Housing development: the economics of small sites – the effect of project size on the cost of housing construction

Report for
The Federation of Small Businesses

BCIS

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BCIS is the Building Cost Information Service of the Royal Institution of Chartered Surveyors

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Contents

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1. Summary

The analysis of the data in this study shows that the build cost expressed in pounds per square metre (£/m^2)for all residential schemes of 10 units or less is on average 6% higher than on large developments. The percentage is +14% for housing only schemes and -5% for flats only schemes.

There is no evidence that it is taken into account when assessing the viability of smaller schemes and some local planning authorities are setting section 106 or Community Infrastructure Levy (CIL) rates for smaller developments without making allowance for these extra costs.

On a typical 1-10 unit development of houses, the extra base construction cost would amount to over £100,000. Section 4 gives the calculated figure for the UK mean and the regions.

This variance is exacerbated by the fact that allowances for external works and professional fees, etc. are often added as percentages of base construction cost. These will often amount to an uplift of more than 20% of the total construction cost.

The figures in this report are directly comparable, and can be used in conjunction with the figures in the BCIS *Quarterly review of building prices*.

Local authorities and their advisers should reflect these higher costs when carrying out viability appraisals for smaller housing sites of 10 units or less.

The effect on viability levels will vary depending on how additional allowances for other development costs have been calculated and on local market values for land and dwellings.

The cash value of such a reduction will vary depending on how additional allowances for other development costs have been calculated and on the local pricing levels.

It is hoped that this report will be of value to authorities in drawing up CIL charging schedules and in carrying out viability appraisals.

All residential schemes: Summary results, build cost by development size.

All Residential	Mean £/sq.ft	Mean £/m^2	Median £/sq.ft	Median £/m^2	Range £/m^2	Inter-Quartile Range £/m^2	Sample Size
1 - 5 Dwellings	108	1157	100	1077	623 - 4539	941 - 1260	488
1 - 10 Dwellings	101	1083	95	1026	593 - 4539	906 - 1181	1075
> 10 Dwellings	95	1025	91	978	522 - 2943	860 - 1131	1196

2. Introduction

2.1 Background

The National Planning Policy Framework (NPPF) introduced in 2012 by the Department of Communities and Local Government (DCLG), placed a new emphasis on the importance of viability assessments in planning policies for England. Paragraph 173 of the NPPF states:

> *'To ensure viability, the costs of any requirements likely to be applied to development, such as requirements for affordable housing, standards, infrastructure contributions or other requirements should, when taking account of the normal cost of development and mitigation, provide competitive returns to a willing land owner and willing developer to enable the development to be deliverable.'*

As a result, viability assessments are now required to demonstrate whole plan viability, the viability of strategic sites, and the viability of any proposed CIL. Applicants may also submit a viability assessment for individual developments where they believe that delivering affordable housing and other planning obligations would adversely impact on scheme viability.

Whole plan and CIL viability is usually tested against a range of hypothetical developments of differing size and type in different locations. The viability of an individual development is normally tested by reference to the actual scheme.

Further work on viability followed in June 2012, with the publication of the Harman Report by the Local Housing Delivery Group, an industry body set up by government to conduct an examination of the extra costs of servicing very large sites. It concluded that viability assessments typically underestimated these costs and overestimated the ability of these sites to pay planning obligations. The report has been influential in changing accepted practice. However, the focus of the analysis was on very large sites, not small ones.

Small housing sites face a different set of challenges. There is evidence that small developments are more expensive to develop on a per m^2 basis, than large sites. Therefore, in 2014, the government announced its intention to amend national planning practice guidance so as to oblige local authorities in England not to seek affordable housing and tariff style contributions from developments of 10 units or less and which have a maximum combined gross floor space of 1,000 square metres. This had already been incorporated as policy in the London Plan and some local authorities responded by proposing to increase their CIL charges for small developments to recoup the loss in section 106 obligations. This change has recently been removed from the government's national planning practice guidance following a High Court ruling (*West Berkshire District Council v Department for Communities and Local Government. Case Number: CO/76/201).*

The Building Cost Information Service (BCIS) of the Royal Institution of Chartered Surveyors (RICS) was asked by the Federation of Small Businesses to conduct an analysis of its database to compare costs of building dwellings as part of large and small housing

developments. This research is intended to provide advice on the impact of project size on construction costs.

An examination of a small sample of recent CIL viability studies suggests that the construction costs used in calculations were generally taken from the BCIS *Quarterly review of building prices*. The analysis is therefore based on the same data and same methodology used to prepare the Quarterly review.

While this is primarily aimed at informing viability assessments for CIL, the work also has relevance for the production of Local Plans which are required to meet viability criteria set out in the NPPF and associated guidance.

2.2 Methodology

The aim of the study is to show the variations in prices between buildings from different sizes of development and the range of prices which occur.

