

**Proposed Development
Ashley Road West - Marketing Suite
London**

**As Built TM52 Adaptive Overheating Report
Assumptions and Results**

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-	29.09.2022	RG / AW	First Issue As Designed Report

1.0 EXECUTIVE SUMMARY

This analysis has been carried out using EDSL TAS which is CIBSE AM11 accredited dynamic thermal modelling software.

All rooms in the proposed Marketing Suite are compliant with Building Regulations Part L2A overheating criteria when assessed against CIBSE Guide A (2013) – *Environmental Design, Table 1.5* and CIBSE TM52 – *The limits of thermal comfort: avoiding overheating in European buildings*.

Using the input data and constructions within this report all occupied spaces pass the overheating tests itemised within CIBSE TM52. It should be noted that while all rooms pass, overheating may still occur if occupancy window control strategies are not as proactive as possible, or the occupancy density/equipment heat gain ratings are significantly higher than those simulated within the thermal model.

2.0 PURPOSE OF ANALYSIS

The overheating analysis will determine whether the building design and service strategy will provide satisfactory internal temperatures in rooms which are to be occupied for 30 minutes or more. The rooms under assessment are mechanically ventilated office/sales spaces.

Each occupied space has been assigned an internal condition with heat gains taken from industry standard publications in conjunction with reviewing the architectural, mechanical and electrical design drawings. A full schedule of internal heat gains can be found within the input data section 4.0 of this report.

This analysis has been carried out using EDSL TAS which is CIBSE AM11 accredited dynamic thermal modelling software. The input data detailed in section 4.0 of this report has been utilised to build the thermal model. Where specific data could not be sourced, assumptions have been made which are noted throughout this report.

3.0 PARAMETERS OF REQUIREMENTS

3.1 CIBSE AM11 – Building energy and environmental modelling (BEEM)

Building energy and environmental modelling (BEEM) software allows comparison of different design and refurbishment options in order to optimise building performance and to improve the quality of buildings. It encourages the adoption of innovative design features, and assists communication within the design team.

Building services engineering practices are the principal target readership, but the manual should also be of interest to architects, developers, facility managers and users of buildings.

CIBSE AM11 sets out the building energy and environmental modelling (BEEM) criteria as follows:

- Role of modelling in the design process
- Categories of BEEM software and their uses
- Establishing a simulation capability
- How to use BEEM software

3.2 CIBSE Guide A (2015) – Environmental Design, Table 1.5

Table 1.5 below gives general guidance and recommendations, based on professional experience and judgement, on suitable winter and summer temperatures (together with outdoor air supply rates, filtration grades, maintained illuminances and suggested maximum noise ratings) for a range of room and building types. Operative temperature set-points within the ranges suggested are likely to be found satisfactory, provided the guidance given in section 1.4.1 on within-day and day-on-day variation is observed.

3.3 CIBSE TM52 – The limits of thermal comfort

CIBSE TM52 was produced as it was becoming recognised that existing advice on overheating, as contained in chapter 1 of the 2006 edition of CIBSE Guide A (CIBSE, 2006), is increasingly restrictive and therefore a more comprehensive guide was needed for inclusion in the next edition of Guide A (CIBSE, 2013) and other CIBSE documents.

CIBSE TM52 sets the following criteria for defining overheating in free-running buildings:

The following three criteria, taken together, provide a robust yet balanced assessment of the risk of overheating of buildings in the UK and Europe. A room or building that fails any two of the three criteria is classed as overheating.

- a) The first criterion sets a limit for the number of hours that the operative temperature can exceed the threshold comfort temperature (upper limit of the range of comfort temperature) by 1 K or more during the occupied hours of a typical non-heating season (1 May to 30 September).
- b) The second criterion deals with the severity of overheating within any one day, which can be as important as its frequency, the level of which is a function of both temperature rise and its duration. This criterion sets a daily limit for acceptability.

- c) The third criterion sets an absolute maximum daily temperature for a room, beyond which the level of overheating is unacceptable.

These are recommendations only and have no statute in law, but these limits are generally accepted by designers and organisations such as BRE and CIBSE as demonstrating compliance for overheating within naturally ventilated buildings.

