

Home of 2030

Competition Brief – Phase 2



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This document contains the supplementary briefing information relating to Phase 2 of the Home of 2030 competition which was provided to the shortlisted entrants from Phase 1. Feedback from Phase 1 was also given to each of the shortlisted entrants.

Introduction

The Home of 2030 Design Competition aims to attract the best and brightest talents of the housing industry to design the homes of the future. In the first phase of the competition, small businesses, designers and manufacturers were invited to come forward with ideas for new low carbon, age-friendly homes, meeting the highest standards of design whilst tackling the key challenges facing our society.

From over 200 entries in the first phase, six designs have been shortlisted for further development and each of the six will be awarded a £40,000 honorarium following submission of a fully worked up design which takes into account the criteria detailed in this document. For Phase 2, a test site has been provided for the shortlisted teams to develop their concept in sufficient detail to demonstrate its application in a (typical) real-world setting, and the deliverability of the vision. NB The choice of site is for illustrative purposes only.

Public engagement carried out in formulating this brief shows emerging recognition that there is a general dissatisfaction with current housing options and growing appetite for fresh thinking and innovation to encourage community cohesion, inclusiveness and increased social connections, which when coupled with active lifestyles contributes to greater independence, healthy ageing and better support mechanisms in times of crisis.

Since the launch of the Home of 2030 competition, Covid-19 has had a significant impact, both on economic activity (including construction) and on how people live and work. Home of 2030 provides an opportunity to respond to some of the challenges by:

- supporting a green economic recovery, which works to the target of Net Zero greenhouse gas emissions by 2050,
- providing a vision of high-quality housing which is age friendly and low carbon, and which also responds to the challenges brought by home working and schooling, as well as multi-generational living.

Background

The Home of 2030 competition is a cross Government initiative that brings together the Ministry of Housing Communities and Local Government (MHCLG, responsible for housing supply, standards, planning and building safety), Business, Energy and Industrial Strategy (BEIS, responsible for innovation and business strategy) and the Department of Health and Social Care (DHSC, responsible for health, wellbeing and issues arising from an ageing population). Each of the departments is seeking a benefit: increased housing supply through greater diversity in the market, improved quality and standards in homes through innovation and technology, and social, environmental and economic benefits arising from better health outcomes. Homes England, the Government's housing accelerator, are engaged in the initiative with a view to future development opportunities, subject to bids by Winner consortia with teams on Homes England's Delivery Panel.

The competition draws on other streams of work as part of the Home of 2030 project:

- **Industry engagement** – insights gained through interviews and workshops conducted with industry sectors including SMEs and innovators, as well as from the Innovation Challenge.
- **Public engagement** – a public vision statement and a set of principles, developed in a series of workshops with the public which were conducted during the autumn of 2019, with the statement and principles verified by a national opinion poll.
- **Engagement with young people** – through a design competition for 11-25 year olds, a vision statement has been developed which encompasses a range of principles which are of importance to the younger generations.
- **Research programme** – a parallel primary and secondary research has been undertaken to identify key areas of the brief and to provide a set of agreed principles for age friendly, low carbon homes.

Phase 2 Competition Requirements

The six shortlisted entries from Phase 1 are asked to further develop their initial design ideas for a specific site location illustrating in greater detail how their proposals meet the multiple objectives of the competition, and can be delivered at scale and density, evidenced by their submission for the test site provided. Site information is provided to permit teams to provide detailed designs for a streetscape with a suggested frontage of approximately 30m, including layouts and home designs of a minimum of three typologies, to illustrate the versatility of their concept and its application in a townscape setting.

The indicative location is a secondary street setting, part of a residential block in a parcel of 300 homes, and drawings and details will need to adequately illustrate resolution of the aesthetic and functional requirements of the brief as well as how this streetscape integrates with the wider parcel, public realm and landscape layout. Teams will be required to demonstrate how their team and systems selection can meet the delivery and competency requirements of a development consortium, as well as setting out compliance with the different criteria including budget costings and environmental performance in a technical report.

Following submission, the shortlisted entrants will be invited to present their detailed design proposals to the competition Evaluation Panel.

Site Specifics for Phase 2

Setting: a proposed new settlement in East Midlands provides the notional context for the Phase 2 submissions. Information on the site is provided in Appendix 1 and includes:

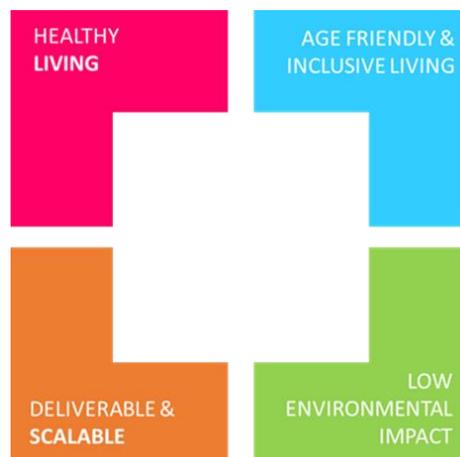
- Masterplan Overview
- Context Document
- Roads and Infrastructure Plan
- Building Heights/Density Plan
- Green/Blue Infrastructure Plan
- Example Street Plan & Typical Street Code

Please note, the choice of site is for illustrative purposes only and is based on a typical site situation. It cannot be visited.

Competition Objectives

The core Two-Phase open ideas competition sets out the following 4 objectives:

1. **Age Friendly and Inclusive Living** - address a gap in the housing market for new homes which appeal to and cater for a variety of age groups, adaptable to changing uses and needs over lifetime for a healthy and inclusive community.
2. **Low Environmental Impact** – applying technology and construction techniques that will deliver net zero emissions and high quality outcomes, reduced fuel bills and improved occupant health.
3. **Healthy Living** – promoting better health and wellbeing to enhance quality of life within homes.
4. **Deliverable and Scalable** – solutions that can deliver market needs at scale and are cost-effective.