The figures in this guidance are consistent with the *BCIS Quarterly review of building prices* and can be used in conjunction with it.

The figures used are contract sums (excluding external works and contingencies, professional fees, VAT, finance charges and the like) with preliminaries apportioned by value. They are therefore the cost charged by the contractor for constructing the dwellings (houses and flats). They are expressed in £/$m^2$of the gross internal floor area.

The prices are adjusted to a notional UK average price using the BCIS location factors and then adjusted to constant prices using the latest estimates for the BCIS All-in Tender Price Index.

Figures are given for the mean, the median, the range, the inter-quartile range and the sample size.

BCIS advise the use of the mean to determine an average build cost, i.e. the sum of the figures divided by the number of figures. The mean is likely to be more representative for all potential projects than the median. It has been used consistently in this report when considering the variation in build costs.

The projects have been analysed by numbers of units irrespective of type or size of units. They have been analysed by:

- Housing only schemes
- Flats only schemes
- Schemes with a mixture of houses and flats
- All schemes

For each category the projects have been analysed by number of units as follows:

- 1 to 5 units
- 1 to 10 units
- More than 10 units

Additionally, schemes for single houses have been identified separately.
Some social housing projects may have been delivered as part of larger developments.

2.3 Viability studies

The CIL is a charge per m2 levied on new development. Differential rates can be set for:

- geographical zones within the charging authority's boundary
- types of development; and/or
- scale of development1.

Any differential rates must be justified by reference to viability. CIL viability assessments are based on a Residual Land Value approach. In this method, the sales value of a development is calculated and then the known costs of development (including CIL and an allowance for developer's profit) are deducted to see whether the Residual Land Value would be enough to provide a competitive return to a landowner.

This approach incorporates several variables (including sales prices, profit margin and land values) that have no relation to construction cost and are beyond the scope of this report. They are addressed in the government's online Planning Practice Guidance. However, other than sales price in high value areas, construction cost will normally be the biggest variable affecting land value.

The guidance recommends that CIL viability assessments should test a number of different hypothetical developments in an area, to see the effect of location, development type and size of scheme on viability and hence the level of CIL that can be charged. Although there is an obligation to test different kinds of development, there is no requirement to set differential rates. It is possible to set a single rate for all kinds of development.

To understand how this worked in practice, BCIS analysed a sample of eight recent CIL viability reports. These were compiled by six different consultancy firms and covered a range of different locations and housing types.

All eight reports referred to data from the BCIS *Quarterly review of building prices* as the source of cost information, but only two gave enough information to tell whether a mean or value was applied. Two reports (from the same consultant) said that adjustments had been applied and one made explicit allowance for the costs of smaller developments but gave no further explanation as to how the figures were derived.

The others made no allowance for increased costs of small developments, even when the viability appraisal reflected additional sales values or reduced affordable housing contributions.

Two viability assessments recommended higher charges for small developments because of lower affordable housing contributions.

[1] Planning Practice Guidance, Paragraph: 022Reference ID: 25-022-20140612

To the base construction cost of the units, the viability studies add allowances for some or all of the following:

- Costs related to the construction:
    - External works, usually as a percentage
    - Higher levels of Code for Sustainable Homes provision
    - Contingencies, usually as a percentage
    - Design fees, usually as a percentage
    - Finance costs on the above, usually as a percentage
- Costs related to the development
    - Marketing
    - The cost of the CIL and 106 and 278 agreements
    - Site purchase costs
    - Finance costs on the above

The adjustments for additions to base cost were fairly consistent with 5% contingency and 7% finance cost for the construction being typical. However there was a variation from 7–12% for the cost of design fees.

A number of reports argued that the proposed CIL rate was a small proportion of total costs and therefore not likely to have a crucial impact on viability. All the reports provided specimen appraisals and some provided sensitivity analysis. From this it was possible to confirm that sensitivity to building costs increased as land values diminished – which tended to correlate with distance from London. The lower the land value the more likely it was that development would be predominantly houses as opposed to flats.

This study has therefore been based on the same definition of construction costs as the viability studies examined, i.e. the cost of the building only. Where the adjustments are applied as a percentage it will exacerbate the cash difference between the smaller and larger schemes.

3. Using BCIS data

The *BCIS Quarterly review of building prices* contains an analysis of average construction costs per unit area (£/m^2 gross internal floor area) for a wide variety of buildings. The construction prices are based on accepted tenders and include an allowance for contractor's overheads, profit and preliminaries.

The average price is provided as a median and mean price per square foot (sq.ft) and m^2. The range and interquartile range of prices is given, along with a sample size so that users can see how statistically robust the average is. BCIS advises the use of the mean to determine an average build cost, i.e. the sum of the figures divided by the number of figures. The mean is likely to be more representative for all potential projects than the median. It has been used consistently in this report when considering the variation in build costs.

