Invitation to Tender:

# Developing guidance and tools to help planners/early stage design teams to identify and mitigate risk of overheating in housing developments

Guidance for Tenderers

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The Foundry, 5 Baldwin Terrace, London, N1 7RU I 020 7704 3503 I www.goodhomes.org.uk I info@goodhomes.org.uk

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# 1 INTRODUCTION

## 1.1 ABOUT THE GOOD HOMES ALLIANCE

Our Mission

The GHA launched our manifesto – **'A Charter for Responsible Housebuilding'** at Ecobuild on Wednesday 8th March 2017. It's been **10 years since the GHA** was formed and we believe our message on quality sustainable housing is as important as ever!

Our aim is to promote and encourage the building of quality sustainable homes and communities and to transform the whole of mainstream UK house building into a sustainable endeavour. We do this by promoting higher quality sustainable housing standards via collaborations with industry and government, creating active knowledge exchange networks, best practice sharing, running events, lobbying for change, partnering on research, commissioning publications and holding conferences.

The GHA currently is focussing on three main themes:

- **Measures to improve health & wellbeing, including reducing the risk of overheating in new homes**
- **Identifying routes to achieve zero energy/ carbon neutral or 'net positive' housing**
- **Helping to address the housing crisis by exploring alternative housing delivery models**

This project is generated by the first of three working groups examining these themes:

- **Overheating Solutions for New Homes**
- **Zero Energy Buildings**
- **Alternative Housing Delivery Models**

## 1.2 PROJECT BACKGROUND

Overheating in new homes is a problem in certain types of properties, especially in towns and cities. This is recognised by MHCLG who commissioned research into certain aspects of the problem in 2017, which may lead to changes in Building Regulations, possibly concurrent with a review of Part L in 2019. BEIS have also consulted on proposals to amend SAP Appendix P, the semi-official "overheating check", although a recent Environmental Audit Committee report stated that "At current temperatures, one in five of the UK's homes overheat, but Government Ministers were unclear about whether building regulations should address the health aspects of overheating"

*Our conclusion is that overheating cannot yet be considered to be a managed risk for much of the sector. There are gaps and uncertainties in current frame-works which mean inherently risky designs and buildings can be approved. – ZCH Overheating in Homes - The Big Picture, 2015*

The Good Homes Alliance has established a cross sectoral working group to examine the problems and explore potential solutions - Overheating Solutions in New Homes (OSNH) working group. After close liaison with MHCLG it is clear that some important areas of research are not being covered and this presents an opportunity for further research.

The research discussions established key deliverables and extent of the work.

- Review recent research in relevant areas identifying key risks to overheating in new homes
- establish risk identification criteria to substantiate a prioritization and mitigation protocol
- propose a protocol or guidance document to help LPAs and design teams identify risk in new schemes during the planning process
- work with planners/design teams to develop an approach for delivering the protocol/guidance

## 1.3 SCOPE OF RESEARCH

The Planning system in the UK is a process through which overheating risk could be identified and mitigated at the design and concept stage/pre-application stage of new residential developments – anticipating and being complementary to further changes to building regulations.

In particular, the risk areas below could be summarised, and prioritized with a view to producing protocols and processes to assist planners in helping to ensure proposals for new housing schemes have adequately assessed the potential for overheating, and if the risk appears high to support an informed discussion with developers about this and agree appropriate adjustments to the design. The work would complement the detailed guidance for designers and engineers set out in CIBSE's new TM59: Design Methodology for the assessment of overheating risk in homes.

- The end product could be a form of risk matrix or decision-tree for planners/design teams that helps to identify overheating risks for various different types of homes, eg including detached houses, flats, student accommodation and care homes,. This would be guided by consultation and act as an aid to working collaboratively with construction/building project teams to achieve positive outcomes including improved chance of avoiding overheating and minimising risks to the health and wellbeing of occupants
- Minimising any high cost services/plant and their running costs
- Minimising reputational risk
- Establishing good Corporate Social Responsibility outcomes
- Avoiding costly retrofitting in the future

The potential scope of the work is summarized in the matrix below. This is not intended

to be the full and final scope or to anticipate the proposed prioritization/risk analysis summary, or form of the guidance or tool. Guidance would not replace dynamic thermal modelling or be used to show compliance with CIBSE TM49/52/59. The entire focus of this project is to support planners/design teams and applicants.