Evaluation of Phase 2

The evaluation weighting for Phase 2 of the competition is as follows:

Detailed response to the key informatives

Age friendly and inclusive living	15%
Low environmental impact	15%
Healthy living	15%
Deliverable and scalable	15%

Design interpretation, appropriateness of development and response to feedback 15%

Viability for the market, and composition of team/ proposed working methodology 25%

The listing of evaluation criteria is provided below (pp6 onward). Some topic areas are deemed to be so important to the competition that they are a minimum requirement of phase 2.

Detailed Evaluation Criteria

This section contains the following information:

- **Benchmarks and evidence requirement** – an introduction to existing standards, frameworks, benchmarks and certification which could be applied in the Home of 2030 competition to demonstrate compliance with the criteria.
- **Evaluation criteria** for each of the assessed themes:
 - Age friendly and inclusive living
 - Low environmental impact
 - Healthy living
 - Deliverable and scalable
 - Design interpretation, appropriateness of development and response to feedback
 - Viability for market
 - Composition of team and proposed working methodology

These sections outline the criteria for success. Guidance as to how the criteria could be addressed and evidenced by the shortlisted teams is contained in Appendix 2. **It is expected that all designs will comply with the relevant section of Building Regulations as a baseline, where appropriate.**

Benchmarks and Evidence Requirements

It is expected that robust evidence will be submitted for the criteria using recognised metrics and frameworks. References and frameworks have been provided for each of the criteria listed in Appendix 2. However, in order to encourage as much innovation as possible, if applicants wish to use benchmarks and/or evidence not mentioned in the brief, they may do so with justification.

Expected approach

- A well designed, accessible and attractive place that functions well for a range of lifestyles and people with different needs, creating a sense of place in a community.
- Offers a sympathetic response to local and site context and can be configured for a range of densities e.g. At 75 dwellings per hectare, say, and at 30-40.
- Home and neighbourhood to be designed for mixed households with due consideration given to HAPPI design principles supporting healthy living.
- Flexibility of design of mainstream homes with the provision for adapting to changing occupancy needs over time and allow easier maintenance.
- Provision and interaction of shared facilities, space and management to support social interaction, social connections and create community cohesion.

Criteria for success

The following criteria are those that we expect to see evidenced in the submission. Appendix 2a provides guidance as to how the criteria could be addressed by the shortlisted teams.

1. Adaptability of homes for re-configuration of spaces and functions over time
2. Accessibility throughout the home, which will be important for people with limited mobility, a cognitive impairment, or a disability
3. Integration of social and physical infrastructure to promote inclusiveness, social connections (including intergenerational), community cohesion and healthy living
4. Promotion of positive social interaction for good mental health and wellbeing outcomes and to create a sense of neighbourhood and belonging
5. Ease of access from door to local amenities and wider public transport
6. Facilitating the delivery of personalised care and support to meet an assessed need or self-care.

Evaluation Criteria – Low Environmental Impact

Expected approach

- Energy and systems efficiencies, including low carbon technologies, which substantially reduce energy demand in line with the Government’s net zero emissions target.
- Homes which use emerging technologies which will reduce carbon emissions beyond the 2025 Future Homes Standard.
- Whole life performance of homes has been considered to ensure value for all stakeholders. The proposal should deliver the lowest possible running costs.
- Construction method and materials used reduce embodied impacts, such as responsible sourcing, low environmental impact and circular economy (including design for reuse).

Criteria for success

The following criteria are those that we expect to see evidenced in the submission. Appendix 2b provides guidance as to how the criteria could be addressed by the shortlisted teams.

1. Highly energy efficient building fabric and energy systems (to meet net zero carbon target)
2. Evidence of anticipated performance in-use (energy, CO₂ and cost) and methods adopted in design and delivery to ensure performance levels are achieved
3. Low carbon and renewable energy technologies and storage
4. Home control and monitoring
5. Template for material efficiency and responsible sourcing
6. Life cycle cost, whole life carbon reduction and circular economy considerations

Expected approach

- Indoor environmental conditions are optimised for thermal comfort, daylight, noise, ventilation, air quality, and safety.
- Built-in resilience by mitigating the risks from changing climate such as flood risk, overheating and water scarcity.
- Functional needs of a home are met with adequate floor area, storage, range of socialising spaces, visual connection to the street/communal outdoor space to encourage feelings of connectedness, and access to outdoor space.
- Digital enabling solutions should be considered with due regard for data security – from home working to care requirements. Integrates digital infrastructure to engage the residents with the wider community.

Criteria for success

The following criteria are those that we expect to see evidenced in the submission. Appendix 2c provides guidance as to how the criteria could be addressed by the shortlisted teams.

1. User wellbeing
 2. Access to the natural environment and encouragement of nature
 3. Anticipated performance to adapt to climate change
 4. Flood resilience
 5. Security - To ensure that people feel safe and secure, and where crime and the fear of crime does not reduce people's quality of life or sense of community
 6. Functional and spatial needs of a home
 7. Safety within the home
 8. Daylighting
 9. Ventilation
 10. Air quality
 11. Water efficiency / quality
 12. Sound insulation and acoustics
 13. Integration of digital infrastructure - home working, support/care needs, social interaction and community engagement
-

Expected approach

- Addresses productivity challenges through speed of delivery and the ability to up-skill the supply chain.
- Enables cost reduction at scale to make mainstream homes affordable through replicability & mass customisation in varied build typologies and context.
- Delivers excellent building quality by using construction techniques and digital technologies both on- and off-site; sharing information with stakeholders to demonstrate value in construction, in-use performance and innovation applications.