BCIS recognises 43 different categories of residential facilities, but some of these are special purpose accommodation – such as nurses' residences or youth hostels. Twenty seven of the categories refer to general housing and many of these are subsets by design and specification rather than use, e.g. flats are broken down into averages for 1–2 storey, 3–5 storey and 6+storey developments. Using sub-categories allows more accurate costing but will be based on a reduced sample.

BCIS provides figures for small developments of three units or less, which represents both single bespoke properties and small infill developments.

Selecting the appropriate category will depend on how much information is available about the proposed development being considered.

The price per m^2 is a UK mean at a given quarter, a number of adjustments need to be made to make appropriate for a particular scheme.

- The UK mean is adjusted by a location factor to arrive at a cost for the particular location.
- The price is adjusted for inflation between the date of the BCIS *Quarterly review of building prices* and the required date, using the BCIS All-in Tender Price Index historic figures or forecast.

These adjustments can be made automatically in the BCIS online services or worked examples and the relevant factors and indices are included in the BCIS *Quarterly review of building prices*.

To arrive at an estimated construction related cost, allowance must be made for:

- External works
- Contingencies
- Design and project fees
- Finance costs on the above

In addition in a developer's budget, and therefore in a viability study, allowance needs to be made for:

- Marketing costs
- Planning costs
- CIL and other charges
- Site purchase costs
- Developer's overheads and profit
- Finance costs on the above

4. Build costs by development size and type

This report is based on the analysis of the project details in the BCIS database. The BCIS database contains analyses of project costs for over 18,500 projects based on accepted tenders.

For this report BCIS analysed residential projects no greater than 10 years old on the database in June 2015. This equated to 2,271 projects of which housing only schemes made up 1247, flat schemes 439 and mixed developments (housing and flats) 585. In total these projects contained 38,387 dwellings.

The majority of these projects are for social housing. As the general movement in tender prices shows no difference between the public sector and the private sector in recent years, we believe that the effect of project size will be consistent between sectors.

The projects are taken from the same sample of UK schemes used to calculate the figures in the BCIS *Quarterly review of building prices*.

The following tables set out average build costs for a dwelling split by development size, for the following categories:

- All residential schemes
- Housing only schemes
- Flats only schemes
- Mixed developments

For each building type, per square metre prices are given for the mean, median and interquartile range. (See Appendix 1 for definitions). This is consistent with the BCIS *Quarterly review of building prices*.

A chart and tables summarising the findings appear below – Figure 1 and Tables 1 to 4.

The figures are given for UK mean and for regions - Tables 5 and 6.

Figure 1: Summary results, build cost by development size.

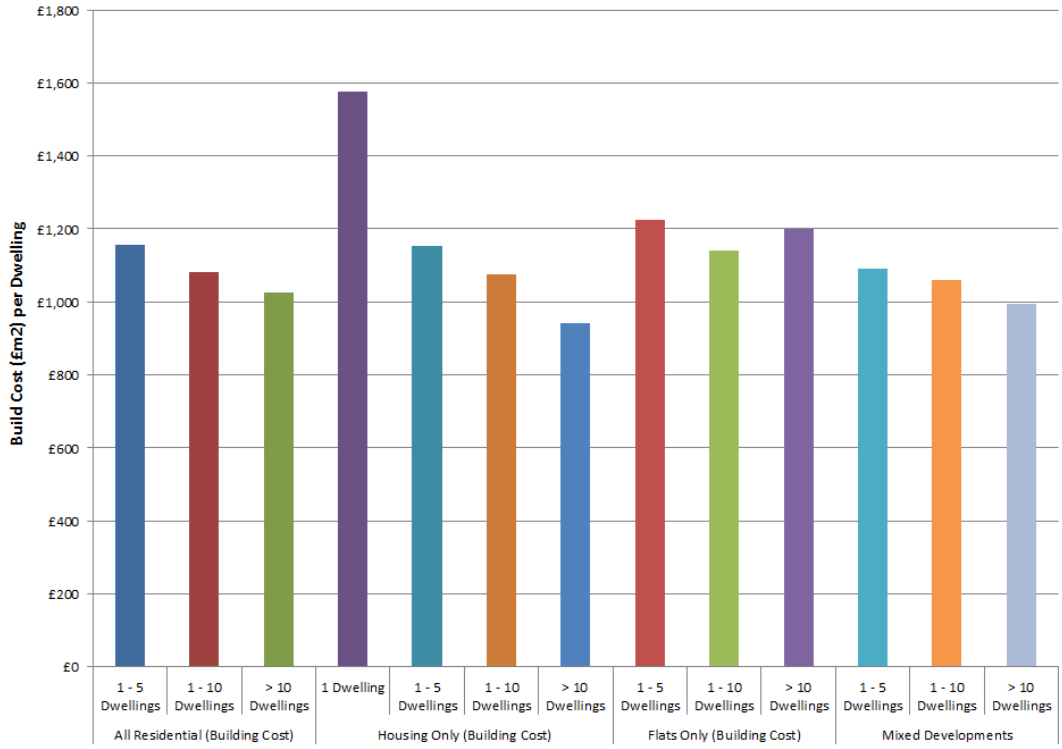

Table 1: All residential

	Mean £/sq.ft	Mean £/m^2	Median £/sq.ft	Median £/m^2	Range £/m^2	Inter-Quartile Range £/m^2	Sample Size
1– 5 Dwellings	108	1157	100	1077	623 - 4539	941 - 1260	488
1–10 Dwellings	101	1083	95	1026	593 - 4539	906 - 1181	1075
> 10 Dwellings	95	1025	91	978	522 - 2943	860 - 1131	1196