| Issue: Contextual or Physical characteristic | Attribute/ Criterion | Risk Assessment | | | Detailed assessment recommendation | Reference/ research/ metric + relevant case studies |
|---|---|---|---|---|---|---|
| General | •User guidance provided | | | | | • Reliability of DSM models/ CIBSE TM59 inputs<br>• Comfort criteria: temperature limits/% exceedence<br>• European comparisons<br>• cf SAP plugins (eg HQM)- National Adaptation Programme 3rd strategy for climate adaptation reporting July 18<br>•NPPF<br>•GLA OH Criteria<br>•LETI |
| Site location | •Geographical position in UK<br>•Local weather files available (altitude/windspeed/insolation etc)<br>•Urban (UHI assessment) | | | | | |
| Site environment | •Air quality<br>•Noise quality<br>•Security | | | | | |
| Microclimate | •Vegetation/tree cover adjacent<br>•Green roofs/walls<br>•Brown roofs/ blue roofs<br>•adjacent materials (e.g. Paving hard landscaping)/ albedo effect<br>•local blue infrastructure<br>•breeze paths<br>•adjacent buildings overshading | | | | | |
| Building occupancy and use | •Vulnerability of occupants<br>•Occupation intensity/ all day | | | | | |
| Built form and facade | •Form factor: volume to external surface ratio<br>•Single/double aspect<br>•Orientation<br>•Albedo of facade materials<br>•Shading/shutters/blinds/self shading<br>•Layered facades<br>•Thermal mass | | | | | |
| Glazing | •glazing % and orientation<br>•glazing ratio (to floor area)<br>•daylight distribution<br>•percentage openable/ restrictors<br>•night cooling potential<br>•solar control/ specification e.g. G values/coatings<br>•effective shading | | | | | |
| Ventilation | •effective purge capability<br>•summer bypass for MVHR<br>•effective night cooling potential<br>•Single aspect dwellings/cross ventilation | | | | | |
| Other | •communal heating insulation/ ventilation<br>•internal service runs minimising heat losses<br>•Length of distribution runs/ flow temps<br>•low-carbon cooling potential<br>•availability of exposed thermal mass<br>•lightweight roof | | | | | •CIBSE Heat Network Code of Practice |

## 2.0 EXISTING INFORMATIVES:

*"As someone who provides advice to planners on how to integrate climate change adaptation into the design of new developments, to have access to a risk matrix/decision tree to help identify overheating risks would be invaluable. Planning and the design of new developments is a vital first step in reducing the risk of overheating, so it is important that all planners are able to assess risk and identify design led solutions to overcome this risk and help deliver sustainable development. It is resource that I could also point design teams to when designing new housing projects on Council owned land and during pre-application meetings with developers. I can also see value integrating this approach into University planning and urban design courses to help train the next generation of planners."*

*Emma Davies* – ***Senior Sustainability Officer (Design and Construction), Cambridge City Council***

The following references (inter alia) have informed the project sttering group and should be referenced in the research.

- Revised National Planning Policy Framework 2018[1]:

  Climate Change adaptation and mitigation is integral to the new NPPF with a clear duty on planning to minimise and avoid vulnerability and improve resilience. Overheating is specifically mentioned at para 149
  https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf

- A report by The Environmental Audit Committee to UK Parliament 26th June 2018, recognises that future heatwaves are predicted to be hotter and more frequent and calls for definite measures to mitigate the risk of buildings overheating. It refers to heat-related deaths in the UK that are expected to triple to 7,000 a year by 2050 unless there is an increased focus on building overheating. It further says that Government should introduce "building regulations to stop new buildings overheating, and make the use of a dynamic thermal modelling test a regulatory requirement for new buildings."
  https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/826/82603.htm#_idTextAnchor000

- GLA guidance on preparing energy assessments, appendix 5 – Domestic Overheating Checklist
  https://www.london.gov.uk/sites/default/files/gla_guidance_on_preparing_energy_assessments_-_march_2016.pdf
- Good Homes Alliance Report: Preventing Overheating http://goodhomes.org.uk/research-project/preventing-overheating
- Climate Change Act 2008 https://www.legislation.gov.uk/ukpga/2008/27/contents
- BRE/CCC Report: The Risk to Housing of Overheating https://www.theccc.org.uk/wp-content/uploads/2014/07/2-The-risk-to-housing-from-overheating-FINAL-4_PDF_2-with-foreword-BRE.pdf
- BRE Briefing Document: Overheating in Dwellings: 116885: 2016 -
  https://www.bre.co.uk/filelibrary/Briefing%20papers/116885-Overheating-Guidance-v3.pdf

- CIBSE TM 59: Design Methodology for the assessment of overheating risk in homes -
  http://www.cibse.org/knowledge/knowledge-items/detail?id=a0q0O00000CQ83EQAT

- Zero Carbon Hub (ZCH): Overheating reports/Guidance, Strategies for Managing Overheating for Local Authorities - http://www.zerocarbonhub.org/sites/default/files/resources/reports/ZCH-OverheatingInHomes-LAs-Spreads%5B1%5D.pdf

- ZCH Overheating in New Homes: A Review of the Evidence http://www.zerocarbonhub.org/sites/default/files/resources/reports/Overheating_in_New_Homes-A_review_of_the_evidence_NF46.pdf

- ZCH Overheating in homes – The Big Picture http://www.zerocarbonhub.org/sites/default/files/resources/reports/ZCH-OverheatingInHomes-TheBigPicture-01.1.pdf

- ZCH Tackling Overheating in Buildings - http://www.zerocarbonhub.org/current-projects/tackling-overheating-buildings

- BBC Newsnight programme from 24th July 2018 discusses some of the latest facts and science behind climate change and the consequences for building design. The piece starts at about 12 minutes into the programme.

