The research.

The Government’s policy of delivering 300,000 new homes a year is an ambitious target and aims to improve access to housing for over a million people over the coming years. This scale of housing delivery hasn’t been achieved since the 1960s and will require a doubling of the current capacity and supply chain commitment.

It could also put pressure on house builders to deliver quick construction programmes and turn potentially challenging sites into new spaces for living. At the same time, we need to consider quality of life for these new residents. This research report highlights some of the most important design and construction considerations for planners, developers, designers and builders.

The study elaborates some of the themes contained in the UK-Green Building Council briefing note, ‘Healthy Housebuilding’, published in April 2018 at a Parliamentary launch event.¹

The work also supports previous UK-Green Building Council findings on the factors influencing health and wellbeing in the residential sector which showed how the design of homes can influence the mental, social and physical conditions of occupants.²

To investigate the specific design features that people like, or dislike, about their home, Hoare Lea sought the views of hundreds of residents across the UK. Our online residential design quality survey received responses from over 470 residents. The sample of residents that provided responses was broad, comprising both home owners and tenants, covering various demographic groups, living in flats and houses of different ages of construction.

The survey provided both quantitative and qualitative responses. For example, the questionnaire asked residents to rate specific design features about their home and also posed open questions like ‘name the top things you like about your home’. It therefore provides a useful indicator of residential design priorities.

We are grateful for the support in dissemination of the survey by BRE, PRP Architects and Clarion Housing Group.

300,000

The target number of homes the government wants built each year.

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Good design – key findings.

Analysis of the residential design quality survey gives a picture of the ideal home. In essence, a good quality home meets four basic needs:

- **Design**: Residents want well-proportioned rooms and an internal configuration that meets functional needs – space for eating, sleeping, entertaining guests, social interaction and storage etc.

- **Construction**: Residents want robust, efficient and resilient construction quality which avoids high energy bills and maintenance. Residents also want good quality facilities and amenities.

- **Environment**: Residents want good daylight, all-year round thermal comfort, good air quality, good ventilation, limited noise nuisance and easy to operate heating installations and other building systems.

- **Community**: Residents want to live in a safe community with opportunities to interact with neighbours. People desire access to local shops, services with good transport links. Gardens and green space are important, supporting people’s preference for healthy surroundings.

An additional finding of the survey is the variable quality of new homes. On the whole, two-thirds of residents in new homes rate the overall design quality as ‘good’ or ‘fairly good’ but delving deeper, the survey shows some disparities and variability in quality. In particular, the smaller average size of new homes, lack of storage space, increasing risk of overheating, and sometimes poor acoustics and poor planning of amenities are issues to be addressed in housing construction going forward. There is evidence that smaller homes that many house builders are delivering may be satisfactory for young couples but less satisfactory for families.
Variations in design quality.

We asked residents what features they like about their home.

The results of the survey show that at one end of the scale residents are normally satisfied with certain aspects of design, such as quality of daylight and internal layout of their home. At the other end of the scale, there is less satisfaction with storage space, thermal comfort, the cost of energy bills and the understanding of home controls.

We found that people with the highest levels of satisfaction live in detached houses. Occupants in detached houses are twice as likely to rate the quality of their home as ‘good’, compared to other housing types (flats, terraced and semi-detached houses), i.e. 60% versus 30% respectively.

Residents in detached houses are also much more likely to own their home - 90% compared to 40% of residents in flats. Nationally about 65% of residents own their home. Detached houses are also generally larger than other types of housing.

Satisfaction need not inherently be about home ownership. The survey shows satisfaction is influenced by a range of design characteristics, which can be achieved in rental properties. In particular, good housing quality is about natural light and having sufficient space. The importance of natural light is demonstrated by the fact that 92% of residents that have the highest ranking for home design quality rate daylight as being ‘good’ or ‘very good’. This figure is 80% for the average resident.

We find that age of the occupant, on the whole, doesn’t have a strong influence on the importance they attach to design quality. For example, younger and older residents have similar views on the importance of natural light, internal layout, controls and internet connectivity. Although younger residents tend to be less satisfied with the quality of the domestic fixtures such as kitchens. This may be because younger residents are more likely to live in rented accommodation with fixtures provided by the landlord that may be of lower standards than they would like.