Table 2: Housing only

	Mean £/sq.ft	Mean £/m^2	Median £/sq.ft	Median £/m^2	Range £/m^2	Inter-Quartile Range £/m^2	Sample Size
1 Dwelling	146	1575	125	1350	734 - 3299	1174 - 1830	62
1–5 Dwellings	107	1154	99	1064	675 - 4539	932 - 1238	412
1–10 Dwellings	100	1076	94	1007	616 - 4539	891 - 1165	780
> 10 Dwellings	88	943	86	922	601 - 1642	832 - 1030	467

Table 3: Flats only

	Mean £/sq.ft	Mean £/m^2	Median £/sq.ft	Median £/m^2	Range £/m^2	Inter-Quartile Range £/m^2	Sample Size
1–5 Dwellings	114	1226	112	1200	818 - 1834	985 - 1415	46
1–10 Dwellings	106	1142	102	1095	623 - 1909	965 - 1278	148
> 10 Dwellings	112	1201	108	1164	671 - 2943	1000 - 1357	291

Table 4: Mixed developments

Mixed Developments	Mean £/sq.ft	Mean £/m^2	Median £/sq.ft	Median £/m^2	Range £/m^2	Inter-Quartile Range £/m^2	Sample Size
1–5 Dwellings	101	1092	100	1074	861 - 1339	956 - 1228	26
1–10 Dwellings	98	1059	96	1038	708 - 1448	948 - 1147	151
> 10 Dwellings	92	995	91	978	522 - 1749	862 - 1105	434

Looking at all schemes, the average (mean) construction cost per m^2 for schemes with 1 to 5 units was 13% higher than schemes with over 10 units, and for schemes with 1 to 10 units was 6% higher.

For housing only, the average cost per m^2 of a single house is 67% higher than the average of larger developments of 11 units or more. On schemes of 1–5 units the cost per m^2 is 22% more expensive and on schemes of 1–10 units it is 14% more expensive.

On schemes which are a mix of houses and flats, the cost per m^2 of schemes of 1–5 units is 10% higher than the larger schemes and on schemes of 1–10 units it is 6% higher.

On flats only developments of 1–5 flats the cost per m^2 is 2% higher than larger developments over 10 units, while schemes of 1–10 units are 5% cheaper.

Table 5 shows the £/m^2 differences and percentage differences between schemes of 1–5 units and schemes of 1–10 units and the larger schemes with over 10 units. For houses the differences are also shown for developments of single units compared with developments of over 10 units. The single units are generally bespoke houses for a client and are significantly larger than units in other developments.

The table also shows the difference on an average dwelling unit, based on the average size of units in the sample and on a development of 5 or 10 units.

Where the viability study uses percentages of the construction costs to allow for other costs, the differences in cash terms will be exacerbated.

Table 5: Summary table

UK Mean
BCIS Location Index 100

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	132	95	12540	5	62700
	1 to 10	6%	58	85	4930	10	49300
Housing Only	Single	67%	632	300	189600	1	189600
	1 to 5	22%	211	95	20045	5	100225
	1 to 10	14%	133	90	11970	10	119700
Flats only	1 to 5	2%	25	95	2375	5	11875
	1 to 10	-5%	-59	75	-4425	10	-44250
Mixed Developments	1 to 5	10%	97	80	7760	5	38800
	1 to 10	6%	64	80	5120	10	51200

Note: The £/m² figures in the table have been rounded to the nearest whole number; the cost per dwelling and per development have been calculated on the unrounded figures.

The figures in table 5 are UK averages; these can be adjusted using the BCIS location factors. Figures for the regions adjusted using the location factors given in Section 6 are presented in table 6 below.