There are no specific overheating standards for transient circulation spaces, WC's, store rooms and therefore these spaces are not considered in the report.

4.0 INPUT DATA

4.1 Weather Data

In accordance with CIBSE TM52 paragraph 6.1.1 item (1) – *Prediction by simulation*, the CIBSE Design Summer Year (DSY) weather file for London has been used for the overheating analysis. This is the closest, and most appropriate, weather file for the Student Accommodation development and consists of hourly data for twelve hot months, selected from the third hottest years in the last 20 years, and smoothed to provide a composite, but continuous, 1-year sequence of data. The DSY weather data file is also used for design cooling calculations.

4.2 Occupancy Profile

The occupied period for the building has been assumed to be 8am to 8pm. The calendar used for this analysis is as per the NCM Standard 2010 calendar, which is also used for Part L analysis. The calendar dictates the days the building will be “open” and “closed”.

4.3 Occupancy Density & Gains

Each occupant has been assigned a sensible heat gain based on the guidance as given in CIBSE Guide A – *Eighth Edition March 2015 Table 6.3* for moderate office work. CIBSE Guide suggests sensible heat gains from an adult 75W and 55W latent heat gain.

Sales Area

It has been assumed that the Sales Area will be occupied by a number of people correspond and it has been simulated that the gains will be present from 08:00-20:00.

	Occupancy	Sensible Gain (W/Person)	Latent Gain (W/Person)	Total Sensible Gain (W)	Total Latent Gain (W)
Adults	3	75	55	225	165

Meeting Room

It has been assumed that the Meeting room will be occupied by a number of people correspond and it has been simulated that the gains will be present from 08:00-20:00.

	Occupancy	Sensible Gain (W/Person)	Latent Gain (W/Person)	Total Sensible Gain (W)	Total Latent Gain (W)
Adults	4	75	55	300	220

Flexible Use

It has been assumed that the Flexible Use will be occupied by a number of people correspond and it has been simulated that the gains will be present from 08:00-20:00.

	Occupancy	Sensible Gain (W/Person)	Latent Gain (W/Person)	Total Sensible Gain (W)	Total Latent Gain (W)
Adults	6	75	55	450	330

Tea Point

It has been assumed that the Tea Point will be occupied by a number of people correspond and it has been simulated that the gains will be present from 08:00-20:00.

	Occupancy	Sensible Gain (W/Person)	Latent Gain (W/Person)	Total Sensible Gain (W)	Total Latent Gain (W)
Adults	1	75	55	75	55

4.4 Building Fabric

The following tabulated constructions have been assumed based on Ashley Road West Tottenham Hale Stage 3b report provided by Environmental Services Design. The thermal performance ('U' value) is calculated within the thermal modelling software based on the construction make-up and materials used.

Item	Construction Make Up	U-Value (W/m ² K)
External Wall	Non-Residential Areas Values	0.25
Ground Floor	Non-Residential Areas Values	0.10
Roof	Non-Residential Areas Values	N/A
Window	Non-Residential Areas Values	1.60
Thermal Bridging	Non-Residential Areas Values	0.15
Air Tightness	Buildings > 500 m ² built to 2002 Building Regulations (or later)	10 m ³ /(hr.m ²)

4.5 Infiltration (Air Permeability)

An infiltration rate of 0.35 ac/h has been applied to the transient areas within the building (not part of the analysis but simulated as adjoining spaces). This reflects an anticipated air permeability of $10.0\text{m}^3\cdot\text{h}^{-1}\cdot\text{m}^{-2}$ @ 50Pa for a predominantly Mechanically ventilated single floor Sales areas and Offices.

4.6 Lighting Gains and Control

The lighting density and control has assumed to be the following, based on the requirements of the electrical drawing number 998-ESD-XX-00-DR-X-E-6301 provided by Environmental Services Design:

Room	Lighting Efficacy (lm/cW)	Lighting Control
Sales Area, Flexible Use, Meeting Room	92.72	No Presence Detection, Manual Daylight Control
Tea Point	100	No Presence Detection

It has been simulated that the occupants of the Sales Area, Flexible Use and Meeting room will manually turn off the lighting if the target lux level can be achieved via natural means.