### Average Satisfaction Ratings for a Range of Design Features and Facilities in the Home

(based on views of 470 residents, for all residential types and locations)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Good / Very good</th>
<th>Acceptable</th>
<th>Poor / Very poor</th>
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</thead>
<tbody>
<tr>
<td>Quality of natural light</td>
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<td></td>
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<tr>
<td>Quality of internal layout</td>
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<td></td>
<td></td>
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<tr>
<td>Size of living / dining area</td>
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<tr>
<td>Internet connectivity</td>
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<tr>
<td>Thermal comfort in summer</td>
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<td></td>
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<tr>
<td>Quality of bathroom</td>
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<tr>
<td>Indoor air quality</td>
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<td></td>
<td></td>
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<tr>
<td>Quality of kitchen</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Space for storage</td>
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<tr>
<td>Thermal comfort in winter</td>
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<tr>
<td>Quality of home controls</td>
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<td>Reasonable energy costs</td>
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</tbody>
</table>

We find variations in design quality.
The importance of daylight.

Natural light is identified as a key priority for a home.

The perception of daylight quality in our homes is generally satisfactory; 80% of respondents rate their daylight quality as ‘good’ or ‘very good’. By comparison, 55% of respondents feel their indoor air quality is ‘good’ or ‘very good’ and the equivalent perception of comfort in winter is 50% (for all construction types).

Given the importance of natural light it’s essential that planners, designers and house builders ensure that new and refurbished homes offer good levels of daylight.

The comments from residents show there is a preference for homes with a dual aspect design that allows natural light to be distributed evenly throughout a dwelling. This feature will generally also support healthy natural ventilation rates and good air quality.

80% of respondents rate their daylight ‘good’ or ‘very good’.
Size matters.

67% of respondents rated the size of their home as 'good' or 'very good', but when asked what people would most like to change about their home, a third of respondents said that more space would be their primary choice of improvement.

A study of how new homes are getting smaller can be found in the RIBA report, the 'Case for Space'. It refers to evidence that the UK has the smallest new homes in Western Europe. The average new UK home is 76m², compared to 87m² in Ireland and 115m² in Netherlands (a more densely populated country than UK). Denmark, at 137m², has the largest new homes in Western Europe and is recognised as having the happiest population in the world. It is probably relevant that in the rest of Europe the total floor area of a dwelling, rather than number of bedrooms, is often the primary selling point in marketing a residence, which makes it easy for Europeans to compare size!

All year-round comfort.

The survey shows that residents like the lower energy bills in modern homes but overheating in summer is an increasing risk.

More stringent building regulations and better standards of thermal insulation are clearly having a beneficial impact on wellbeing. 95% of respondents living in modern homes are satisfied with internal temperatures in winter, compared to 72% in older homes. In modern homes however, there can be an issue with overheating in the summer. In older homes, 89% of responses show satisfaction with summer comfort compared to a slightly lower satisfaction level of 76% in new homes. Therefore, whilst there is positive evidence that new developments are becoming more resource efficient and can help tackle fuel poverty, the overheating challenge needs to be carefully considered in the design of new homes.

Careful design of windows (with shading if necessary) and effective ventilation strategies will be necessary to improve the comfort standards throughout the year, to avoid the risk of overheating in the summer.

Delivering comfort isn’t just about design and construction quality. 19% of residents rate their home controls as ‘poor’ or ‘very poor’. This shows that the industry needs to make heating and other control systems simpler to understand and easier to adjust. Smart controls and better appreciation of user interfaces could improve with developments in technology.

1/3rd of residents living in old homes (built before 1945) are dissatisfied with thermal comfort in winter.

1/5th of residents in new homes (built after 2000) complain about overheating in summer.
Disparity in the quality in new homes.

When considering age of construction, a higher proportion of newer homes get the best overall design quality rating. 44% of new homes (built after 2000) are rated as 'good' compared to 35% for pre-war homes. However, the survey shows that design and construction quality is not consistent in new homes. A quarter of residents in new homes rate the design quality as acceptable, with 7% saying the design quality is 'fairly poor' or 'poor'. The lowest satisfaction ratings occur in homes built between 1945-2000, with 11% of residents saying the overall design quality in these homes is 'fairly poor' or 'poor'.

Examples of disparity in satisfaction with new housing design and construction quality were found in the responses, indicating that there isn't consistency in the industry and there is room for improvement.

