

Title: Stage 4 Interim Part L Summary

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Introduction

This technical note has been produced to provide an overview of the work undertaken with regard to Part L compliance, overheating assessment criteria and related acoustic studies following RIBA Stage 3, as part of the current Stage 4 Interim design and in support of MCC Planning Policy.

Part L Compliance

The position at Stage 3 prior to Futureserv involvement in terms of Part L compliance was that a pass level was achieved with a reduced margin in terms of the required percentage improvement for Manchester City Council planning policy (Building Regs 2013 without 2016 Amendments), less than that anticipated at planning stage, and following the introduction of CIBSE TM59 assessments of overheating risk.

Compliance at Stage 3 was based on use of a robust building fabric, with a highly insulated façade and triple glazing with inward opening windows. During design development the design has changed to include inward opening vent panels to increase natural ventilation rates, and the façade specification has changed to incorporate specific acoustic measures.

Futureserv have carried out further Part L calculations within this Stage 4 Interim period to enable specification development within the design team to arrive at the final SAP specification for the purposes of sub-contractor discussions. A compliant scheme has been developed based on the updated façade design, and continued developed specification of the following fabric and MEP services efficiencies:

Fabric

- The selection of glazing
- The Fabric U values
- The dwelling air tightness
- The glazing shading coefficient
- Heat loss between apartments
- Heat loss from apartments to common areas
- Thermal Bridge details

Services

- Heating efficiency
- Heating Controls
- DHW efficiency
- DHW Controls
- Ventilation and heat recovery efficiency
- Lighting efficiency
- The introduction of photovoltaic panels to both towers

Following RIBA Stage 3 the introduction of renewable energy through photovoltaic panels to both residential towers at roof level, and improved DHW and MVHR specifications, this has boosted the carbon efficiency. Due to the density in occupancy within apartments, there will be a fairly constant base electrical load prevalent on the building which will be mitigated in part by the use of Solar PV.

The calculated building CO2 emissions rate (BER) is less than the target (TER). The landlord areas show an improvement over Part L 2013 of 15% in each block. When this is combined with the SAP results, an overall area-weighted pass of 2% is demonstrated for the development.

Given the constraints governed by achieving the rigorous fabric targets, overheating criteria and acoustic measures this shows some improvement within the Stage 4 interim design period where a coordinated design team approach including supply chain input has enabled further fabric and carbon efficiency.

The new 2020 Part L will be released later this year and it is envisaged SAP Calcs will incorporate the current Carbon Intensity of grid electricity which has improved massively since 2010. This may support an all-electric heated development such as New Victoria in comparison with meeting improvement targets over 2010 and 2013, however full details of the route to compliance are still to be confirmed.

CIBSE TM59 Overheating Analysis

At RIBA Stage 3 a natural ventilation strategy through opening windows was shown to work in previous analysis, but was expected that this would lead to acoustic issues due to the restricted window opening times. As part of the Stage 4 Interim design and façade engineering development, purge ventilation panels were introduced to keep the benefits of the natural ventilation strategy while minimising the number of hours allowable for facade openings.

Further design development was carried out in conjunction with additional and detailed acoustician testing reports, and refined façade and glass specification in order to identify viable MVHR selections and appropriate ventilation rates, and to establish the link between the overheating strategy and total vent panel opening hours.

The scheme now meets the requirements of CIBSE TM59 whilst conforming to the proposed revised acoustic criteria, which requires the vent panels to be closed between 11pm and 7am and the model was re-run with blinds pulled down and the windows/ vent panels closed.

The analysis identifies a few rooms which do not meet TM59 under the mechanically ventilated criteria. These rooms require the vent panels and windows to be open for up to a maximum of between 1 and 4 hours a day (depending on the room) in the summer months.

The results from the model indicate that:

- The worst-case room requires the vent panels to be open 14 days a year, and
- Of those 14 days a year; there are only 7 days a year when the vent panels need to be open for between 3 and 4hrs a day.
- For the other 7 days, the vent panels need to open for between 0.5 hrs and 2 hrs a day.

This criterion has been confirmed as acceptable to Manchester City Council.