4.7 Equipment Gains

All of the inhabited spaces have been assigned sensible equipment heat gains, based on the assumed equipment being present. Gain figures have been taken from CIBSE Guide A – Eighth Edition March 2015 Table 6.6 and 6.15.

Room	Appliance						Total Gain
	Laptop	TV	Printer	Kettle	Microwave	Fridge	W
Sales Area	36						36W
Flexible Use	36	2x24	15				99W
Meeting Room	36	24					60W
Tea Point				22	9	16	47W

The equipment gains will follow the occupancy profile and density i.e. in the Sales / Office area the gains will be continuous throughout working day to reflect the occupancy. It is assumed that the Laptops in the Marketing suite will be switched off during the unoccupied period and the gains will therefore diminish to zero (no standby).

4.8 Window Openings

All windows in the habitable areas are unopenable.

5.0 RESULTS AND APPRAISAL

Using the input data and constructions within this report all occupied spaces pass the overheating tests itemised within CIBSE TM52 and therefore also satisfies the overheating test required to meet Building Regulations Part L2A. The full overheating result is set out in Appendix A.

It should be noted that while all rooms pass the overheating tests individual spaces may overheat if the occupancy density/equipment heat gain ratings are significantly higher than those simulated within the thermal model.

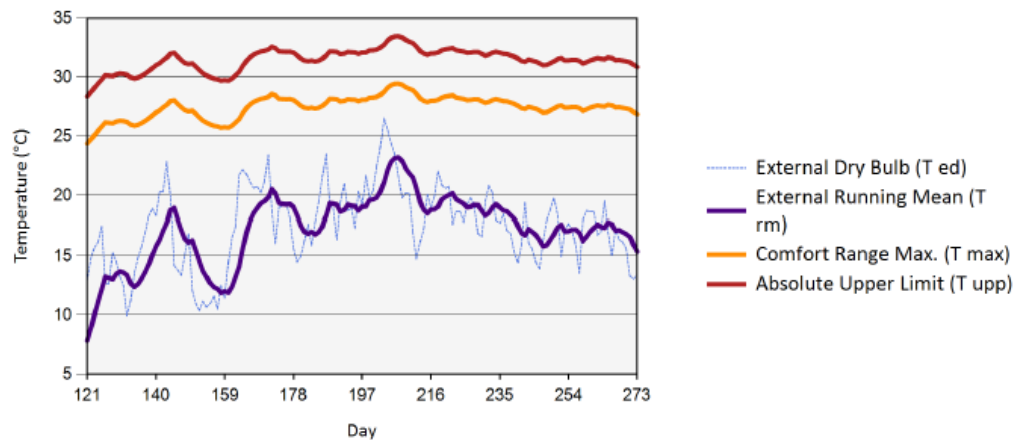
The building has been modelled using the dynamic computer modelling package EDSL TAS Version 9.4.2. Images of the TAS building model are shown below:

APPENDIX A: RESULTS FROM CIBSE TM52 ANALYSIS

Ashley Road West - TM52 Marketing Suite.tsd

Adaptive Overheating Report (CIBSE TM52)

Adaptive Summer Temperatures for London DSY



The adaptive overheating assessment tests rooms against three criteria. If a room fails any two of the three criteria then it is said to overheat.

1. The first criterion sets a limit for the number of hours that the operative temperature exceeds the comfort temperature by 1°C or more during the occupied hours over the summer period (1st May to 30th September).
2. The second criterion deals with the severity of the overheating within any one day. This sets a daily limit for acceptability.
3. The third criterion sets an absolute maximum daily temperature for the room.

