%
Bespoke WHDG (as % of WHDG)	Low	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Central	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
	High	10%	12%	13%	15%	16%	18%	19%	21%	22%	24%	25%
Future Adaptable Housing (as of dwellings in areas with WHDG policy)	Low	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
	Central	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
	High	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%

Security Scenario Assumptions

14.10 Take-up of SBD amongst private dwellings has been varied across the scenarios.

- Under the low scenario take-up is assumed to remain constant at 2014 levels
- Under the high scenario take-up is assumed to increase at a faster rate than the central scenario

Table 14.7

Security Take-Up Assumptions												
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
SBD/ Level 2 (private dwellings in areas with SBD policy)	Low	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
	Central	17%	19%	21%	23%	25%	27%	29%	30%	32%	34%	36%
	High	17%	20%	24%	27%	31%	34%	37%	41%	44%	48%	51%
SBD (private delivered through CFSH)	Low											As per code
	Central	7%	7%	8%	8%	9%	10%	10%	11%	12%	13%	13%
	High											As per code
SBD / Level 2 (Affordable)	Low	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Central	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	High	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Water Scenario Assumptions

14.11 Take-up of Water standards under CFSH and through LAD policy has been varied

- Under the low scenario take-up of CFSH is assumed to remain constant at 2014 levels. It is assumed that no additional dwellings are covered by LAD policies
- Under the high scenario take-up of CFSH is assumed to increase at a faster rate than the central scenario. It is assumed that an additional 10% of dwellings are covered by LAD policies

Table 14.8

Water Take-up Scenario Assumptions												
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Proportion of Dwellings Adopting Water Standards Under CFSH	Low	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
	Central	46%	46%	47%	49%	51%	53%	55%	56%	58%	60%	62%
	High	46%	48%	51%	53%	56%	58%	60%	63%	65%	68%	70%
Additional % of dwellings build to water standards through LAD policy	Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Central	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	High	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Energy Scenario Assumptions

14.12 The high and low scenarios use the same assumptions as the general CFSH assumptions.

Table 14.9

Energy												
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Proportion of Dwellings Adopting Energy Standards Under CFSH	Low	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
	Central	46%	46%	47%	49%	51%	53%	55%	56%	58%	60%	62%
	High	46%	48%	51%	53%	56%	58%	60%	63%	65%	68%	70%
Introduction of Zero Carbon Standard (% of all Dwellings)	Low	0%	0%	0%	10%	35%	55%	75%	90%	100%	100%	100%
	Central	0%	0%	0%	10%	35%	55%	75%	90%	100%	100%	100%
	High	0%	0%	0%	10%	35%	55%	75%	90%	100%	100%	100%

Space Scenario Assumptions

14.13 For private dwellings the scenario analysis varies the proportion of private new dwellings subject to space standards

- The low scenario assumes that the proportion remains constant
- The high scenario assumes a take-up increasing at a faster rate than the central scenario

14.14 For affordable dwellings, the scenario analysis varies the proportion by which dwellings built above the proposed minimum size standard falls over timetable

Table 14.10

Space Scenario Assumptions												
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Space Standards (proportion of dwellings in LAD with space standards)	Low	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
	Central	9%	9%	9%	10%	11%	12%	13%	14%	15%	16%	17%
	High	9%	11%	12%	14%	15%	17%	19%	20%	22%	23%	25%
Enforcement	Low	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
	Central	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
	High	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
Cost Recovery through higher house prices	Low	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	Central	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	High	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%

Table 14.11

		Change in % of dwellings built within HQI minimum size range over 10 years	**Change in % of dwelling built larger than HQI minimum over 10 years**
Impact of introducing new space standard for affordable dwellings	Low	-10%	-25%
	Central	-25%	-50%
	High	-50%	-75%