Table 6 Regional summary tables

REGION **North East**
BCIS Location Index 105

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	139	95	13167	5	65835
	1 to 10	6%	61	85	5177	10	51765
Housing Only	Single	67%	664	300	199080	1	199080
	1 to 5	22%	222	95	21047	5	105236
	1 to 10	14%	140	90	12569	10	125685
Flats only	1 to 5	2%	26	95	2494	5	12469
	1 to 10	-5%	-62	75	-4646	10	-46463
Mixed Developments	1 to 5	10%	102	80	8148	5	40740
	1 to 10	6%	67	80	5376	10	53760

REGION **North West**
BCIS Location Index 91

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	120	95	11411	5	57057
	1 to 10	6%	53	85	4486	10	44863
Housing Only	Single	67%	575	300	172536	1	172536
	1 to 5	22%	192	95	18241	5	91205
	1 to 10	14%	121	90	10893	10	108927
Flats only	1 to 5	2%	23	95	2161	5	10806
	1 to 10	-5%	-54	75	-4027	10	-40268
Mixed Developments	1 to 5	10%	88	80	7062	5	35308
	1 to 10	6%	58	80	4659	10	46592

REGION **Yorkshire and Humberside**

BCIS Location Index 92

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	121	95	11537	5	57684
	1 to 10	6%	53	85	4536	10	45356
Housing Only	Single	67%	581	300	174432	1	174432
	1 to 5	22%	194	95	18441	5	92207
	1 to 10	14%	122	90	11012	10	110124
Flats only	1 to 5	2%	23	95	2185	5	10925
	1 to 10	-5%	-54	75	-4071	10	-40710
Mixed Developments	1 to 5	10%	89	80	7139	5	35696
	1 to 10	6%	59	80	4710	10	47104

REGION **East Midlands**

BCIS Location Index 105

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	139	95	13167	5	65835
	1 to 10	6%	61	85	5177	10	51765
Housing Only	Single	67%	664	300	199080	1	199080
	1 to 5	22%	222	95	21047	5	105236
	1 to 10	14%	140	90	12569	10	125685
Flats only	1 to 5	2%	26	95	2494	5	12469
	1 to 10	-5%	-62	75	-4646	10	-46463
Mixed Developments	1 to 5	10%	102	80	8148	5	40740
	1 to 10	6%	67	80	5376	10	53760

REGION **West Midlands**

BCIS Location Index 93

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	123	95	11662	5	58311
	1 to 10	6%	54	85	4585	10	45849
Housing Only	Single	67%	588	300	176328	1	176328
	1 to 5	22%	196	95	18642	5	93209
	1 to 10	14%	124	90	11132	10	111321
Flats only	1 to 5	2%	23	95	2209	5	11044
	1 to 10	-5%	-55	75	-4115	10	-41153
Mixed Developments	1 to 5	10%	90	80	7217	5	36084
	1 to 10	6%	60	80	4762	10	47616

REGION **East of England**

BCIS Location Index 100

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	132	95	12540	5	62700
	1 to 10	6%	58	85	4930	10	49300
Housing Only	Single	67%	632	300	189600	1	189600
	1 to 5	22%	211	95	20045	5	100225
	1 to 10	14%	133	90	11970	10	119700
Flats only	1 to 5	2%	25	95	2375	5	11875
	1 to 10	-5%	-59	75	-4425	10	-44250
Mixed Developments	1 to 5	10%	97	80	7760	5	38800
	1 to 10	6%	64	80	5120	10	51200

REGION **London**

BCIS Location Index 110

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	145	95	13794	5	68970
	1 to 10	6%	64	85	5423	10	54230
Housing Only	Single	67%	695	300	208560	1	208560
	1 to 5	22%	232	95	22050	5	110248
	1 to 10	14%	146	90	13167	10	131670
Flats only	1 to 5	2%	28	95	2613	5	13062.5
	1 to 10	-5%	-65	75	-4868	10	-48675
Mixed Developments	1 to 5	10%	107	80	8536	5	42680
	1 to 10	6%	70	80	5632	10	56320

REGION **South East**

BCIS Location Index 110

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	145	95	13794	5	68970
	1 to 10	6%	64	85	5423	10	54230
Housing Only	Single	67%	695	300	208560	1	208560
	1 to 5	22%	232	95	22050	5	110248
	1 to 10	14%	146	90	13167	10	131670
Flats only	1 to 5	2%	28	95	2613	5	13063
	1 to 10	-5%	-65	75	-4868	10	-48675
Mixed Developments	1 to 5	10%	107	80	8536	5	42680
	1 to 10	6%	70	80	5632	10	56320

REGION **South West**

BCIS Location Index 100

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	132	95	12540	5	62700
	1 to 10	6%	58	85	4930	10	49300
Housing Only	Single	67%	632	300	189600	1	189600
	1 to 5	22%	211	95	20045	5	100225
	1 to 10	14%	133	90	11970	10	119700
Flats only	1 to 5	2%	25	95	2375	5	11875
	1 to 10	-5%	-59	75	-4425	10	-44250
Mixed Developments	1 to 5	10%	97	80	7760	5	38800
	1 to 10	6%	64	80	5120	10	51200