Project Details

Building Designer File (.tbd): Ashley Road West - Retail Units.tbd

Simulation Results File (.tsd): Ashley Road West - TM52 Marketing Suite.tsd

Date: 27 September 2022

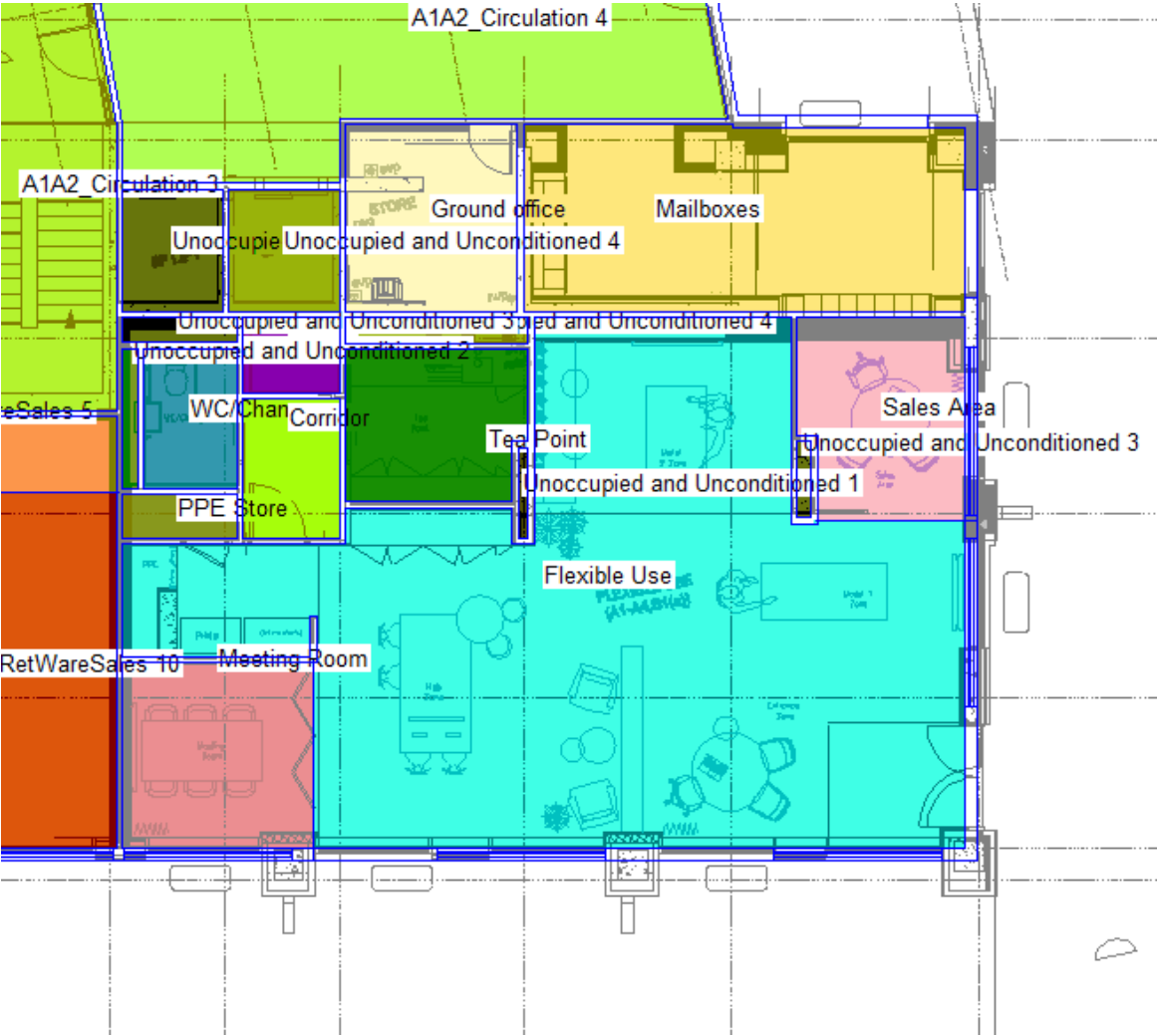
Building Category: Category II

Report Criteria: TM52

Results

Zone Name	Occupied Summer Hours	Max. Exceedable Hours	Criterion 1: #Hours Exceeding Comfort Range	Criterion 2: Peak Daily Weighted Exceedance	Criterion 3: #Hours Exceeding Absolute Limit	Result
Tea Point	3672	110	65	11.0	0	Pass
Sales Area	1989	59	16	6.0	0	Pass
Meeting Room	1989	59	25	12.0	0	Pass
Flexible Use	1377	41	20	7.0	0	Pass

APPENDIX B: TAS FLOOR PLANS



APPENDIX C: TAS 3D IMAGES

