

Condition of School Buildings Survey

Key findings

May 2021

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Executive summary

This report provides the key findings of the Condition Data Collection programme. The Condition Data Collection programme was commissioned by the Department for Education and collected data on the building condition of government funded schools in England. The primary purpose of the programme was to provide a robust evidence base to enable the Department for Education to target the capital funding it provides for maintaining and rebuilding school buildings.

The programme ran from 2017-2019 and was one of largest data collection programmes of its kind. It collected data on 22,031 schools, comprising 63,942 teaching blocks, across 9 geographical regions of England. There were approximately 300 qualified building surveyors and engineers collecting condition data at any one time.

The key findings from the programme include:

- the school estate in England has a total internal area of 78.7 million m²
- the school estate in England has a ground area usage of 514 million m² for buildings and school land combined
- the total condition need, defined as the modelled cost of the remedial work to repair or replace all defective elements in the school estate, is £11.4 billion

Further detail on these findings can be found in the 'Condition Data Collection - Key Findings' section.

This report provides background to the programme. It explains how the Condition Data Collection programme was undertaken, the data collection methodology, and steps taken to ensure high standards of data quality. It also provides a summary of the feedback received during the lifetime of the programme.

A separate programme to determine the condition of FE college buildings was commissioned by the Department for Education. The findings of that programme are not included in this report.

If you have any comments or questions about this report, please send them to <u>dfe.cdcprogramme@education.gov.uk</u>.

Background

The Condition Data Collection (CDC) ran from 2017-2019 and followed the model of a predecessor programme, the Property Data Survey (PDS).

The CDC programme incorporated lessons learnt from the PDS. It included a rigorous surveyor training and quality assurance process to ensure that the data gathered was consistent and accurate across schools. The CDC process was piloted with a number of schools before the programme started and a report on each school's condition was shared with the school during the programme.

Who is this publication for?

This publication is for:

- local authorities, academy trusts and dioceses
- school leaders, school staff and governing bodies in all maintained schools, academies and free schools
- any other interested parties

Purpose

The CDC data provides a consistent representation of the condition of all government funded school buildings in England. Building on PDS, CDC continued to meet the recommendation in the 2011 James review of school capital funding that a rolling programme of data collection across all schools is undertaken to provide a credible picture of changing investment needs over time. CDC provides up to date data to inform school funding policy so that our investment in the school estate is effective and efficient.

In particular, CDC is:

- informing allocations of capital funding to groups of schools
- providing a complete picture of the size and nature of the school estate and how it is changing over time
- identifying school buildings in greatest need of investment to inform how funding is targeted

Coverage

All government funded educational establishments providing nursery, primary, secondary phase education, and some further education establishments, were included in the CDC programme. The exceptions were privately owned and operated nursery schools that did not share their buildings with schools.

The establishments included:

- infant, junior and middle-deemed primary schools
- secondary schools, middle-deemed secondary schools, sixth form centres, sixth form colleges
- short stay/pupil referral units, special schools and special colleges

In total 22,031 schools or 99.8% of government funded schools were visited in the programme. 46 schools were not visited as there were ongoing rebuilding works. The data and analysis in this report represents a "snapshot" in time. The total number of schools and blocks in the school estate in England is continually changing, for example as schools are extended, merged or closed and new schools are opened.

Partners involved in delivery of the CDC programme

There were four surveying organisations that DfE commissioned to collect condition data for the CDC programme. These were Aecom, Capita, Faithful+Gould and Rider Levett Bucknall. These organisations provided the building surveyors and the mechanical and electrical engineers to undertake the school site visits and collect data about the condition of the school buildings. DfE comissioned a Technical Service Management organisation, Arcadis, provided training, quality assurance and technical leadership across the programme. The IT solution was provided by Accruent. Their KyKloud IT system provided the data collection, storage, and reporting platform for the programme.