REGION **Wales**

BCIS Location Index 92

Type	units	% difference compared to developments over 10 units	Difference in £/m²	Average unit size m²	Difference per dwelling £	Number of units	Average difference per development £
All Residential	1 to 5	13%	121	95	11537	5	57684
	1 to 10	6%	53	85	4536	10	45356
Housing Only	Single	67%	581	300	174432	1	174432
	1 to 5	22%	194	95	18441	5	92207
	1 to 10	14%	122	90	11012	10	110124
Flats only	1 to 5	2%	23	95	2185	5	10925
	1 to 10	-5%	-54	75	-4071	10	-40710
Mixed Developments	1 to 5	10%	89	80	7139	5	35696
	1 to 10	6%	59	80	4710	10	47104

REGION		**Scotland**					
BCIS Location Index	101						
Type	**units**	**% difference compared to developments over 10 units**	**Difference in £/m²**	**Average unit size m²**	**Difference per dwelling £**	**Number of units**	**Average difference per development £**
All Residential	1 to 5	13%	133	95	12665	5	63327
	1 to 10	6%	59	85	4979	10	49793
Housing Only	Single	67%	638	300	191496	1	191496
	1 to 5	22%	213	95	20245	5	101227
	1 to 10	14%	134	90	12090	10	120897
Flats only	1 to 5	2%	25	95	2399	5	11994
	1 to 10	-5%	-60	75	-4469	10	-44693
Mixed Developments	1 to 5	10%	98	80	7838	5	39188
	1 to 10	6%	65	80	5171	10	51712

5. Conclusions

The analysis of the data shows that the build cost per m^2 for all residential schemes 10 units or less is on average 6% higher than on large developments. From our review of viability studies there is no evidence that it is taken into account when assessing the viability of smaller schemes. In addition, some local planning authorities are setting higher section 106 or CIL rates for smaller developments without making allowance for these extra costs.

The difference is greater on housing only schemes (+14%), while the situation is reversed for flats only schemes (-5%). On mixed development schemes the difference is also +6%.

On a typical 1–10 unit development of houses, the extra base construction cost would amount to over £100,000. Section 4 gives the calculated figures for each English region.

This variance is exacerbated by the fact that allowances for external works and professional fees, etc, are often added as percentages of base construction cost. These will often amount to an uplift of more than 20% of the total construction cost.

The effect on viability levels will vary depending on how additional allowances for other development costs have been calculated and on local market values for land and dwellings.

6. Recommendations

1. Local authorities and their advisers should reflect the higher construction costs experienced by smaller housing developments when carrying out viability appraisals for smaller housing sites of 10 units or less, setting CIL, or considering levels of contributions to be sought through section 106 agreements.

2. The figures in this report are directly comparable with, and should be used in conjunction with, the figures in the BCIS *Quarterly review of building prices*.

3. BCIS advises the use of the mean to determine an average build cost, i.e. the sum of the figures divided by the number of figures.

7. BCIS Location factors study

Introduction

The cost of a building is affected by its location. Many localised variables combine to produce a unique cost, including market factors such as demand and supply of labour and materials, work-load, taxation and grants. The physical characteristics of a particular site, its size, accessibility and topography also contribute. Not even identical buildings built at the same time but in different localities obtain identical tenders.

While all these factors are particular to a time and place, certain areas of the country tend to have different tender levels than others. The BCIS Location Indices are a measure of recent regional price differences combined with a long term average intra-regional variation (counties and districts). The location factors given in the table below are an attempt to identify some of these general differences using information derived from the BCIS Tender Price Index. The regions chosen are administrative areas and are not significant cost boundaries as far as the building industry is concerned. It should be stressed that even within counties or large conurbations, great variations in tender levels are evident and that in many cases these will outweigh the effect of general regional factors.

Table: BCIS Location factors (using 2000 boundaries data)
Base: UK mean = 100;
Updated: 29-May-2015

Location	Index	90% confidence interval	Standard deviation	Range	Sample
North East	105	104 - 106	13	79 - 187	459
North West	91	91 - 92	10	61 - 150	980
Yorkshire and the Humber	92	92 - 93	11	70 - 174	630
East Midlands	105	104 - 106	12	68 - 149	633
West Midlands	93	93 - 94	10	65 - 158	897
East of England	100	99 - 101	11	66 - 149	973
London	112	111 - 113	15	75 - 182	1001
South East	112	111 - 112	13	80 - 170	1466
South West	100	99 - 101	12	69 - 221	853
Wales	92	91 - 93	11	70 - 143	397
Scotland	101	100 - 102	14	67 - 201	1211
Northern Ireland	56	55 - 56	6	43 - 74	194
Islands	115	113 - 117	12	89 - 157	131

Adjusting project prices

The most commonly used study is location, which has wide application in adjusting the price of a project from one location in order to estimate the price of a similar project somewhere else. This can simply be done by dividing the project cost by the location index for the location where it was actually built and multiplying by the location index for the location of the proposed scheme.

It should be noted that the location factors represent differential pricing levels and do not allow for any variation in specification or design.