Criteria for success

The following criteria are those that we expect to see evidenced in the submission. Appendix 2d provides guidance as to how the criteria could be addressed by the shortlisted teams.

1. Buildability –Details/drawings/illustrations
 2. Quality Indicators (e.g. Speed of delivery, quality control)
 3. Cost – Innovation Cost vs Capital cost, Pre-manufactured Value; Prototype costs, Costs at scale
 4. Deliverability and measures to minimise performance gap
 5. Ability to construct while adhering to physical distancing.
-

Evaluation Criteria – Design Interpretation, Appropriateness of Development and Response to Feedback

Considerations for evaluation

- **Beauty and character.** Integrity of the design and detailing to create visual harmony, cultural resonance, and character. This will be assessed in the context of the proposal's setting in the test site location - how it generates identity in the context of the wider masterplan. References to support this include the Building Better, Building Beautiful Commission, the National Design Guide and Building for Life 12.
- **Creation of a sense of ownership (by residents and community).** This will be assessed by an appraisal of the submission's potential to create a distinctive identity, and to afford opportunities for community interaction and shared space. References to support this include Building for Life 12.
- **Ease of maintenance and durability.** This will be assessed by a review of the consideration of durability and ageing gracefully of the proposed properties, simplicity of maintenance requirements and repairability. References to support this include Building for Life 12.
- **Use of new technology, practices and/ or materials that are not currently widely used.** This will be assessed through their inclusion in the submission. They might include reference to BREEAM innovation credits or to innovations included in the Home of 2030 Innovation Directory.
- **Achieving a significantly higher performance target in any area than has been expected or previously achieved.** This will be assessed by reviewing performance levels across all areas of the submission.
- **Use of smart, artificial intelligence.** This will be assessed through their inclusion in the submission.
- **Response to feedback from Phase 1**

Evaluation Criteria – Viability for Market

Considerations for evaluation:

- **Optimisation of systems and technologies for economies of scale**
- **Integration of innovative systems to forge a breakthrough in usability to appeal to consumers**
- **A product which demonstrates suitability and readiness for UK industry and the UK market.**

Evaluation Criteria – Composition of Team and Proposed Working Methodology

- **Evidence of a multi-disciplinary approach and a collaborative working method**
- **Ability to work within an experienced multi-disciplinary team and in a commercial delivery context**
- **Evidence of technical competence in integrated design and building information management.**

Phase 2 Submission Requirements

The following are the submission requirements for Phase 2 of the competition:

- **4 x A1 Design Boards (digital submission)**
- **Design Report**
- **4 x Publicity Images**
- **Completed Product/ Material Resources template**

The A1 Design Boards and Contents

The design submission should be presented on an electronic equivalent of 4 x No. A1 'boards' in landscape format. They should be contained within single PDF files of <20Mb each. The 'boards' should be illustrated in a clear and succinct manner to enable Evaluation Panel members to readily understand the essence and design drivers behind the proposals. The electronic boards do NOT need to be submitted anonymously. An indicative scope is as follows:

Board 1

- Site layout of residential block and the location of sample site and typologies, depicting the main features and organisation of the scheme, its context within the development parcel and its relationship with the wider masterplan

Board 2

- Test site plan, layout and street and other elevations for a minimum of 12 homes

Board 3

- Detailed Unit plans, sections and elevations including at least three typologies – eg ground floor flat/ upstairs flat/ house typologies - and relevant iterations

Board 4

- Construction details and methods, materials and performance strategy

(Separate or on additional Board) **4 Visualisations** illustrating the main characteristics of the scheme and its relationship to the setting, proposed material palette etc.

Design Report and Contents

An accompanying design report (maximum 20 single sides of A4, or double-side equivalent) including any explanatory sketches, drawings, models should be prepared to summarise/expand on the material presented on the A1 boards and evidence how the evaluation criteria are met. The electronic version of the report should be contained within a single PDF file of <20Mb. The report should be collated and laid out to address the points below in the order indicated:

- a) Brief Description of the design proposal outlining how the proposed design approach and key elements address the brief.
- b) Construction methodology and performance strategy, providing a short, written explanation for the proposed approach.
- c) Specification: a brief description of the key components, proposed palette of materials, finishes and the reasons for selection.

- d) Proposed team structure, respective roles, responsibilities and key personnel that would be involved in developing the design proposals, together with method of proposed working and engagement with a Client and its stakeholders.
- e) Statement on Costs. Teams are expected to explain strategic design choices demonstrating deliverability and commercial proposition at scale, including an elemental cost plan.
- f) Colour reductions of the A1 design boards should be incorporated at A3 size.

Note on page limit:

The 20-side page limit **excludes**:

- The A1 board reductions
- The contents page
- Front and rear covers to the report.

Note that the Evaluation Panel will expect key personnel identified to be present at the Final Presentations/Interviews.

Publicity Images x 4

Four visualisations should be provided for potential future media-use purposes. These could be the visualisations provided in the submission. However, please note that the images should be representative of the ideas proposed and be readily identifiable as such, but applicants should bear in mind that whole scheme images do not necessarily reproduce well in the printed media and/or on-line. The publicity images should be submitted in JPEG format with high (300dpi) and low (72dpi) resolution versions of each image.

Template to evidence key outcomes

Please complete the Product/ Material Resources template which is attached as Appendix 3.

