

170 FORTIS GREEN, SPRING LANE

1916 – Overheating Assessment

A report prepared for and on behalf of:

Springdene Care Homes



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Overheating Assessment

1.0 EXECUTIVE SUMMARY

- 1.1 This overheating analysis has been produced for the proposed care home scheme at, 170 Fortis Green, Spring Lane, London prepared by Harniss Consulting Ltd on behalf of Springdene Care homes.
- 1.2 A detailed thermal model has been produced using EDSL Tas software v9.5.6, in line with TM59 requirements. Model inputs are based on the mechanical and electrical services performance specification, along with architectural drawings and specifications provided by RDT architects and designers.
- 1.3 All bedroom and living spaces have been assessed against the TM59 criteria. With the information provided by RDT architects, all of the building passed the assessment against the 2020 weather file without any additional provisions needed.

2.0 INTRODUCTION

- 2.1 The purpose of this report is to assess the overheating potential of the proposed care home scheme, against the criteria set out in CIBSE TM59, using the occupancy characteristics and building fabric data as agreed with the client team.
- 2.2 The dynamic thermal simulation has been carried out using EDSL TAS software version 9.5.6 utilising the appropriate weather file based on the geographical location of the proposed development. Details about the weather file used in the simulation can be found in the later sections of this document.
- 2.3 This report is structured to outline the targeted building fabric details, occupancy profiles and internal heat gain data that has been used within the simulation.
- 2.4 This analysis demonstrates concept design only and provides a route to compliance to inform the tender process & identify any additional measure required to control overheating with the information available at this design stage. The contractor shall be responsible for developing a holistic solution in conjunction with the detailing architect and contract team to achieve compliance. Any additional measures required to achieve compliance at the next stage shall be communicated to the client team for client sign off. No additional overheating control measures shall be provided until agreed with the client team.

3.0 DESCRIPTION OF DEVELOPMENT

- 3.1 The proposed development consists of a new care home scheme located at 170 Fortis Green, Spring Lane, London. The development contains Bedrooms with dedicated Ensuites and combined Living and Kitchen areas.
- 3.2 The assessment has been based on the following RDT Architects layout drawings, plus supporting elevations and sectional drawings:
 - 1326PL-RDT-01-ZZ-DR-A-1100_P2
 - 1326PL-RDT-01-B1-DR-A-2000_P1
 - 1326PL-RDT-01-00-DR-A-2100_P1
 - 1326PL-RDT-01-01-DR-A-2200_P1
 - 1326PL-RDT-01-02-DR-A-2300_P1
 - 1326PL-RDT-01-03-DR-A-2400_P1
 - 1326PL-RDT-01-ZZ-DR-A-3000_P2
 - 1326PL-RDT-01-ZZ-DR-A-3001_P2
 - 1326PL-RDT-01-ZZ-DR-A-3002_P2
 - 1326PL-RDT-01-ZZ-DR-A-3003_P2

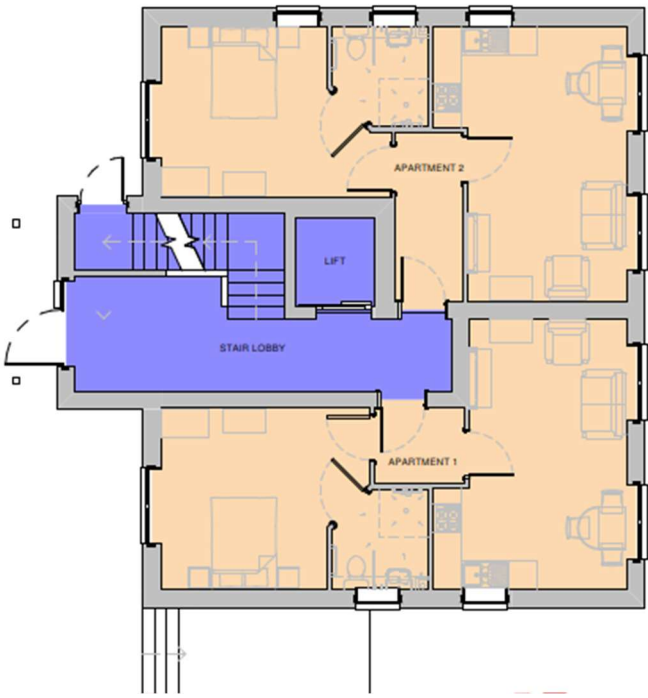


Figure 2— RDT Architects Ground Floor Plan



Figure 3—RDT Architects Site Plan

4.0 MODELLING REQUIREMENTS

4.1 The overheating analysis includes a dynamic thermal modelling using software in accordance with CIBSE AM11 building energy and performance modelling standards.