Data collected

The CDC programme collected the following types of data:

- asset/contextual data summary data which describes the estate and the buildings within it, including size, construction type and contextual information (such as listed status, known planning restrictions)
- condition data an assessment of the condition of each building element
- management data for example, presence of documentation including electrical and fixed wiring test certificates and fire risk assessments

Data collection methodology

Condition was assessed for twelve main primary building 'elements'. Each of these elements are split into sub-elements that in turn are split into construction types. For example, a roof (element) could be a pitched roof (sub-element) and made of natural slate (construction type). When visiting the school site, the surveyors/engineers identified each construction type present for each sub-element and awarded each a condition grade and repair priority.

Where there are different grades of condition apparent across construction types making up a sub-element, a percentage grade is applied. For example, 'internal flooring' could have 40% at condition grade B and 60% condition grade C. The surveyor or engineer awarded each construction type a condition grade based on a visual assessment. Where that was not possible the grade would be based on discussion with the school, reference to a third party report or based on professional judgement.

The condition grade and repair priority definitions are described below.

Table of grade descriptors:

Grade	Condition	Description
А	Good	Performing as intended
В	Satisfactory	Performing as intended, but exhibiting minor deterioration
С	Poor	Exhibiting major defects and/or not operating as intended
D	Bad	Life expired and/or serious risk of imminent failure
x	Full Replacement	Supplementary designation assigned in addition to 'B' and 'C' where full replacement is required For example, a boiler may be assessed as "Cx" if the surveyor judges it to be in poor condition but is aware that it is obsolete and that it will no longer be possible to get the necessary spare parts due to its age

Table of priority ratings:

Priority	Time Frame	Description
4	> 5 Years	More than 5 years before remedial action required. All condition 'Grade As' will be priority rating 4 by default
3	3 – 5 Years	Between 3 and 5 years before remedial action is required
2	1 – 2 Years	Between 1 and 2 years before remedial action required
1	0 Years	Immediate remedial action or replacement required (default priority rating for condition grade D)

Explanation of GIFA and Condition Need

The Gross Internal Floor Area (GIFA) is a calculation of all the floor area in a school. The CDC GIFA is the area of a building, measured off Ordnance Survey (OS) based information using the external face of the perimeter walls at each floor level, and which also includes areas such as those occupied by internal walls and partitions.

The GIFA calculation is not based upon the Royal Institution of Chartered Surveyors (RICS) definition of GIFA (which would, for example, discount external wall thickness) but is recognised as being taken from Ordnance Survey (OS) based information and consequently a +/- 10% tolerance is allowed, given the limitations of site measurement and the base information from which measurement is taken.

Condition information is collected at construction type level and graded A - D as appropriate (see table above). Quantities for each construction type are measured in accordance with an agreed method of quantification, with costs having been calculated for each of the construction types based on the full replacement cost, condition D. Adjustments are made for condition grades B and C to reflect the lower level of work required and no costs are applicable to those identified as being in condition grade A.

Once costs have been ascertained for each construction type, they are aggregated up to sub-element and elemental level. These elemental level costs can then be aggregated up to the block and then school level, thus giving a value for the condition need of the block and school. It should be noted that these costs are given per construction type in isolation and do not take account of the impact of any consequential work or works that could be carried out concurrently.

These modelled costs are not an accurate estimate of the actual repair costs at any individual school. Their purpose is to be able to compare the relative condition need between different schools on a consistent basis. By calculating the condition need divided by the GIFA we can compare condition across different sized schools using the cost per m² metric.

Data quality

The CDC programme incorporated rigorous quality control measures to ensure that the data collected is robust and reliable. All surveyors and engineers were provided with full training on the CDC methodology to ensure consistency of data collection and comparability across all schools. In addition, the data collected was subject to stringent quality assurance by surveying organisations and the DfE, and an independent audit led by the Technical Service Manager.

Sharing data

Once the CDC data had been quality assured, schools and their responsible bodies were provided with a condition report containg general block information, the condition grade assessments, a photopack and site plan, and were given the opportunity to provide feedback on the findings in the report or any aspect of the CDC programme.

Feedback from schools

We have had over 1,400 feedback submissions from schools over the lifetime of the CDC programme, which represents over 7% of schools that received condition reports.