### COMPARISON OF DESIGN QUALITY RATINGS FOR HOMES BUILT DURING DIFFERENT PERIODS

- **NEW HOMES (BUILT AFTER 2000)**
  - Good / Very good
  - Acceptable
  - Poor / Very poor

- **HOMES BUILT BETWEEN 1945-2000**
  - Good / Very good
  - Acceptable
  - Poor / Very poor

- **HOMES BUILT BEFORE 1945**
  - Good / Very good
  - Acceptable
  - Poor / Very poor

Some of the design aspects that residents like about new homes include:
- Modern kitchens, new appliances and new decoration.
- Good thermal insulation, so little need for heating.
- Large windows and daylight (although in some new dwellings, this can lead to overheating if there are large south-facing windows and lack of ventilation).
- Concierge services, where provided, are normally well-liked.
- Flat balconies, where provided, are generally popular although these need to be of adequate size.

Some of the design aspects that residents don’t like in new homes include:
- Small size of new homes, including feedback that bedrooms can be so small that they are just about big enough to have a double bed and a wardrobe with little flexibility in reconfiguring the room.
- Single aspect apartments (which have poor daylight in the interior parts of the dwelling).
- Concierge services, where provided, are normally well-liked.
- Flat balconies, where provided, are generally popular although these need to be of adequate size.

- Overheating is more prevalent in new homes. It is particularly a problem in new apartments with 28% of residents stating that overheating is a problem, compared to 9% of residents in new houses. In some locations the ability to open windows to get cooling is constrained, with some occupants stating that they don’t like to open windows at night to get cool because external noise disturbs their sleep.

- Lack of storage space (a common feedback in new homes).
- Noise transference between rooms due to lightweight construction.
- Insufficient space for waste recycling or poorly planned amenities.
Design quality and construction quality can vary in new homes. These two statements show very different levels of satisfaction.

The location is good and the security/services provided by the concierge are great. I also like the stylish look of the building. I receive many compliments about my apartment.

Satisfied young couple living in a new apartment.

Being a newly built apartment, the dimensions are very tight. There is barely any storage. Acoustics is pretty bad, particularly if you have children. Footsteps bother downstairs neighbours. Insulation is great in winter, but summer is unbearable. It’s close to train tracks, when you open the window, you cannot hear anything inside. Open plan is great, but cooking smells and noise is spread around the whole house when the kitchen is in use.

Dissatisfied resident living in a new apartment with their partner and two children.
Community, amenities and connectivity.

A good neighbourhood is shown to be important for residents. When asked to identify the top things that people like about their home, 53% of respondents mention their location. This is perhaps not surprising; we are familiar with location being a major selling point but what the survey helps us to understand better is what householders mean by a good location – a place with local amenities, good transport links, connectivity and somewhere that is perceived as being a safe place to live.

Analysis of the survey shows there is a relationship between how people rate a place as being ‘safe and secure’ and also rating it as ‘child friendly’. Approximately 70% of residents rate the safety and security and child friendliness of their neighbourhood as being ‘good’ or ‘very good’ - although 6% of residents rate these aspects in their community as being ‘poor’ or ‘very poor’.

Interestingly, there is a better sense of place and community with occupants living in older homes (pre-1945) than new homes (built after 2000). Satisfaction ratings are, on average, 85% versus 68%, respectively.

Residents in rural locations have by far the highest level of satisfaction with their neighbourhood. Nearly 35% of residents in urban and suburban locations rate their home as being in a ‘good’ neighbourhood. By comparison, 83% of residents in rural locations rate their neighbourhood as ‘good’.

Young occupants tend to live in more urban locations than older occupants and this can affect the perception of the external environment. 60% of residents under the age of 30 said they lived in an urban place, compared to 27% for over 50-year olds. 40% of under 30-year olds lived in suburban locations and 20% in rural locations, compared to 47% and 26% respectively, for older residents (over 50).

This may explain why young residents perceive they have worse indoor and outdoor air quality. Young residents are 30% more likely to be dissatisfied with indoor air quality and nearly three times more likely to be dissatisfied with outdoor air quality than older residents (over 50).