Conditions

Evaluation Panel

The Evaluation Panel for Phase 2 will be:

- Peter Freeman (Founder and former Chief Executive, Argent; Co-sponsor, Housing Sprint)
- Sadie Morgan (Director, dRMM; Design Group Chair, National Infrastructure Commission)
- Leigh Johnson (Head of Master Development and Design, Homes England)
- Jeremy Porteus (CEO, Housing LIN; Home of 2030 Advisory Panel Member)
- Lynne Sullivan (Principal, LSA Studio; Chair, Good Homes Alliance; RIBA Architect Adviser).

In the event of an Evaluation Panel member being unable to continue to act through illness or any other cause, the client group, in consultation with the Home of 2030 delivery consortium, reserves the right to appoint an alternative Panel member.

Timetable

The indicative timetable for Phase 2 of the Home of 2030 competition is:

Deadline for shortlisted entrants to raise questions	Wednesday 12 th August 2020
Response to questions issued by	Wednesday 19 th August 2020
Phase 2 Submission Deadline	Tuesday 29th September 2020 by 14.00 hrs
Final interviews/ presentations	w/c 19 th October 2020
Notification and result announced	November 2020

Questions

Questions about the Phase 2 brief should be emailed to riba.competitions@riba.org **by close of business on Wednesday 12th August 2020**. Responses will be circulated to all six shortlisted entrants by 19th August 2020.

Final interviews

Details of the format of the final interviews will be confirmed at a later date.

Notification of result/ publicity

The competition results will be published after all entrants have been notified. Please note that any requests for feedback should be submitted to Home of 2030 within one calendar month of a shortlist, or a result being announced. Entrants must not release their designs for publication to any 3rd parties until after the shortlist or result has been officially announced and permission has been granted from Home of 2030. Entrants should note that by entering the competition they are expected to honour the request for confidentiality to prevent information on the winning teams being leaked to the Press before any official announcement is made.

Home of 2030 reserve the right to publicise the competition, any design submission, and the result in any promotional activity, including all social media channels, they consider fit. Illustrations of any design - either separately, or together with other designs, with or without explanatory text - may be used without cost. Once anonymity has been lifted, authors will be credited and recognised in all associated media and publicity.

Honoraria

Each shortlisted entrant who submits a completed Phase 2 entry will receive an honorarium of £40,000 +VAT. The client undertakes to pay these honoraria payments within six weeks of the conclusion of the competition. Invoices for payment should be submitted to Home of 2030.

Copyright

The ownership of copyright will be in accordance with the Copyright, Designs and Patents Act 1988 - i.e. Copyright rests with the author of the submitted design.

Post-competition

Following Phase two of the RIBA open ideas competition, competition winners will be introduced to Homes England development framework partners to explore the possibility of developing bids for a series of homes on Homes England land.

The role of RIBA Competitions and Home of 2030 is limited to the administration and management of the competition process. The RIBA and Home of 2030 delivery consortium will have no further role once the winners have been selected and entrants notified.

Brief Informatives

Outcomes

Outcomes
<p>The outcomes we are seeking are:</p> <ul style="list-style-type: none">• New typologies in the market for inclusive, age friendly homes, including innovative new responses and options;• New products that are replicable and deliverable to increase housing supply through greater diversity;• Increased environmental and energy performance of new homes;• Lower environmental impact of housing development;• Improved health outcomes to enhance people’s wellbeing and happiness and to help save on costs and pressures on health services and social care;• New developers, contractors, supply chains funders and delivery partnerships;• Following the competition, we also hope that new funding streams will come forward to invest in adaptable housing.

Public Vision

A Public Vision and 20 Principles for the Home of 2030 have been developed through a public engagement process undertaken by Design Council on behalf of Home of 2030. 90 participants took part in four workshops across England from November 2019 to January 2020. Teams should, therefore, demonstrate their interpretation of the Public Vision Statement in formulating their Phase 2 response.

The Public Vision Statement: The Home of 2030 is fit for purpose, being affordable for everyone and getting the basics right without needing constant maintenance. It gives people control and agency over their lives and homes, and connects people to each other and their communities. The home, and how the home supports the way in which we live, contributes to tackling the climate crisis, and also is able to meet the needs of people at different life stages, particularly in later life. The Home of 2030 represents something different through its character and meets these challenges through innovative approaches.

The 20 Principles for the Home of 2030 sit under the following six headings:

- Being fit for purpose**
- Giving people control and agency**
- Tackling the climate crisis**
- Connecting people and their communities**
- Meeting the needs of every life stage**
- Representing something different**

The Principles can be found in Appendix 4. The full report provides information on the research, including the outcomes of a national poll carried out to validate the Principles, and is available to download here: <https://www.homeof2030.com/the-challenge/a-public-vision-for-the-home-of-2030/>.

Future Generations Vision

The Future Generations Vision has been developed from the response to the Home of 2030 Young Person's Challenge. The challenge invited entrants to design an innovative and inspirational green home that meets the changing needs of future generations, including promoting wellbeing, quality of life and healthy ageing. The challenge was open to young people aged 11 to 25, including those in Further and Higher Education.

The challenge brief asked entrants to consider good design, the ageing population, multi-generational living and sustainability (especially energy). Beyond the brief, the entries for the Young Persons' Challenge centred around the following themes:

- Adaptability/Flexibility**
- Sustainable Materials**
- Recycled/Reclaimed materials**
- Conservation and the Environment**
- Communities and Social Interaction**
- Smart Technologies.**

Further details are contained in Appendix 5.

