

Briefing Note on Proposed Changes to Housing 21 Specification for New Build Schemes.

Introduction

Housing 21 are reviewing the impact of Environmental and Sustainability targets on our new build development schemes and how we will achieve lower energy usage and reduce carbon emissions through our design and specification.

We have recently completed a review of the design of a typical Extra Care scheme currently being delivered and how we would approach a move away from gas heating and hot water systems and how we would seek to reduce carbon emissions through improvements to our specification.

The review has focussed on improvements to the fabric of the scheme taking a 'Fabric First' approach and differing non-fossil fuel heating and hot water systems and their suitability for Extra Care and Retirement Living developments and residents.

The Housing 21 Board have decided that for future development schemes, we will no longer utilise gas central heating systems with immediate effect and as such the review will now be formalised through a revised set of specification documents.

Until these documents have been finalised, this briefing note outlines the specification parameters to consider when designing and reviewing the costs for delivery for each scheme. The briefing note overrides the existing requirements within the Housing 21 Specification Documents.

Fabric Efficiency

Improvements to the fabric of the development will significantly reduce the energy demands of space heating requirements for residents.

To enable this the following are to be adhered to or improved upon:

Component	Maximum value's
Floor	0.13 W/m ² K
Roof	0.11 W/m ² K
External Walls	0.18 W/m ² K
Windows / Doors	1.0 W/m ² K
Thermal Bridging	0.06 Y value (average)
Airtightness	2m ³ /(h.m ²) @ 50Pa
MVHR	90% efficiency

The values above enable compliance with the current and new part L building regulations whilst assuming the use of decentralised direct electric space heating to the apartments.

Thermal Bridging

Improvements in thermal bridging detailing are required to minimise the heat loss through the structure as reflected in the table. If masonry construction is used this will include the use of thermal lintels and thermal blockwork to key locations. Careful consideration is also required to other forms of construction detailing.

Air Permeability Testing

To reflect the fabric efficiency improvements sought also requires high level of air tightness to be implemented. An air permeability rate equal to or less than $2\text{m}^3/(\text{h.m}^2)$ @ 50Pa will need to be achieved. Design detailing will need careful consideration and enhanced quality inspections of works to achieve these levels will be required.

MVHR

As part of a fabric first approach heat recovery is required. This ensures excessive heat is not lost extracting warmed air to the outside via mechanical extraction systems that would typically pull cold air into the building through trickle vents.

The Zehnder ComfoAir 180 or equal system to be identified for approval.

MVHR units to be located in a store within the dwelling, without compromising on built in storage requirements for meeting Nationally Described Technical Housing Standards.

A store housing the MVHR will need to be acoustically sealed where located within a habitable room.

The MVHR unit should be located close or adjacent to an external wall to limit cold ductwork linking to the outside.

Heating Strategy (dwellings)

The current Housing 21 specification is to utilise individual gas combination boilers in dwellings, which supply low surface temperature radiators to all habitable rooms.

Housing 21 has reviewed the options for continuing to provide individual heating and hot water systems for dwellings rather than a return to communal systems housed in centralised plant rooms supplying dwellings and communal spaces. Communal system options are not acceptable to Housing 21.

Low Surface Temperature electric panel heaters such as Dimplex LST range or similar approved are to be utilised in dwellings and some communal areas (offices, guest room, assisted bathroom, staff rest room, meeting rooms, Activity Room – where separate to main lounge). The main ground floor larger communal areas within Extra Care schemes other options may be considered.

Housing 21 also welcomes other innovative solutions for review that will meet the required heating strategy of providing non-fossil fuel, individual heating systems as an alternative to the suggested panel heaters.

Hot Water Strategy (dwellings)

Electric immersion hot water tank with integrated water heat pump housed in a service cupboard and ducted to external air. (Potential options include Dimplex EDL 200UK and ECOCENT Ambient 100L) The tank should be located near or adjacent to external walls to limit the duct lengths and

careful co-ordination with the MVHR ducts and louvres would be required. The shower will remain as current specification with this option.

Heating and Hot Water Strategy for Communal Areas within Extra Care schemes

The design and servicing design strategy for the communal areas should be consistent with the apartment requirements where possible and should be confirmed on a scheme by scheme basis (this should be the strategy for all Retirement Housing communal areas also).

The use of Heat pumps to provide both heating and hot water to a principal large communal zone is likely.

Hot water delivery for areas where higher usage is expected (Catering Kitchen, Hairdresser, Assisted Bathroom) will need to be appropriate for their intended demand.