# 3 TENDER INFORMATION

## 3.1 BUDGET

The proposed project budget is **£20,000 plus VAT**, with the intention that this be paid in three installments according to agreed project milestones (e.g. on signing the contract, delivery of the interim draft report and the final outputs to an acceptable quality standard).

We would be happy to consider bids that involve match-funding or co-funding, and for research teams to consider how leveraging in additional funding could extend the scope of the project.

## 3.2 ELIGIBILITY

Tenders are invited from consultancies, Universities, research bodies and consortiums. We welcome tenders from diverse teams. We strongly welcome applications which include at least one GHA member on the team, and ask that applicants list all of their team members indicating who is a GHA member.

## 3.3 REFERENCE POINTS FOR THE RESEARCH

1. Review of UK wide policies at national and local level and any examples from abroad on mitigating overheating.

2. Review of existing current/relevant research related to overheating and early stage design in new homes.

3. Review of current practices for planners.

4. Reference current knowledge, processes and practice around mitigating overheating.

5. Propose new tools/processes to mitigate risk of overheating.

6. Develop appropriate robust risk analysis tools/processes/solutions to prevent and mitigate risk of overheating for early stage design teams and planners. For planners this should be succinct and easy to use.

7. Test the tools/processes/solutions with both sectors to establish usefulness/effectiveness

8. Produce final version of tools/processes/solutions for online use and a suitable set of presentational material for knowledge transfer/dissemination/training

The key audiences for this work are:

- Local authority planning departments/urban designers/building control
- Design teams
- National policymakers
- Broader policy and media audiences (representative/trade bodies, think tanks, national/regional/local press)
- Developers and house builders

# 4 METHODOLOGY

The intention is to appoint a supplier or partnership capable of gathering data and developing appropriate robust tools and processes. The scoping document identifies relevant issues/factors but should be used as guide/framework only.

The supplier or partnership will need to demonstrate experience in a range of quantitative, qualitative, and desktop research methods and have extensive knowledge of overheating risk, design of new buildings, the planning process and compliance checking. Tenders should set out how the researchers propose to approach the development of this model, drawing on previous projects and experience as appropriate.

## 4.1 PROJECT TIMESCALES

We anticipate that the project will last around **five months with an anticipated completion date of 1st March 2019**

## 4.2 GOVERNANCE

The commissioning client for this project is the Good Homes Alliance. A steering group will act as an advisory group for this project.

## 4.3 OUTPUTS

- A clearly written report (interim and final reports to be provided in MS Word and Adobe PDF electronic formats), which the Good Homes Alliance will publish in a suitable form.

- A robust model process/tool for use by both planners and design teams, including a real life trial and review report. The tool should be capable of being used online, be very concise and contain info-graphics to assist with understanding by non technical persons.

- Presentational material (MS PowerPoint slides preferred)

- Optional output: suitable training material

## 4.4 TENDER PROCESS

Organisations/project teams should submit a tender document that includes:

i) Proposed methodology, including regarding stakeholder engagement;
ii) Proposed outputs;
iii) Project team and general experience;
iv) Statement of experience relevant to the project, and selected projects that demonstrate relevant experience;
v) Total cost of the project; and
vi) A budget breakdown between the stages, daily rates and personnel inputs.

## 4.5 EVALUATION CRITERIA

Applications will be evaluated against five criteria:

1. Quality, rigour and depth of the proposed methodology and analysis;
2. Experience/track record/knowledge of research relevant to the project;
3. Experience of effective and impactful partnership working;
4. Experience of managing potentially politically-sensitive projects;
5. Value for money.

## 4.6 ASSESSMENT PANEL

The assessment panel will comprise officers from the Good Homes Alliance and the project steering group.

## 4.7 TIMESCALES FOR APPLICATIONS

Applications should be submitted electronically to: julian@goodhomes.org.uk

Applications should be received by no later than **5pm on Friday 21st September 2018**.

If required, we would intend to interview a shortlist of bidders during **week commencing 24th September 2018** and to appoint the successful research team by **27th September 2018**.

## 4.8 INTELLECTUAL PROPERTY

The Good Homes Alliance will retain ownership of the work, but may grant the researchers the right to publish and re-use the material submitted to GHA, and will be fully credited for their work. Researchers and institutions should not apply if they will not be able to agree to this provision. The researchers should acknowledge the support from the GHA in any subsequent publications and activity based on the supported projects.

# 5 FURTHER INFORMATION AND ENQUIRIES

We welcome enquiries about this project. As appropriate, responses may be issued as anonymised Q&A's to all those who have notified us of their intention to bid.

Please contact:

Julian Brooks

Network and Programme Manager

Good Homes Alliance

01308 487012

Email: julian@goodhomes.org.uk