Appendices and References

There are 5 appendices:

1. Site Information Documents
2. Evaluation criteria:
 - a. Age Friendly and Inclusive Living
 - b. Low Environmental Impact
 - c. Healthy Living
 - d. Deliverable and Scalable
3. Product/ Material Resources template
4. Public Vision
5. Future Generations Vision

There are 2 sets of references:

1. References which support the evaluation of the criteria
2. General references

Appendix 1: Site Information Documents

The site information documents are contained in the PDF labelled **Appendix 1** and in the DWG file.

Appendix 2: Evaluation criteria

NOTE regarding Frameworks and References

There are various existing references, frameworks, standards, benchmarks and certification that relate wholly or partly to the criteria for Home of 2030. These can be used by applicants as they provide evidence of industry recognised measurement to the evaluation panel. Providing independent verification that the entry has achieved these measurements (i.e. through certification or other means) can give the evaluation panel greater confidence that the criteria has been met.

In order to encourage as much innovation as possible, if applicants wish to use other frameworks and references not mentioned, they may do so, with justification.

Appendix 2a: Age Friendly and Inclusive Living

	Criteria for success	How this could be addressed and evidenced	Suggested frameworks / references.
1	Adaptability of homes for re-configuration of spaces and functions over time	Technical adaptability of the home (e.g. non-structural walls)	HAPPI principles
2	Accessibility throughout the home	Design features to meet the Part M Category 2	Home Quality Mark (HQM) WELL Building Standard
3	Integration of social and physical infrastructure to promote inclusiveness, social connections (including intergenerational), community cohesion and healthy living	User-centred design approach, and design features to promote inclusiveness, social connections (including intergenerational), community cohesion and healthy living	HAPPI principles Building for Life RIBA: Places Where People Want to Live BREEAM Communities WELL Building Standard
4	Promotion of positive social interaction to good mental health and wellbeing outcomes	User-centred design approach, and design features to promote good mental health and wellbeing outcomes. Virtual connection to community through local digital intranet; Access to outdoor/ green space; plant-growing opportunities	HAPPI principles Building for Life WELL Building Standard
5	Ease of access from door to local amenities and wider public transport	Provision of virtual aspects from within the home, such as real-time public transport information, easy electric car charging, access to shared site re car-sharing or deliveries, ease of home delivery and care; Walkways and site set out.	HAPPI principles BREEAM Communities WELL Building Standard
6	Facilitating the delivery of personalised care and support to meet an assessed need or self-care	Purpose-built accommodation enabling the delivery of 'care ready' features, including use of technology, to enable the commissioning and delivery of on-site care and support	Extra Care Housing design HAPPI principles

Appendix 2b: Low Environmental Impact

	Criteria for success	How this could be addressed and evidenced	Suggested frameworks / references
1	Highly energy efficient building fabric and energy systems (to meet net zero carbon target)		
	a) Thermal energy demand of the building fabric	Thermal energy demand calculations kWh/m ² /year.	SAP HQM PHPP IES EnergyPlus CIBSE AM11 Guidelines CIBSE TM60
	b) Heating, Cooling, DHW, Ventilation system efficiency	Equipment efficiency information available in product datasheets	SAP systems efficiency CIBSE Guide B guidance CIBSE TM60
2	Anticipated performance in-use and methods adopted in design and delivery to ensure performance levels are achieved		
	a) Anticipated performance in-use (energy, CO ₂ and cost)	Operational energy consumption (including plug loads). This can be estimated using DSM tools. Can be presented in kWh/m ² /year. Can be converted into kg CO ₂ /m ² /year, using SAP CO ₂ conversion rates. If a compliance model is used to estimate energy consumption, additional calculations for unregulated energy consumption would be needed (HQM SAP tool?)	RIBA 2030 Climate Challenge < 0 to 35 kWh/m ² /year EPC Rating A HQM UKGBC Net Zero Framework CREAM framework CIBSE TM60
	b) Design and delivery to ensure performance levels are achieved	Overall approach taken by the design team to reduce the performance gap	HQM Construction Innovation Hub Passivhaus CIBSE TM60
3	Low carbon and renewable energy technologies and storage	Description of low carbon and renewable energy systems – systems efficiency and coefficient performance On-site energy generation kWh/m ² /y Community level solutions On site storage for shared access	HQM CIBSE TM60

4	Home control and monitoring	Use of effective control systems and effective performance monitoring strategy both for occupant and developer	HQM CIBSE TM60
5	Template for material efficiency and responsible sourcing	Provide resources inventory for each unit (template provided in Appendix 4); Demonstrate compliance with BES 6001 Responsible Sourcing standard Calculate waste arising at factory and/ or onsite including packaging and surplus	BES 6001 Responsible Sourcing standard Waste arising benchmark using SmartWaste
6	Life cycle cost, whole life carbon reduction and circular economy considerations		
	a) Life cycle cost	Life cycle cost (LCC) analysis (to PD 156865:2008) at a level of detail suitable to inform the occupant of key maintenance and operational costs	As per HQM guidance: PD 153865:2008 compliant (BS ISO 15686-5) RICS LCC Guidance CIBSE TM60
	b) Whole life carbon reduction	Use resources inventory to do a building level carbon assessment; will also need to have replacement cycles, maintenance requirements, transport and end of life and justification of indicated design life span	< 300 kgCO ₂ e/m [based on RICS Whole Life Carbon (A-C)] 1. Whole Life Carbon Analysis 2. Using circular economy Strategies 3. Minimum offsetting using UK schemes (CCC)] LCA tools including One Click LCA
	c) Circular economy	End of life scenario for the system including Reversibility assessment i.e. reversibility of products and systems, including connections.	BSI/ISO 20887:2020 - Sustainability in buildings and civil engineering works — Design for disassembly and adaptability — Principles, requirements and guidance UKGBC - Circular Economy Implementation Packs for Products as a Service and Reuse Mayor of London – Design for a Circular Economy Primer