Overall, the feedback received was positive. 88% reported a positive or neutral experience of the programme. Highlights include:

- 'programme understanding', 'visit experience' and 'school report accuracy' were all 95% (or over) positive/neutral
- 'pre-visit communications' and the 'condition report reflecting overall condition' were both over 80% positive/neutral
- 'ease of use of the school condition report' was 77% positive/neutral

Condition Data Collection – Key Findings

In their 2017 report on Schools Capital, the National Audit Office (NAO) found that the total backlog maintenance need in the school estate was £6.7 billion, based on data from the 2012-2014 PDS. While this was calculated on a slightly different basis, this does demonstrate that the overall condition need in the estate has grown over the last six years.

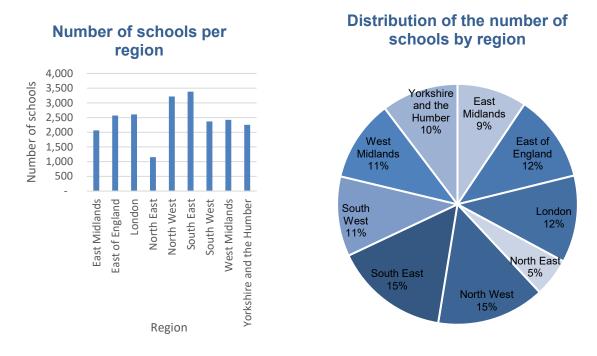
In the early CDC visits, we prioritised visiting a group of schools that we deemed to be in the worst 15% of schools in PDS. This was done so we could assess how effectively responsible bodies were addressing the poor condition of these schools. Overall, we have found that only a quarter of these schools remain in the same group in CDC demonstrating that the poor condition need in many of these schools has been wholly or partially addressed.

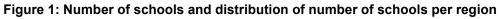
The school estate has a GIFA of 78.7 million m^2 and a ground area usage of 514.2 million m^2 for buildings and school land combined. The modelled total condition need in the estate is £11.4 billion.

CDC surveys assessed 22,031 schools across 9 geographical regions of England. They comprised 63,954 teaching blocks. 211 element types were surveyed, split into 12 main element groups.

The number of schools in each section below represents those schools that were visited as part of the CDC programme. Due to rounding, not all figures in the following tables and charts add up to 100%.

Region data





The South East has the highest number of schools, with 3,381, which represents 15% of the school estate. The lowest number of schools is in the North East with 1,155 schools, 5% of the school estate. The full numbers for all the region data can be found in the table in annex 1.

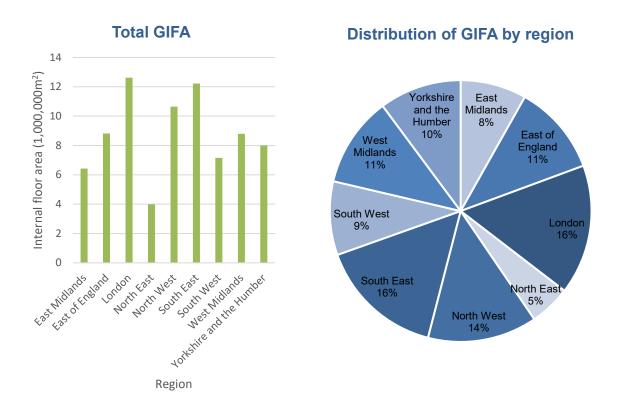


Figure 2: Total GIFA and distribution of GIFA by region

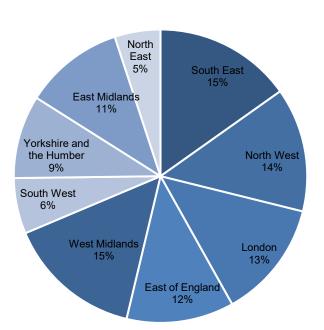
London contains the most floor space within schools, with a total GIFA of 12.6 million m^2 , representing 16% of the total internal floor area in the estate. The North East has the lowest GIFA with 4 million m^2 , representing 5% of the school estate.