The costs in this study have been adjusted to a UK mean. To adjust the costs to a specific region, multiply by the location factor index in the table and divide by 100.

Classification

The BCIS Location study shows pricing levels represented in a three level hierarchy. For convenience these are referred to as 'regions', 'counties' and 'districts', although other terms will be more appropriate in specific cases (e.g. some regions are countries). Versions of this study are available based on the local authority boundaries in 2000 and on the boundaries in 1980. Regions are standard statistical regions at the time; counties include the Scottish Regions, and districts include unitary authorities and metropolitan districts. The 2000 boundaries are based on the UK NUTS (Nomenclature of Territorial Units for Statistics) classification.

Under the 1980 coding, London is treated as a special case. The first split is between London Postal Districts (anywhere with a London postcode such as N, NW, W, SW, SE, E, EC or WC) and Outer London (anywhere within Greater London but with a postal address of Surrey, Middlesex, Hertfordshire, Essex or Kent). An alternative split for London is by London Borough – this is shown at the same level as the London Postal Districts/Outer London split because the boundaries of the two breakdowns do not coincide. There are several London Boroughs which lie part in and part out of the London Postal Districts.

There is nothing significant about the boundaries chosen in price level terms and price levels could be expected to change gradually from one area to another.

Date when the indices apply

Because regional differences are known to vary over time, the study has been standardised to the most recently available inter-regional differences. Because a) there is always a delay between a project's tender date and when it can be included in a study and b) small sample sizes in individual regions mean that more than one quarter is required to calculate a current regional factor, there will always be a lag between the date of publication and the average date of projects used to calculate the latest regional trend. This lag varies from region to region and time to time but is typically around four quarters.

Because of the small sample available for any county or district, the intra-regional factors

are based on a long term average linked to the regional factors.

In summary, the location indices represent recent inter-regional differences which represent the situation approximately one year behind the publication date.

Sample
The number of figures of each category included in the study. The higher the number in the sample, the more reliable the results are likely to be. Treat small samples (less than 20) with caution.

Results are not published where the sample is less than four. This is one reason why the sample size of a category may be greater than the sum of the sample sizes of subsidiary categories. Another reason might be that one or more projects may have some information missing, e.g. BCIS may know which county the project lies in for the location study, but not the district – in which case the project will be included in the county sample but none of the districts.

Appendix 1 – Definitions

TENDER PRICE – the amount of the accepted tender. This is the price the client and contractor have agreed for the execution of the work as defined in the contract documents.

COST – basic cost to the contractor. It includes the cost of labour, at the nationally agreed rates, materials and plant.

£/m2 – the tender price of the building only, (i.e. excluding external works and contingencies) divided by the gross internal floor area of the building, measured in square metres.

£/sq ft – as above, but measured in square feet.

GROSS INTERNAL FLOOR AREA – total of all enclosed spaces fulfilling the functional requirements of the building measured to the internal structural face of the enclosing walls. It includes areas occupied by partitions, columns, chimney breasts, internal structural or party walls, stairwells, lift wells, and the like. Also included are lift, plant, tank rooms and the like above main roof slab. Sloping surfaces such as staircases, galleries, tiered terraces and the like are measured flat on plan.

MEAN – the sum of the figures divided by the number of figures. It is the average price paid for the buildings in the sample.

MEDIAN – the middle statistic (NOT the middle of the range). Unlike the mean, this is not as easily affected by rogue figures.

LOWER QUARTILE – just as the median is the middle statistic, the lower quartile is the statistic which is one quarter of the way up a list of ordered rates, i.e. 25% of rates will fall below the lower quartile and 75% above.

UPPER QUARTILE – just like the lower quartile but 25% of rates will fall above the upper quartile and 75% below.

INTERQUARTILE RANGE – the range between the lower and upper quartile.

RANGE – the upper and lower figures of the sample.

SAMPLE SIZE – the number of buildings of each type included in the survey. The higher the number in the sample, the more reliable the results.

QUARTER – the quarterly index figures are based on the mean prices or costs for the three months average of any one quarter. Thus, figures for the 1st quarter 1988 are based on costs or prices in the months of January, February and March 1988.

CONTRACT SUM – the prices in this publication are based on the contract sums for the projects covered. The contract sums will normally have been produced as a result of contractors competitively pricing or negotiating a contract sum analysis or bills of quantities. The contract sum represents the agreed price for which the builder is prepared to do the work and which the client is prepared to pay. The contract sum will include builders' profits and overheads. Prices in the publication do not include for fees payable to architects, quantity surveyors, engineers or any other consultants normally paid directly by the client nor for design fees paid to the contractor on a design and build contract.

Appendix 2 – Indices of tender prices and building costs

Introduction

The BCIS Tender Price Indices and the General Building Cost Index monitor the movement of tender prices and building costs from the beginning of 1984. The Tender Price Index measures the trend of contractors' pricing levels in accepted tenders for new work i.e. cost to client. The General Building Cost Index measures changes in costs of labour, materials and plant, i.e. basic cost to contractor.