Appendix 2c: Healthy Living

	Criteria for success	How this could be addressed and evidenced	Suggested frameworks / references
1	User wellbeing	Design features to maximise user wellbeing	WELL HQM
2	Access to the natural environment and encouragement of nature	Design features to meet the guidelines provide in the National Design Guide	National Design Guide - Nature guidelines Building with Nature HQM / BREEAM Natural England BSI 8683 (In development)
3	Anticipated performance to adapt to climate change	Design features to reduce risks for overheating and thermal comfort, flood, extreme weather conditions.	GHA overheating minimisation criteria HQM CIBSE TM59
4	Flood resilience	Design and other approaches to flood resilience with reference to the Property Flood Resilience Code of Practice	Property Flood Resilience code of practice British Standard BS 85500:2015 – Flood Resilient Construction
5	Security - To ensure that people feel safe and secure, and where crime and the fear of crime does not reduce people's quality of life or sense of community	Design features that will promote security and improve quality of life and sense of community.	Secure by Design SABRE Home Quality Mark NHBC
6	Functional and spatial needs of a home	Floor area and spatial configurations. Flexibility for home working and other situations. Floor plans illustration and GIA calculations; proposed room heights.	National space standards Lifetime Homes Design Guide
7	Safety within the home	Design solutions to meet needs of users whilst reducing risk for accidents and health problem and damage to property, ease of cleaning Provide a risk assessment.	Cost of Poor Housing (BRE report) BRE – HHSRS – Housing Health and Safety Rating System Building Safety Programme
8	Daylighting	Daylight factor calculation	HQM Guidance: CIBSE TM60
9	Ventilation	Ventilation strategy which provides resilience to changing occupancy patterns	Domestic Ventilation Compliance guide. HQM CIBSE Guide B CIBSE TM60
10	Air quality	VOC and particulate concentrations; CO ₂ concentrations	HQM (Technical Manual SD239 V0.0. Section 4.1 Indoor Pollutants and 4.6 Ventilation)

		<p>Strategy and approach taken to minimize Formaldehyde concentration and VOC levels. Provide an inventory of paints, finishes, adhesives, floorings, acoustic and thermal insulation materials specified, their VOC contents as shown on manufacturer details (see inventory template). Achieve Formaldehyde Class E1.</p>	<p>CIBSE – KS17 Indoor Air Quality and Ventilation</p> <p>Public Health England – Indoor Air Quality Guidelines for selected VOCs in the UK</p> <p>Cradle to Cradle Sundahus WELL standard/scheme documents</p>
11	Water efficiency / quality	<p>Water consumption: Water calculation per person per day</p> <p>Water recycling features: rain water and grey water recycling features</p> <p>Water quality</p>	<p>Home Quality Mark</p> <p>RIBA 2030 Climate Challenge < 75 l/p/day CIBSE Guide G</p> <p>CIBSE TM60</p> <p>Design in accordance with BS 8515:2009+A12013 - Rainwater harvesting systems. Code of practice</p> <p>WELL for water quality</p>
12	Sound insulation and acoustics	<p>Design features to minimise internal and external noise, provide acoustic comfort</p>	<p>HQM NHBC</p>
13	Integration of digital infrastructure	<p>Design features and occupant interface to integrate digital infrastructure, considering the needs of different age groups; Narrative on incorporating digital enabling solutions should give due regard to data security. Integration of digital infrastructure to engage the residents with the wider community + research with end users</p>	<p>HAPPI ‘work ready’ design features</p> <p>NHBC – The Connected Home: Designing and Building Technology into Today’s New Homes Risk assessment for privacy and user experience, interoperability, maintaining, future proofing</p> <p>HQM Future Cities Catapult – Housing Innovation Map</p>

Appendix 2d: Deliverable and Scalable

	Criteria for success	How this could be addressed and evidenced	Suggested references
1	Buildability – Details/drawings/illustrations	Detailed design drawings, demonstrating need for buildability/ ease of assembly/ quality assurance - to minimise risk of performance gap. Risk assessment.	HQM Zero Carbon Hub 'Builders' Book and Services Guide Construction Innovation Hub Quality Planning Guide
2	Quality Indicators (e.g. Speed of delivery, quality control)	Project delivery timeline. Approach to quality control. Risk assessment.	Quality – HQM Construction industry Council - DQI.org.uk Housing Quality Indicator – HQI NHBC Accepts BRE BPS7014
3	Cost – Innovation Cost vs Capital cost, Pre-manufactured Value; Prototype costs, Costs at scale	Elemental cost breakdown, Innovation cost vs Capital cost	Construction Leadership Council - Procuring for Value Construction Innovation Hub Value Framework
4	Deliverability and measures to minimise performance gap	Implementation plan and risk analysis for the procurement, delivery and commissioning process Key members of proposed team structure, roles, responsibilities and disciplines Demonstrated through prototype delivery programme	NHBC Foundation – Building Sustainable Buildings at Speed
5	Ability to construct while adhering to physical distancing	Where physical distancing might become the norm, how can homes be constructed where there is no need for individuals to work in close proximity (i.e. heavy manual handling, two person lift, etc.)	HM Government: Working Safely During Coronavirus Construction Leadership Forum Dashboard on Safe Operating Procedures

Appendix 3: Materials/ Resources template

The Materials/ Resources template is contained in the Excel labelled **Appendix 3**.