Average GIFA per school



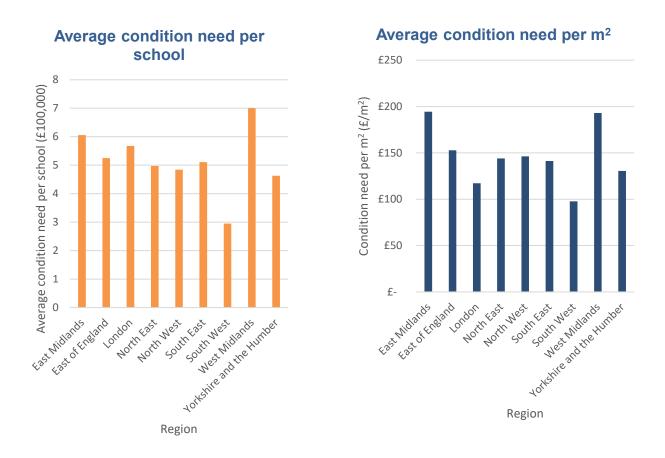
London has the largest schools, with an average of 4,844m² of internal area per school. The South West has the smallest schools, with an average internal area of 3,021m².

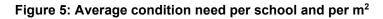


Proportion of condition need (£) in the school estate by region

Figure 4: Proportion of condition need in the school estate, by region

Schools in the South East and in the West Midlands each have £1.7 billion of condition need, the highest in the estate. Schools in the North East have the lowest total condition need with below £600 million, representing 5% of the total condition need in the estate - the proportion of England's schools located in the North East was also 5%.





Schools in the West Midlands have the highest average condition need per school at over £700,000 and the second highest condition need per m² at £193/m². The only region with a higher condition need per m² is the East Midlands, at £194/m². Most regions have similar condition needs per m² throughout their schools, with East of England, North East, North West, South East and Yorkshire and the Humber all being between £130/m² and £153/m².

The regions with the lowest condition need per m^2 are London, with £117/m² and the South West with £98/m², the only region with a condition need below £100/m².

Block data

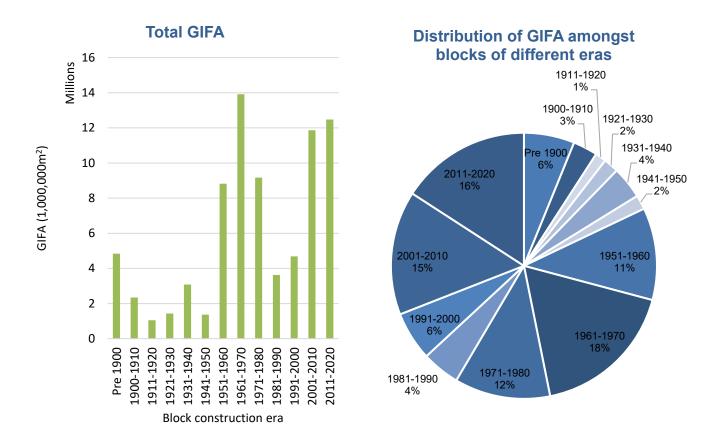


Figure 6: Total block GIFA and the distribution of GIFA amongst blocks of different eras

For teaching blocks still being used in the school estate, the 1960s is the decade with the largest representation in terms of available floor area, and is over 4,000,000m² and over 50% greater than the decade either side of it. The two decades in the 21st century are the next highest for available floor area. The 1910s and 1940s are, understandably given the context of those decades, the least represented decades in available floor space, occupying between 1% and 2% of the school estate. The full figures for the ages of blocks in the estate are set out in annex 2.

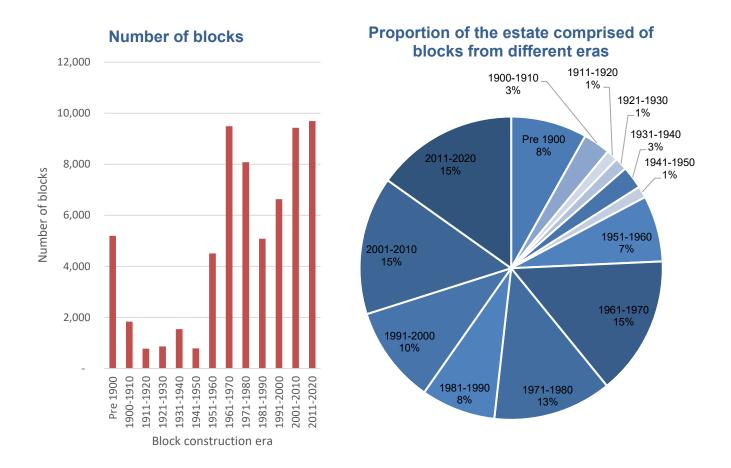


Figure 7: Number of blocks and the proportion of the estate comprised of blocks from different eras

