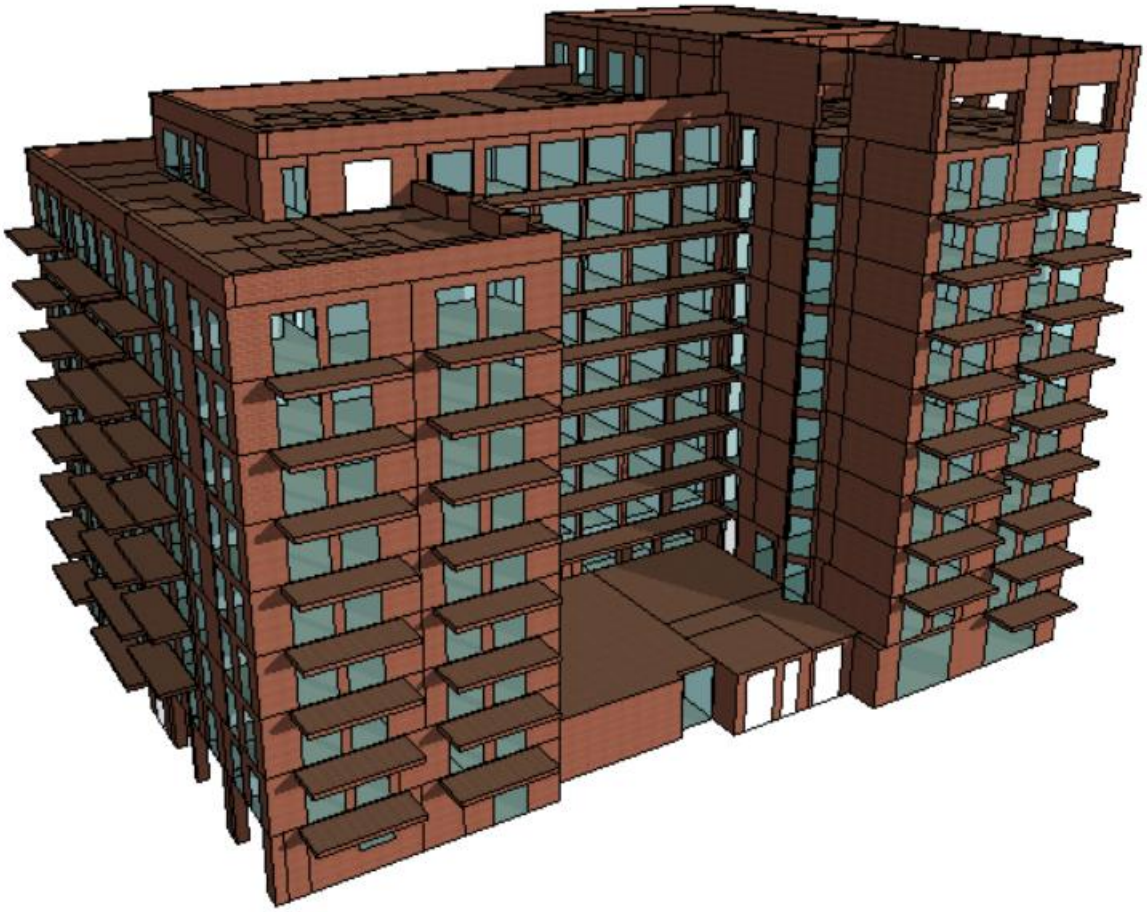
Vinyl Square

SAP / BRUKL Summary

Prepared by CCA Environmental Limited on behalf of SJS Engineering Limited
Client: ARJ Construction Limited



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Vinyl Square – L1A Design (residential units)

PART L1A COMPLIANCE
INPUT DATA

SAP Reports produced for Planning using Elmhurst Energy Systems Limited, Design SAP 2012 4.14r19

The design specification used is as follows.