It consists of three sheets for completion:

- Group elements
- Design for disassembly and adaptability
- Construction waste

Appendix 4: Public Vision

Being fit for purpose

1. Affordable to live in and maintain

The Home of 2030 is affordable, allowing people to live comfortably once they have accounted for rent, mortgage and bills. It also allows people to afford to be able to maintain and to adapt their homes when required and when their lives change. There should be a variety of options available that mean that homes are affordable to people with different needs and requirements. Affordability should also include the whole-life cost of the home, including maintenance, bills, and repairs, as well as upfront housing costs. Upfront investment in well-insulated and well-built homes could reduce bills and maintenance costs in the long term, such as energy efficiency, opportunities for energy generation, and adaptable homes that wouldn't need to be expensively retrofitted later.

2. Gets the basics right

The Home of 2030 needs to get the basics right. This means having the right amount of natural light; a comfortable ambient temperature that can be controlled; sufficient ventilation; a quiet home without external noise; and sufficient storage. All of these things have a big impact on people's everyday lives in their homes, including their ability to sleep well at night and making other tasks complicated or impractical.

3. Doesn't make me worry about everything working as it should

Our current home lives, as a result of things like bills, appliances and repairs, is becoming more complicated and stressful. The Home of 2030 doesn't create further stresses and is a home which people don't have to worry about. This means that it is simple to take care of, including to use, to maintain, and to pay for, where everything works, and which allows people to live a simpler, more relaxed life.

Giving people control and agency

4. Easy to adapt or extend

The Home of 2030 allows people to adapt and extend their homes as their lives change, whether that's having children, as they are ageing, if they have a disability, or when other relatives and friends move in and out. This includes things like being able to add or remove rooms and move walls. It also includes being able to adapt homes to make them more accessible, which is a concern for people thinking about ageing or disability, who want to be independent for longer.

This adaptability and flexibility can help people to stay in their homes and neighbourhoods for longer, rather than needing to move when their lives change. This enables people to put down roots, get to know their neighbours and be part of the local community, helping to support long-term wellbeing and avoid isolation.

This adaptability also needs to be affordable so that it is a realistic and practical option for people.

5. Provides the opportunity to contribute to the design of my home

The Home of 2030 allows people to contribute to the design of their homes. Some people want to take a very active role in the design of their homes, including different types of self-build and community-led housing. Others wish for the opportunity to input into the design or fittings of their home. Overall, wanting to contribute to the design of their homes is related to people's desire for control and agency over their home.

6. Is simple to fix and maintain without assistance

Being able to fix and maintain things in their own homes is important to people. This relates to people's desire to be independent and to have control over their lives, rather than being reliant on others. This is also linked to people's sense of wellbeing. As the amount and the complexity of technology in our homes is likely to increase, with things such as home assistants and the internet of things, being able to manage and maintain these without external support will be more important.

7. Gives me more choice and freedom over my housing options

People feel that that buying and renting are the only options available to them. The Home of 2030 will give more choice and freedom about housing tenure options that meet a wider variety of needs. This could include options such as being able to try out living somewhere before making a long-term commitment (such as renting before you buy); having longer-term security in rented accommodation without needing to buy; being more involved in how decisions about things like maintenance are made, such as in community-led housing; and being able to build their own homes.

For some people these are practical options that give them the flexibility to make the right decisions for them. But for others this was also linked to a desire to have more independence, control and agency over how they live, which was also related to having security over their tenure and ability to stay in their home. This is also closely linked to people's wellbeing.

8. Gives me control over what digital technology can do in my home

People recognise how technology is likely to play an increasingly significant role in our future homes, including things such as digital assistants and the internet of things. Many people recognise that this could bring benefits: allowing them to monitor and reduce energy consumption, and to make things around the home easier to manage. However, people are also concerned and cautious over the role of digital technology, particularly regarding privacy and data collection. The Home of 2030 therefore also helps people to retain control over how much technology is used in their home and what the data was used for. People also want to maintain a human touch, and a digital home won't work for everyone, particularly those who may not be as familiar with technology and how to use it. Some people are concerned about the possibility of a 'digital divide' in the future and the need to provide a mixture of options for people in their homes.

Tackling the climate crisis

9. Is part of the solution to climate change

People are acutely aware of the climate crisis and regard many homes as being part of the problem. They want to live in a home that is part of the solution to climate change. This includes both new and existing homes, and the need to reduce carbon output, to shift to renewable energy sources, to ensure energy efficiency, and to maximise biodiversity. For some, housing is an opportunity to prompt a more sustainable economy overall. People also recognise the potential impacts of changing weather patterns and climate conditions, and are looking for their future homes to be designed to meet this, including changing temperatures and flood risk.

10. Makes it easier for me to make more sustainable living choices

People are concerned by the climate crisis and the role that lifestyle choices play in this. Some people felt that their current homes prevented them from making sustainable choices, such as being able to cycle, limiting and monitoring energy usage, and growing their own food. There was a call for our future homes to be sustainably located, serviced by public transport and walking and cycling routes, and to enable more sustainable choices.

Connecting people and their communities

11. Allows me to have regular contact with my neighbours

Building communities is important to people in their future homes. The Home of 2030 allows people to have regular contact with their neighbours in order to build these local communities. This is related to people's desire for individual and collective wellbeing through regular social contact, and the role that homes and neighbourhoods can play in creating opportunities for informal and chance meetings. People are also concerned by the possibility of social isolation, particularly as they get older and also as advances in the capability and the reach of technology could mean that they lose the need for regular human contact.