The 1960s also has a lot of the remaining teaching blocks in the school estate, with 9,463. The 2010s is the only decade that has more blocks in the estate with 9,692. Again, the 1910s and 1940s are the two decades with the fewest currently used teaching blocks with only 780 and 793 respectively.

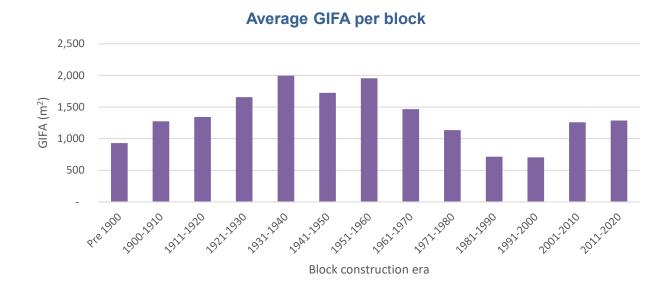
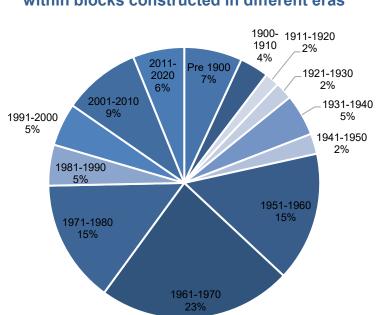


Figure 8: Average GIFA per block across the different block construction eras

The average size of new school buildings increased through to the 1930s, and decreased through to the 1990s, from a peak of near $2,000m^2$ in the 1930s down to just above $700m^2$ in the 1990s. The average has increased again in the 21st century to similar sizes to the 1970s. Primary schools in the estate have an average block size of $865m^2$ per block compared to $1,924m^2$ for secondary schools.



Proportion of the total cost need contained within blocks constructed in different eras

Figure 9: Proportion of the total cost need contained within blocks constructed in different eras

23% of the estate's condition need is in blocks from the 1960s, making it the highest source of condition need, followed by the two decades either side of it. In contrast the two decades from the 21st century represent a combined 15% of the condition need in the estate.

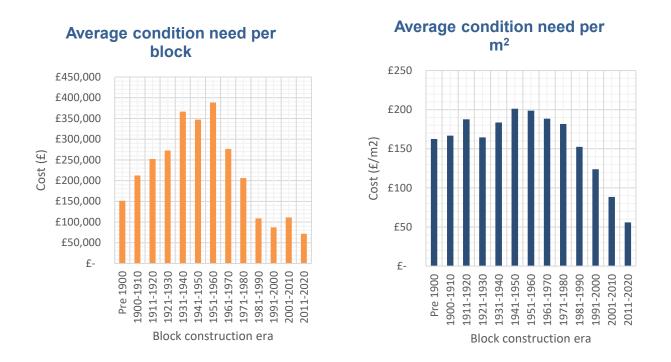


Figure 10: Average condition need per block and per m², by era

The 1960s sees the peak of condition need per m² and condition need per block. Condition need per m² then falls every decade through to 2020. Condition need per block rises slightly in the 2000s compared to the 1990s. Schools from before 1900 have a condition need per block less than half of the peak, and a condition need per m² similar to the 1980s, suggesting that these buildings are in excellent condition for their age.