Element	U Value Residential Units
Exposed Walls	0.12W/m²K
Exposed Floors	0.13W/m²K
Roof	0.11W/m²K
Glazing	1.2W/m²K G-Value: 0.40

Thermal bridging SAP default 0.15 W/m^2K

Air permeability rate of 3.0 m^3/hm^2@50Pa in all flats

- MVHR system with a 90% efficiency and a SFP of 0.60 W/l/s
- Lighting 100% LED
- Heating to be 50% from a CHP plant with an efficiency of 83.5%, and the remaining 50% from a gas boiler plant with an efficiency of 90%.

The above schedule will enable the development of 134 flats at One Vinyl Square, Hayes, Middlesex, UB3 1SY to achieve a CO_2 reduction of 38.47% compared to the Target Emission Rate.

Vinyl Square – L2A Design (commercial unit)

PART L2A 2013 COMPLIANCE
ASSUMPTIONS AND INPUT DATA

ADL2A Shell and core developments

If a building is offered to the market for sale or let as a shell for specific fit-out work by the incoming occupier, the developer should demonstrate via the design-stage TER/BER submission how the building shell as offered could meet the energy efficiency requirements. For those parts of the building where certain systems are not installed at the point the building is to be offered to the market, the model that is used to derive the BER should assume efficiencies for those services that will be installed as part of the first fit-out work. The specification provided to the BCB (see paragraph 2.14) should identify which services have not been provided in the base build, and the efficiency values assumed for each such system. This should enable the BCB to ensure that the necessary infrastructure needed to deliver the assumed fit-out specification is provided as part of the base build. At practical completion of the base building, the as-built TER/BER calculation should be based only on the building and systems as actually constructed; the fit-out areas should be assumed to be conditioned to temperatures appropriate to their designated use, but no associated energy demand included.

NOTE: *As part of the design-stage calculation, a predicted energy performance certificate (EPC) rating for the fit-out areas should be available to inform prospective occupiers of the energy performance that is achievable. However, a formal EPC lodged on the EPC register is not required at this stage.*

Building Data

Geometrical data – IES model was prepared in accordance with architectural drawings received.

Building type and activities – Due to the nature of the flexible planning class, the following building types chosen for the IES L2A model were assigned to the model 'A1/A2 Retail'. The NCM activity used for the retail units were 'Sales area – general' the NCM specifies predetermined values for parameters such as occupancy density, casual gains, DHW loads and relevant temperature variation profiles for each category.

Construction and glazing data – The building construction details and U-values for the various elements of the proposed commercial unit can be found below:

Element	U Value Retail Units
External Wall	0.12W/m²K
Ground/exposed floors	0.13W/m²K
Roof	0.11W/m²K
Glazing	1.2W/m²K G-Value: 0.40

As built Air Permeability: 3.0 $m^3/hr.m^2$

Assumed Building Services

Lighting - Standalone photoelectric dimming has been assigned to the Retail shell unit lighting with provision for metering capable of warnings for out-of-range alarms. Allowance for electric power factor correction has been made >0.95.

LED lighting have been assumed throughout with an efficacy of 95 lm/W and light output ratio of 100%. The lamp efficacy of any display lighting has been assumed as 60 lm/W.

Mechanical Systems data - The commercial space has been deemed as occupied areas, which require heating and cooling. The following systems have been assumed to satisfy the requirements of the internal environmental conditions.

VRF (heating and cooling)

Type: Split or Multi-split System
Seasonal/Nominal EER: 3.5 / 3.5
Seasonal COP: 3.0

DHW System – Via district heating system

Ventilation: Heat recovery MVHR or similar, maximum SFP: 1.1 W/l/s, efficiency: 75%.

Location and weather data - The development is in Hayes, Middlesex and the closest weather file used was London.

The above schedule will enable the commercial unit at One Vinyl Square, Hayes, Middlesex, UB3 1SY to achieve a CO_2 reduction of 39.78% compared to the Target Emission Rate.

Appendices

1.0 SAP Reports (design stage)
2.0 BRUKL (design stage)