The movement of the Tender Price Index is a reflection of many factors. As well as measuring changes in basic costs it indicates the feelings of the industry about its current and future workload. When demand for the industry's services is high not only do contractors' margins increase but so do the margins charged by materials suppliers and producers and the money paid to attract labour. When demand is low all these factors fall. It should be noted that it is the difference in the rate of change in the indices that is significant: the absolute difference between the two indices is not meaningful.

Tender price indices

Tender Price Indices are produced by the examination and analysis of priced bills of quantities. In essence, bills of quantities are repriced by BCIS using a base schedule of rates and the repriced tender figure compared with the actual figure to produce a 'project index'. A large number of bills of quantities are indexed in this way each quarter and the resulting project index figures are first adjusted to eliminate average differences due to location, contract size and method of procurement at base date and then averaged to produce the published index.

The Tender Price Indices are quarterly indices. Each project index is allocated to a quarter by either date of tender or base month (as applicable) of the scheme. The average of the project index figures for each quarter forms the published quarterly index figure. In order to achieve stability of the index, BCIS likes to include 80 projects in each quarter although this has not always proved possible.

The number of projects included in each quarter is shown against the index figures.

The All-in Tender Price Index is based on a random sample of accepted tenders for new building work, with contract sums over £100,000, which have been priced in competition or by negotiation. The index covers both public and private sectors.

PRIVATE SECTOR TPI – The Private Sector Tender Price Index is based on an analysis of a random sample of private sector projects excluding housing. The index has been produced by BCIS for the Department of Trade and Industry (DTI) and is reproduced with their kind permission.

PRIVATE COMMERCIAL TPI –The Private Commercial Tender Price Index considers those projects in the Private Sector TPI which are for commercial projects only.

PRIVATE INDUSTRIAL TPI – The Private Industrial Tender Price Index considers those projects in the Private Sector TPI which are for industrial projects only. This Index is calculated using a method which is intended to replicate, as far as is practical, the Index that would have been calculated if sufficient priced bills of quantities or quantified schedules were available to BCIS for indexing.

PUBLIC SECTOR TPI – The Public Sector Tender Price Index is based on all projects in the public sector excluding public housing. The index provides a direct comparison with the All-in Private Sector TPI.

General building cost Index

The BCIS General Building Cost Index is based on a cost model of an average building. The model was derived from the analysis of 80 bills of quantities. These bills were broken down into the work categories defined in the National Economic Development Office's formula method of calculating fluctuations under a building contract.

The inputs to the index are the work category indices prepared by the Construction Market Intelligence Division (BERR) for use with the NEDO Formula. The indices allow for changes in the costs of nationally agreed labour rates, material prices and plant costs.

Appendix 3 – Average building prices

Introduction

The BCIS Average building prices are the results of analysis of tender prices of over 18,500 buildings. The aim of the study is to show the variations in prices between buildings of different function and the range of prices which occurs for buildings of each functional type. The figures used are contract sums excluding external works and contingencies, professional fees, VAT, finance charges and the like with preliminaries apportioned by value. They are expressed in £ per m2 of the gross internal floor area.

The prices are adjusted to a notional UK average price using the BCIS County location factors and then adjusted to constant current prices using the latest estimates for indices.

The prices

The results given are based on prices which have been made available to BCIS. It should be stressed therefore that the sample for any particular building type is not random. Prices can vary considerably from one region to another and between individual sites. The figures therefore can only be a general guide to the level of building prices and professional interpretation is always necessary.

The study includes complete new buildings, i.e. horizontal extensions, vertical extensions and shell only schemes are specifically excluded. Rehabilitation and conversion works are analysed and presented separately.

The buildings have been analysed by function and have been classified according to Table 0 of the 1976 revision of the CI/SfB classification system. Each building type is shown separately. In some circumstances buildings have subclasses, the building function being subdivided by one characteristic (such as size). In a few cases (e.g. offices), a second characteristic has been used and this is prescribed as a hierarchy so that, for example, offices are first split between air conditioned and non-air conditioned, and then air conditioned and non-air conditioned offices are sub-divided by height. You can therefore easily compare the different cost per m2 for air conditioned and non-air conditioned 3–5 storey offices. For each building type, £/m2 prices are given for the mean, median and interquartile range.

The survey draws upon all projects available to BCIS including Tender Price Index returns, questionnaires and analyses. Where possible, the published results are based on projects that are not more than 15 years old. Where this would result in a small or non-existent sample, the period is extended as necessary. The initial minimum sample size is four projects: if less than four projects are available for a category within the last 15 years then the period is extended by five years and the required sample reduced by one. This process is repeated if necessary. However, where samples are less than three, the category of building is not included in this section. The cut off period is shown in brackets so that categories where an extended period has been used are clearly identified.