Direct, decentralised electric heating and hot water to remote areas of communal accommodation such as corridors and cleaners stores is likely.

Thermal Modelling

A ventilation and/or cooling strategy is to be determined that complies with the criteria set out within CIBSE TM59. The most location-relevant CIBSE Design Summer Year (DSY) weather files should be used for overheating assessments.

The overheating criteria must be achieved with the DSY1 file, for the 2020, high emissions, 50% percentile scenario.

An additional assessment to be made with the DSY1 future files for 2050s and 2080s. Compliance is not required for the 2050 and 2080 scenarios, however the assessment should demonstrate the extent of overheating that may occur and the associated risks.

Thermal modelling parameters should allow for:

- All internal doors to be modelled as closed 100% of the time
- All external doors to be modelled as closed 100% of the time (openable windows either side of the glazed doors to provide ventilation)
- All openable ground floors windows are modelled to be shut at night (21:00 – 07:00) for security
- Apartment openable windows can be assumed to be openable without restriction to a maximum of 45°
- Communal windows can be assumed to be openable without restriction to a maximum of 45° unless they open onto hard landscaped area and require restriction to avoid them being a danger
- High level communal windows and roof lights openable via the use of remote-control actuators
- The rooflight should be electrically openable with a rain sensor over-ride to enable ventilation of the ground floor communal area.

Consideration of glass G values and window shading devices is required to avoid overheating

Cooling

In addition to the thermal modelling requirements (which set time limits for overheating events) the Communal Lounge must be capable of being maintained below a maximum of 25°C at all times, regardless of external weather and in accordance with anticipated climate change data for 2050.

The purpose of this active cooling is to provide a space that can act as a refuge for vulnerable residents during extreme heat events. It is not intended that the active cooling is operational during day to day building use and the Communal Lounge should meet the standard thermal modelling compliance using passive measures where possible.

Innovation

Housing 21 strives for Innovation through the quality of homes and services that we offer our residents. For our new developments, we also seek and strive for innovation and welcome such ideas and solutions for consideration.

To be able to meet the room sizes and storage requirements for housing the mechanical solutions that have been referenced in this briefing note it is proposed that all one-bedroom dwellings have a minimum floor area of 54sq.m* and for two-bedroom dwellings a minimum floor area of 64sq.m*. (*where designs have not progressed to a planning submission stage).

Embodied Carbon

The amendments to the Housing 21 specification will have significant impact on reducing the energy and operational carbon emissions when compared to our current schemes being delivered.

Embodied Carbon is not currently a consideration under Building Regulation although this is also a major contributing factor in the total carbon emissions of new developments.

RIBA have set targets for reducing Embodied Carbon emissions by the year 2030 to 300kgCO₂/m² (around a third of current levels). Targets for H21 schemes to be confirmed and we are looking for innovative solutions to reduce embodied carbon in new developments and welcome opportunities to review this with partners.

Regardless of targets, all schemes will require a Whole Life Carbon Assessment to be undertaken. This will enable construction options to be considered and the setting of future targets.

Modern Methods of Construction

Housing 21 welcomes the opportunity to review MMC solutions for new developments. We have utilised these types of solution including Volumetric Modular construction for smaller developments and Light Gauge Steel Frame solutions.

The current specification does exclude the use of timber frame methodologies for new developments and this is still the position that the organisation would wish to take.

Renewables

Housing 21 is not looking to utilise on site renewable technology for generating electricity for dwellings. Where renewables are required to meet Local Planning Authority requirements, or for assisting with electricity demand in areas where capacity of the existing network may require significant upgrade, then Photovoltaic panels are the favoured technology to use. This must link to the Landlords supply only to reduce the loading requirements from the electricity network for the communal usage.

Electric Vehicle Charging Points

A minimum of two electric vehicle charging points are to be provided within communal parking areas to schemes. These are assumed to be 7kW (minimum) charging points and can be individual or twin charging points. These should be token or RFID card operated points. These will be wired in to the Landlords electricity supply to the scheme.

BREEAM

Housing 21 is currently utilising the BREEAM 2018 New Construction Assessment for several new developments where Contractual and Local Planning Authority policy requires this standard.

Future new developments may also be required to be assessed under the BREEAM standard and this will be confirmed at design stage for each scheme where this is to be the case and the required standard that is to be met for that development.

Employment & Skills

Housing 21 developments provide employment opportunities for local communities and seek to integrate new schemes in to local communities from the outset. Provision of local employment and training opportunities is important to Housing 21 during the construction stage and initiatives and commitments from Developers are required.