AVERAGE SATISFACTION RATING OF COMMUNITY FEATURES
(based on views of 470 residents, for all residential types and locations)

<table>
<thead>
<tr>
<th>PERCEPTION OF SAFETY AND SECURITY</th>
<th>CONNECTIVITY / TRANSPORT LINKS</th>
<th>OUTDOOR AIR QUALITY</th>
<th>CHILD FRIENDLY LOCATION</th>
<th>COMMUNITY FEEL IN NEIGHBOURHOOD</th>
<th>ONSITE AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good / Very good</td>
<td>Acceptable</td>
<td>Poor / Very poor</td>
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</table>

20% of residents rate the outdoor air quality in their neighbourhood as ‘poor’ or ‘very poor’.
There are other implications for health and wellbeing at urban sites. Younger residents (that live predominantly in urban locations) are nearly five times more likely to perceive a poor sense of community at the place they live. 32% of residents under 30 say their sense of community is ‘poor’ or ‘very poor’ where they live, compared to 7% for those aged over 50.

People need the appropriate facilities to support their lifestyles and activities. The survey shows that the provision of on-site amenities needs appropriate consideration in residential planning: 18% of residents are dissatisfied with on-site amenities such as space for recycling or cycle parking/storage.

Urban planning should focus on opportunities for social interaction, perceived safety, security and reduced isolation. The survey shows that it’s important that developers and planners create a sense of community when increasing housing numbers and housing densities.

32% of young residents (under the age of 30) rate the sense of community where they live as ‘poor’ or ‘very poor’. 
People that have their own garden rate it as an important feature of their home.

80% of residents with a garden rate it as ‘good’ or ‘very good’. Indeed, people that live in older houses with a garden rate it as the third most noteworthy aspect of their house (after location and size).

The survey revealed that people living in newer homes are much less likely to mention their garden as a key feature of their home, perhaps because more new homes have been developed without private gardens. Balconies can offer private outdoor space for residents living in apartments but the perception of quality is variable. 56% of residents with balconies rate them as ‘good’ or ‘very good’ and 20% rate them as ‘poor’ or ‘very poor’.

Residents that have access to nearby communal or shared outdoor space rate the quality as being slightly better than balcony provision, with 67% rating the shared outdoor space as ‘good’ or ‘very good’.

The survey shows people generally like to see nature, in some form. If it’s not feasible for residents to have their own private garden or shared garden there are at least increased levels of satisfaction when there are views of green landscaping. For example, there are positive statements by residents that can see trees through their window or near their home.

Good planning and housing development should therefore consider strategies to ‘green’ the neighbourhood.
Conclusion.

Quality, community and environment matter.

The ideal home has four key aspects: design quality, construction quality, good environmental conditions and a sense of community.

The lesson for policy makers, planners and developers is therefore that these aspects should, as much as possible, be considered in an integrated way. Building a home in a place that doesn't also have a supportive neighbourhood will make residents less content.
Analysis of respondents.

Over 470 people responded to the design quality survey. The responses represent a range of housing types, location and age groups, as shown below.

Location
39% of respondents lived in urban location, 45% in sub-urban location and 16% in rural locations.

Housing typology
29% of respondents lived in a semi-detached house, 25% in a detached house and 25% lived in an apartment. 18% lived in terraced housing and 3% in a bungalow.

Age of home
38% of respondents said that their home was built before 1945, 38% built between 1945-2000 and 20% built after 2000. 4% of respondents didn't know when their home was built.

Age of respondent
28% of respondents were aged 30-39, 25% aged less than 30, 22% aged 40-49, 15% aged 50-59 and 9% aged above 60. Only 1% of respondents declined to answer this.

Home ownership
70% of respondents owned their own home. This is roughly aligned with national average home ownership level in the UK, which is about 65%. 24% of respondents rented, 3% lived at home with parents and the remaining 3% were in either shared ownership accommodation or other method of residence.

Number of people living in the home
Two thirds of the homes accommodated 2 adults (67%); 13% of the people lived alone; 12% had homes with 3 adults and the remainder (8%), had 4 adults or more.

Number of children living in the homes
Roughly a third of the homes had no children in the dwelling (34%), 26% of homes had one child, 32% of homes had two children, 7% had three children and 1% had four children.
Engineers of human experiences.

Hoare Lea is an award-winning engineering consultancy with a creative team of engineers, designers, and technical specialists. We provide innovative solutions to complex engineering and design challenges for buildings.

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