Phase of education data

Phase	Number of schools
Primary	16,759
Secondary	3,225
Special	1,032
All-through	161
16 Plus	125
PRU	213
Nursery	393
Alternative provision	123

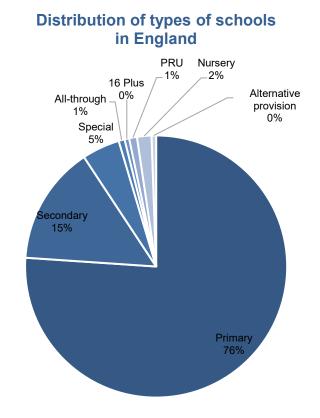


Figure 11: Number of schools in each phase of education and the distribution of types of schools in England

Primary schools represent over 75% of the estate's schools, with secondary schools representing 15% and the remaining 10% of the estate being shared between special schools, all-through schools, 16 plus schools, pupil referral units, nurseries, and alternative provision schools.

Phase	GIFA, m ²
Primary	33,272,454
Secondary	37,157,716
Special	3,766,418
All-through	2,054,922
16 Plus	1,559,110
PRU	334,130
Nursery	300,030
Alternative provision	221,457

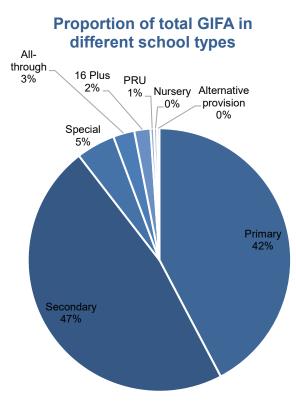


Figure 12: GIFA across each phase of education

Secondary schools have the most internal space, with nearly 4,000,000m² more available space in teaching blocks than primary schools. Nursery schools and alternative provision schools each take up less than 1% of the estate's internal floor space.

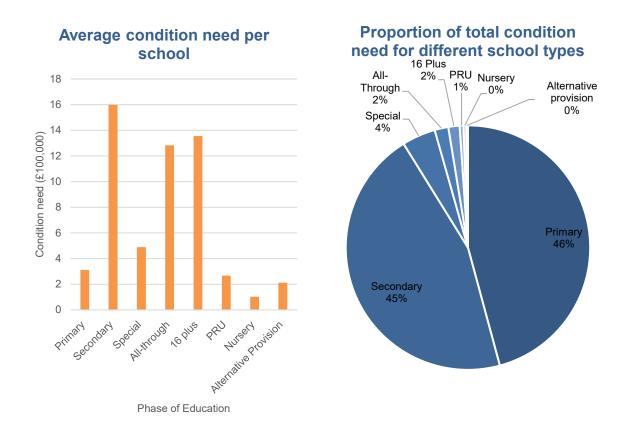
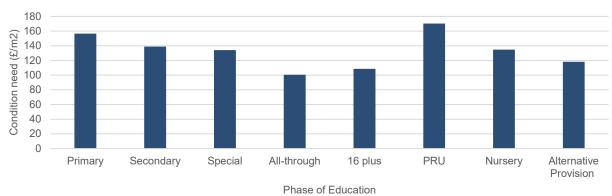


Figure 13: Average condition need per school and the proportion of total condition need for different school types

Primary schools and secondary schools combined represent over 90% of the estate's condition need, while nursery schools and alternative provision establishments each represent less than 1%. Unsurprisingly, secondary schools have the highest condition need per school, followed by 16 plus establishments and all-through schools. These are the largest school types in the estate, so they are likely to have the highest need per school.



Average condition need per m2

Figure 14: Average condition need per m², by school type

Average condition need per m^2 is the truest measure we have for the condition of different types of schools. Pupil referral units have the highest condition need, with $\pm 170/m^2$ of need, compared to the 'best' condition type of school which is all-through schools with $\pm 101/m^2$ of need. Primary schools are, on average, in a worse condition than secondary schools when comparing on entire school level, with $\pm 157/m^2$ of need compared to $\pm 139/m^2$. When comparing individual blocks, primary schools and secondary schools have similar distributions of need.

