Responses to speaker questions from ‘Tried and tested solutions for a green recovery: New homes and places’ on 11 March 2021

Mark Barry, mark.barry@architype.co.uk	Response
How can we help people in the homes they live in to decarbonise their homes in an affordable way? So that we don't leave anyone behind and address the huge need for reducing fuel poverty and household carbon emmissions existing homes.	I think much more focus and investment needs to be given to the retrofit market, which is more complicated to improve than the new build market. Systems, processes, products and skills all need to be developed to become accessible and deliverable at different levels. Investment and incentivisation from Government is key as the significant upgrades, such as insulation of external fabric, are often financially inaccessible to most households. It is therefore critical that we do not add to the already enormous retrofit burdon by building sub-standard new homes.
could you please share the link to the report about the impact of unhealthy homes on the NHS?	https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/Economics_housing_and_health_Kings_Fund_Sep_2016.pdf
My understanding of a Passivhaus is that if washing is hung up to dry in an extract zone such as a bathroom, or utility room with an extract terminal, the MVHR should be adequate to dry the clothes. As the alternative for winter, a tumble dryer, is a high consumer of energy, should not	It is clearly important to find low energy/carbon solutions for processes such as drying clothes and PH’s will naturally dehumidify if the outside air temp is lower than the internal temp however it is important to consider the impacts of potentially increased ventilation (subject to volumes to dry and desire for speed of drying) and increased floor space to construct room for drying in these situations.

a dedicated space be allocated for hanging up washing in every new build Passivhaus? We have two high level airers with ropes and pulleys in our non-Passivhaus high ceilinged bathroom with an extractor fan and our washing dries very well.	
As an addition to the question on cost, is there data on running cost and carbon emissions (embodied and in use) of Passivhaus versus a standard new home built to minimum building reg standards?	There is a recent report here on 'actual' energy usage in the UK as opposed to 'predicted' (critical to differentiate between the two) : https://passivhaustrust.org.uk/UserFiles/File/Technical%20Papers/2020%2006_Passivhaus%20and%20the%20Performance%20Gap_University%20of%20Bath_Rachel%20Mitchell%20and%20Sukumar%20Natarajan.pdf Regarding the translation into costs, this will vary on energy types and tariffs but the significant reductions are clear. How you construct PH homes (and therefore the embodied carbon which is used) is not currently dictated by the standard and as operational energy/carbon is significantly reduced, the proportional weighting of embodied carbon becomes greater (can be well over half the carbon used in the lifecycle of building) so benchmarking embodied carbon against current standards/targets such as RIBA or LETI is useful.
we live in such a temperate climate do you believe there is a strong argument for achieving Passive performance I.e. <15kw/m2 rather than the cost uplift in cost to achieve Passive certified.	We have found certification to be very useful as it covers comfort/health and general quality assurance, in addition to the energy targets you mentuion here. As a recognised standard it gives clients/consumers more protection regarding the delivered standards of the buildings they procure as opposed to more ambiguous 'Passivhaus principles' which is sometimes used.
with regard to residential homes, are Passivhaus "affordable" & are they rentals or aimed at owner occupiers? What is the situation re: leasehold & ground rents (this system has recently	Passivhaus is a versatile methodology focussing on evidence based performance and can/has been applied to many different residential models and tenures in cost effective ways, for example, due to the energy demand for each unit in an extra care scheme we are just completing in Exeter, our client has decided it is more cost effective to include heating in the base rent than monitor and charge tenants individually. I don't think Passivhaus performance changes how developers

been much abused by traditional developers)	structure agreements?
Can you give a m2 cost for a new build house?	There's a link to a document here: https://passivhaustrust.org.uk/UserFiles/File/research%20papers/Costs/2019.10_Passivhaus%20Costs(1).pdf but I'd like to accompany it with a warning...final costs of projects are often due to factors not directly linked to Passivhaus performance such as size, design complexity, ground conditions, familiarity with build/methodology process.
What are the criteria you use for the evidence based assesment?	A link to a technical briefing listing the requirements - some of which are rather technical - but comes with a summary too: https://www.passivhaustrust.org.uk/UserFiles/File/Technical%20Papers/150318_Claiming%20the%20Passivhaus%20Standard_MJS_YP%20rev(1).pdf
What heating is used to top up during the coolest months	It is not dictated so long as it falls under the energy requirements of the standard so, in theory, can be all the usual fuels such as gas, oil, biomass, indirect electric. Etc. however there is a generally a move away from fossil fuels for energy provision.
Is it possible to build to passive house standards without accreditation?	In theory, yes. You won't be able to claim it is a certified project though, even if all correct processes are followed. Also, see above notes regarding QA.
are the volume housebuilders doing anything yet - and if not how long before this becomes business as usual for them?	Volume house builders tend not to do anything more - in performance terms - than they are mandated to do. Lots argue this is because they don't need to inorder to keep selling their products in the thousands. Therefore the most likely way this will change - as it is unlikely building regulations will insist on evidence based, high performance anytime in the near future - is if people start making it clear they want an an alternative product/option.
Given the fascination with Modular Methods of Construction and Council's desire to deliver affordable housing / housing for social rent, what concerns are	How almost is 'almost' - it's the same issue as trying to quantify how 'passivhaus principles' will perform? The Passivhaus standard has been scientifically developed to find an optimum balance of fabric performance, coupled with robust ventilation strategies, so to only perform in one of these areas can be detrimental for the building and/or its occupants ie high levels of insulation

there around diluted standards (recent example of our local Council proposing a development it plans to deliver as `almost passivehaus standard' - and this is for volumetric construction).	and airtightness without adequate ventilation can lead to mould and poor air quality. Any construction type must be judged against how well it responds to the actual needs of the project as opposed to anything else.
Covid-19 has shown the importance of access to outside space and nature for peoples' health and wellbeing. What thinking is now going on to develop designs that consider this as much as the importance of Passivhaus buildings -which are great, by the way!	Encouraging access to outside spaces and having a positive connection with nature is something we try and enable wherever possible with our buildings. Passivhaus is versatile enough to allow this, for example, our PH primary schools will often have doors out into the playground from the classrooms whilst still delivering high performing and comfortable environments.
Are air source heat pumps practicable for a large block of flats in a crowded urban situation? Must they be sited externally to the building or can they be sited internally? In either case, how is the noise issue dealt with? How remotely can they be sited from each flat (e.g. on a flat roof). I was told that Camden's Agar Grove Passivhaus complex was originally intended to be heated by air source heat pumps but I believe will now be heated by 7 CHP boilers. Why was this change effected? Impracticability of air source heat pumps, or just greater energy	I think this question would be better answered by an M&E engineer with more details on the specific project but we have found air source heat pumps to be an appropriate heat source for high density residential developments. If you email me directly about this, I'm happy to have a more detailed discussion with you.

efficiency of CHP?	