12. Might have spaces and facilities that I can share with my neighbours

Some people have an interest in sharing more with their neighbours, such as gardens, laundries and other shared spaces. For some people, this can be a practical way of living more efficiently in high-density neighbourhoods and cities. For others, this emerged as a way of facilitating the creation of community, such as in co-housing projects. However people recognise a trade-off between privacy and sharing, and value their own space and privacy when thinking about shared spaces.

13. Is part of a neighbourhood that has everything I need

People want to live in neighbourhoods that offer easy walking access to all the local amenities that they might need, at all stages of life – whether they have children, or if they are elderly. These smaller, accessible neighbourhoods include day-to-day amenities such as shops, parks, cafes and doctors' surgeries.

14. Has plenty of convenient travel options so that I can get around easily

The Home of 2030 should be well-connected, providing convenient travel options that allow people to get around easily, whether that's to work, to visit family and friends, or to facilities and services that they need. People want these connections to be sustainable, inclusive, and convenient.

Meeting the needs of every life stage

15. A home which is suitable for multiple generations to live in

People's patterns of living are changing rapidly and are likely to change even further by 2030. People are concerned about how we will care for our ageing population. Many people are looking for multi-generational homes that can accommodate all ages and allow for people to care for children and elderly relatives and friends, while also being able to live their lives. The Home of 2030 should also allow people to live independently as they age, with a focus on accessibility.

16. A home that is my current home, with the right improvements

Most of the homes that people will be living in in 2030 have already been built. Many people expect to or want to be still living in their current homes in 2030. However, many people do not think that their current homes will meet their future needs and will need to be retrofitted to allow this to happen. This includes the accessibility of homes for people as they age. It also relates to issues around insulation and the need for better energy efficiency, including new energy sources such as solar panels.

17. Makes it possible to work from home

The Home of 2030 needs to be flexible to suit a variety of different uses, particularly as our living patterns change, and to allow us to balance our home and working lives in the same space. People recognise this as important to a good work life balance and how this has an impact on health and wellbeing. People's changing living patterns, such as our ageing population, means that we may also need to care for elderly relatives while also working.

18. Has good quality private or shared gardens

It is important to people that they have gardens or outdoor spaces that provide them with access to nature and to outdoor space. This includes access to private outdoor space as well as shared spaces. This access to nature is particularly to support people's health and wellbeing.

Representing something different

19. Looks attractive and has its own identity

The character and appearance of peoples' future homes is important to them. People tend to think that many new homes look the same and don't tend to have a lot of distinct character. People want to see more diversity and more choice rather than a cookie-cutter approach to new homes. For some people, they want to see homes reflect the character of local places better.

20. Is innovative and offers something different to homes that have been built before

Some people have a desire for fresh thinking and innovation in housing, based on a dissatisfaction with current housing options. People mentioned that many new homes are quite similar to one another and that they don't have the option of something which feels unique and innovative. New homes in 2030 will be truly different to one another and different to homes that had been built before. This includes overcoming old perceptions through progressive thinking. For example, many people feel that making a step-change in sustainability with our new homes would require innovative approaches.

For many, innovative thinking was a prerequisite for achieving some of the other things that they regarded as important in their future homes.

Appendix 5: Future Generation Vision

The Home of 2030 Young Person's Challenge asked entrants to consider good design, the ageing population, multi-generational living and sustainability (especially energy) as part of the brief. Beyond the brief the entries for the Young Persons' Challenge centred around themes including, Adaptability/Flexibility, Sustainable Materials, Recycled/Reclaimed materials, Conservation and the Environment, Communities and Social Interaction and Smart Technologies. Not many submissions focussed on costs and affordability.

Adaptability and Flexibility

Pods and modular frameworks of uniform size and manufactured robotically or on automated assembly lines were a feature of many designs. These offered simple additions/adaptations as families grew/aged/downsized, variations of layout, orientation, extension horizontally and vertically. Examples: Sheffield Hallam University, HUS House, Darwen Aldridge Community Academy, House for Life.

Sustainable and Recycled Materials/Energy

Several explored alternative materials such as cork, bamboo, reclaimed steel, timber, plastic, natural generation of energy, solar power, recycled energy/heat (from the London Tube Network). Others focused on reclaiming traditional materials and re-using them. Examples: London South Bank University, King Egbert School, Sheffield and Harlow College.

Conservation and the Environment

Considerable focus on saving the planet and environmental protection, garden areas, use of roofs, walls for growing, building from nature. producing harmony, shape and balance, (Fibonacci Sequence, cobwebs, coral reefs) more of a focus with the younger students. Building on 'bad' land, contaminated sites and flood protection. Examples: FL-HEX floating homes, YDRO Haus, University of Wales, Berkeley Green UTC, Oxted School, Honeycomb Housing.

Communities and Social Interaction

Despite being designed and submitted pre-Covid, a number of submissions drew attention to people's need for social interaction and the importance of living within a community and the mental health issues around loneliness. This was especially significant for the ageing population and predicted increases in 'working from home' lifestyles. Shared spaces and areas for play, recreation, health, socialising, growing food, was a feature of most entries focussing on social housing. Others considered housing communities for particular groups, single parents, the elderly, those with learning difficulties or those who just wanted to live communal, alternative lifestyles. Examples: University of Nottingham, Urban Farming, Co-Existing Social Housing, University of Wales, Nottingham Girls Academy, Chainlink Communities.

Technology

The inclusion of new and smart technologies predictably featured prominently in most designs. Including 'smart' services, health analysis and diagnostic systems, materials, energy creation/control, robotics, security devices, delivery of 'post' and bills on screen as well as interior finishes/room function interchangeability and labour saving gadgets, including self-making beds, self-cleaning windows, surfaces.

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