	Primary	Secondary	% Primary	% Secondary
0 condition need	1,931	765	72%	28%
Decile 1	3,543	1,962	64%	36%
Decile 2	3,664	1,841	67%	33%
Decile 3	3,645	1,860	66%	34%
Decile 4	3,740	1,765	68%	32%
Decile 5	3,701	1,803	67%	33%
Decile 6	3,668	1,837	67%	33%
Decile 7	3,631	1,874	66%	34%
Decile 8	3,641	1,864	66%	34%
Decile 9	3,659	1,846	66%	34%
Decile 10	3,622	1,883	66%	34%
Totals	38,445	19,300	67%	33%

Figure 15: Distribution of primary and secondary need

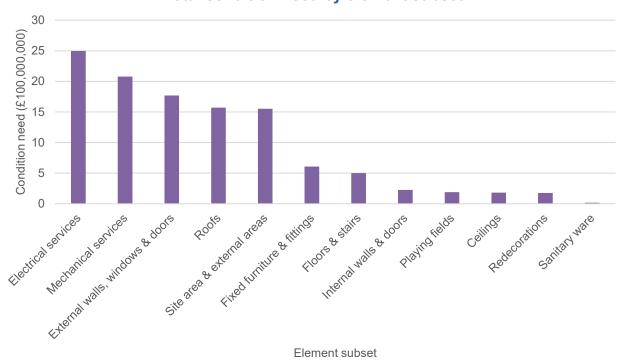
The row for blocks with no condition need contains fewer blocks than the other rows, which contain a consistent proportion of primary schools to secondary schools.

Deciles 1 to 10 are for condition need per m^2 in each block with decile 1 being lowest condition need and decile 10 being highest.

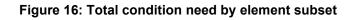
All the figures for phase of education can be found in the table in annex 3.

Element data

12 different types of element were assessed under CDC. The total condition need of repairing or replacing each of these is shown in the charts below.



Total condition need by element subset



Element type	Examples of elements included
Electrical services	Mains switch panels, lighting, IT infrastructure
Mechanical services	Boilers, pipework, air conditioning
Site and external areas	Drainage systems, boundary walls, tarmac or grass standing areas
Fixed furniture and fittings	Science, technology & ICT equipment, admin areas, storage
Redecorations	Painted or unpainted external walls, internal walls, ceilings

Figure 17: Element types and examples of the elements included

'Electrical services' has the highest condition need with £2.5 billion needing to be spent to fully repair or replace this element in the whole estate. 'Mechanical services' has a condition need of just above £2 billion, with 'external walls, windows & doors', 'roofs', and 'site area & externals' all having total condition needs over £1.5 billion.

The element with the least condition need throughout the estate is 'sanitary ware', at just £18 million - less than 1% of the condition need of either 'electrical services' or 'mechanical services'. 'Internal walls & doors', 'playing fields', 'ceilings', and 'redecorations' each have a condition need below £250 million. All the figures for elements in the estate can be found in the table in annex 4.

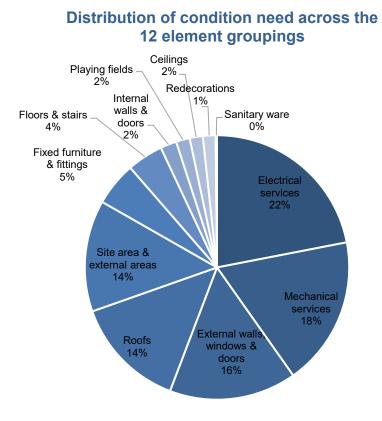


Figure 18: Distribution of condition need across the 12 element groupings

Annexes

Annex 1 – School data by region

Region	Number of schools	Number of blocks	Total GIFA	Average GIFA per school	Total modelled condition need	Average condition need per school	Average condition need per m ²
East Midlands	2,061	6,074	6,422,584	3,116	£1,248,565,042	£605,805	£194
East of England	2,567	8,215	8,806,384	3,460	£1,343,780,823	£523,483	£153
London	2,607	8,559	12,628,217	4,844	£1,479,558,091	£567,533	£117
North East	1,155	2,420	3,990,575	3,455	£574,563,926	£497,458	£144
North West	3,215	7,008	10,643,872	3,311	£1,556,270,002	£484,065	£146
South East	3,381	11,340	12,223,904	3,615	£1,726,387,122	£510,614	£141
South West	2,369	7,599	7,160,447	3,021	£699,349,478	£295,209	£98
West Midlands	2,424	6,982	8,791,603	3,627	£1,696,758,945	£699,983	£193
Yorkshire and the Humber	2,252	5,745	7,998,651	3,593	£1,043,499,517	£463,366	£130

Block Age	Number of schools	Number of blocks	Total GIFA	Average GIFA per block	Total modelled condition need	Average condition need per block	Average condition need per m ²
Pre 1900	4,134	5,200	4,840,206	931	£786,067,128	£151,167	£162
1900-1910	1,415	1,839	2,341,205	1,273	£390,457,799	£212,321	£167
1911-1920	633	780	1,048,165	1,344	£196,639,733	£252,102	£188
1921-1930	717	866	1,434,992	1,657	£236,190,585	£272,737	£165
1931-1940	1,255	1,541	3,076,399	1,996	£564,933,589	£366,602	£184
1941-1950	664	793	1,368,530	1,726	£275,216,717	£347,058	£201
1951-1960	3,384	4,509	8,817,796	1,956	£1,751,921,504	£388,539	£199
1961-1970	6,522	9,492	13,916,327	1,466	£2,623,210,709	£276,360	£188
1971-1980	5,629	8,083	9,167,575	1,134	£1,665,114,431	£206,002	£182
1981-1990	3,690	5,083	3,631,437	714	£553,497,485	£108,892	£152
1991-2000	4,715	6,636	4,682,392	706	£579,827,627	£87,376	£124
2001-2010	6,776	9,429	11,868,360	1,259	£1,049,174,481	£111,271	£88
2011-2020	7,205	9,691	12,472,853	1,287	£696,481,157	£71,869	£56

Annex 3 – School dat	a by education phase
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Phase	Number of schools	Number of blocks	Total GIFA	Average GIFA per school	Average GIFA per block	Total modelled condition need	Average condition need per school	Average condition need per m ²
Primary	16,759	38,445	33,272,454	1,985	865	£5,208,287,102	£310,776	£157
Secondary	3,225	19,300	37,157,716	11,522	1,925	£5,156,412,227	£1,598,888	£139
Special	1,032	3,331	3,766,418	3,650	1,131	£504,619,087	£488,972	£134
All-through	161	827	2,054,922	12,763	2,485	£206,595,980	£1,283,205	£101
16 Plus	125	719	1,559,110	12,473	2,168	£169,392,769	£1,355,142	£109
PRU	213	468	334,130	1,569	714	£56,865,675	£266,975	£170
Nursery	393	595	300,030	763	504	£40,393,714	£102,783	£135
Alternative Provision	123	257	221,457	1,800	862	£26,166,391	£212,735	£118

Annex 4 – Elemental data by the 12 types of element assessed

Element Type	Occurrences of this element	Number of schools with this element	Number of blocks with the element	Total modelled condition need	Average proportion of Grade A	Average proportion of Grade B	Average proportion of Grade BX	Average proportion of Grade C	Average proportion of Grade CX	Average proportion of Grade D
Electrical services	830,228	22,030	63,942	£2,496,318,288	47	51	1	1	1	0
Mechanical services	822,552	22,026	63,797	£2,077,169,222	60	37	1	1	1	0
External walls, windows & doors	374,782	22,023	63,932	£1,769,698,665	77	20	0	2	0	0
Roofs	394,168	22,016	63,929	£1,570,866,426	71	26	0	2	0	0
Site area & external areas	269,491	22,024	23,874	£1,551,480,963	68	29	0	2	0	0
Fixed furniture & fittings	231,093	22,026	63,716	£608,028,009	72	27	0	1	0	0
Floors & stairs	363,628	22,026	63,723	£501,934,796	75	23	0	1	0	0
Internal walls & doors	261,568	22,026	63,725	£225,237,920	77	22	0	1	0	0
Playing fields	50,997	18,587	19,335	£190,826,646	75	23	0	1	0	0
Ceilings	111,137	22,025	63,714	£181,900,328	77	21	0	2	0	0
Redecorations	381,886	22,031	63,942	£177,212,602	77	19	0	3	0	0
Sanitary ware	55,301	22,019	55,294	£18,059,081	68	30	0	1	0	0



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