5.0 CIBSE TM59

- 5.1 The CIBSE TM59 overheating assessment methodology is aimed specifically at residential buildings, and as such has been applied to the care home scheme.
- 5.2 The overheating criteria establishes the amount of time that a room is assessed to exceed an established maximum comfort temperature. The maximum comfort temperature is determined using an equation taking account of the weighted running mean of outside air temperatures.
- 5.3 The TM59 code also requires the internal temperature of bedrooms to not exceed 26°C for more than 1% of the annual hours during the time period 22.00-07.00.

6.0 MODELLING DATA

6.1 This section details the data input into the dynamic model simulation software. All relevant inputs have been agreed with the client team.

7.0 WEATHER DATA

7.1 For the purpose of the overheating analysis, the London DSY (Design Summer Year) weather file has been used. The following types of weather files have been used for the assessment:
London_DSY1_2020High50_

8.0 BUILDING FABRIC DATA

8.1 Detailed specific constructions were available at the time the model was produced, and the figures outlined below reflect the information provided by the Architectural information received. These values were as follows:

Building Fabric Parameter	Value
Air permeability (m³/(m².hr) @ 50Pa	4.0
External Wall U-value (W/m².K)	0.14
Roof U-value (W/m².K)	0.13
Ground Floor U-value (W/m².K)	0.13
Glazing U-value (doors & windows) (W/m².K)	1.2
Glazing G-value	0.4

9.0 BASELINE INTERNAL ROOM TEMPERATURES

9.1 The Following temperatures were used as baseline room temperatures.

Room Type	Winter Set-Point Temperature (°C)	Summer Set-Point Temperature (°C)
Bedrooms	22°C	-
Living Areas	22°C	-
Kitchenette	22°C	-

10.0 ROOM GAIN DATA

10.1 As well as the U-values and design air permeability previously indicated, the following information summarises the key input information used for this analysis detailing the enhanced building services:

Room Type	Heat Gain Data				
Bedroom Peak	Gain	Value	Factor	Setback Value	Schedule
	△ Infiltration	0.25 ach	1.0	0.0 ach	
	△ Ventilation	0.0 ach	1.0	0.0 ach	
	△ Lighting Gain	0.3 W/m ²	1.0	0.0 W/m ²	Care Bedroom Lighting/...
	△ Occupancy Sensible Gain	1.5 W/m ²	1.0	0.0 W/m ²	Care Bedroom Occupati...
	△ Occupancy Latent Gain	1.1 W/m ²	1.0	0.0 W/m ²	Care Bedroom Occupati...
	△ Equipment Sensible Gain	0.3 W/m ²	1.0	0.0 W/m ²	Care Bedroom Lighting/...
	△ Equipment Latent Gain	0.0 W/m ²	1.0	0.0 W/m ²	
	△ Pollutant Generation	0.0 I(CO2)/hr/m ²	1.0	0.0 I(CO2)/hr/m ²	
Bedroom Base	Gain	Value	Factor	Setback Value	Schedule
	△ Infiltration	0.0 ach	1.0	0.0 ach	
	△ Ventilation	0.0 ach	1.0	0.0 ach	
	△ Lighting Gain	2.3 W/m ²	1.0	0.0 W/m ²	Care Bedroom Lighting/...
	△ Occupancy Sensible Gain	3.5 W/m ²	1.0	0.0 W/m ²	Care Bedroom Occupati...
	△ Occupancy Latent Gain	2.57 W/m ²	1.0	0.0 W/m ²	Care Bedroom Occupati...
	△ Equipment Sensible Gain	2.3 W/m ²	1.0	0.0 W/m ²	Care Bedroom Lighting/...
	△ Equipment Latent Gain	0.0 W/m ²	1.0	0.0 W/m ²	
	△ Pollutant Generation	0.0 I(CO2)/hr/m ²	1.0	0.0 I(CO2)/hr/m ²	
Living Peak	Gain	Value	Factor	Setback Value	Schedule
	△ Infiltration	0.25 ach	1.0	0.0 ach	
	△ Ventilation	0.0 ach	1.0	0.0 ach	Apartment Kitchen Occ...
	△ Lighting Gain	2.3 W/m ²	1.0	0.0 W/m ²	Apartment Living Occup...
	△ Occupancy Sensible Gain	1.25 W/m ²	1.0	0.0 W/m ²	Apartment Living Occup...
	△ Occupancy Latent Gain	0.91 W/m ²	1.0	0.0 W/m ²	Apartment Living Occup...
	△ Equipment Sensible Gain	2.3 W/m ²	1.0	0.0 W/m ²	Apartment Living Occup...
	△ Equipment Latent Gain	0.0 W/m ²	1.0	0.0 W/m ²	
	△ Pollutant Generation	0.0 I(CO2)/hr/m ²	1.0	0.0 I(CO2)/hr/m ²	
Living Base	Gain	Value	Factor	Setback Value	Schedule
	△ Infiltration	0.25 ach	1.0	0.0 ach	
	△ Ventilation	0.0 ach	1.0	0.0 ach	Apartment Kitchen Occ...
	△ Lighting Gain	0.3 W/m ²	1.0	0.0 W/m ²	Apartment Living Base
	△ Occupancy Sensible Gain	3.75 W/m ²	1.0	0.0 W/m ²	Apartment Living Base
	△ Occupancy Latent Gain	2.75 W/m ²	1.0	0.0 W/m ²	Apartment Living Base
	△ Equipment Sensible Gain	0.3 W/m ²	1.0	0.0 W/m ²	Apartment Living Base
	△ Equipment Latent Gain	0.0 W/m ²	1.0	0.0 W/m ²	
	△ Pollutant Generation	0.0 I(CO2)/hr/m ²	1.0	0.0 I(CO2)/hr/m ²	
Kitchenette	Gain	Value	Factor	Setback Value	Schedule
	△ Infiltration	0.25 ach	1.0	0.0 ach	
	△ Ventilation	2.0 ach	1.0	0.0 ach	
	△ Lighting Gain	5.0 W/m ²	1.0	0.0 W/m ²	Care Bedroom Lighting/...
	△ Occupancy Sensible Gain	4.3 W/m ²	1.0	0.0 W/m ²	Care Bedroom Occupati...
	△ Occupancy Latent Gain	2.3 W/m ²	1.0	0.0 W/m ²	Care Bedroom Occupati...
	△ Equipment Sensible Gain	2.58 W/m ²	1.0	0.0 W/m ²	Care Bedroom Lighting/...
	△ Equipment Latent Gain	0.0 W/m ²	1.0	0.0 W/m ²	
	△ Pollutant Generation	0.0 I(CO2)/hr/m ²	1.0	0.0 I(CO2)/hr/m ²	

11.0 OCCUPANCY DATA

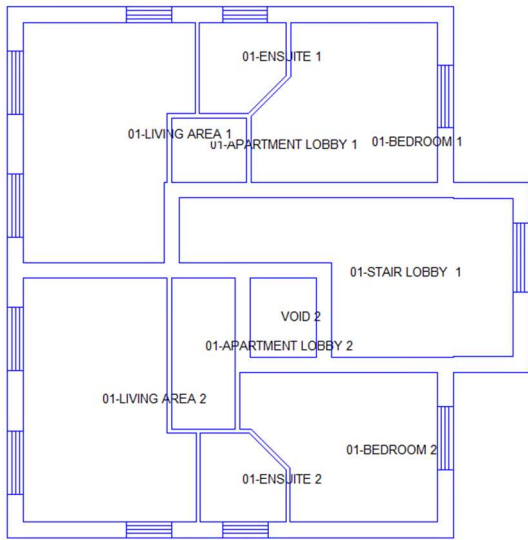
11.1 The below table illustrates the schedules used to represent the resident’s occupancy throughout the day in the designated areas.

Room Type	Occupied Hours																							
	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Bedroom Base	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bedroom Peak									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Living Base	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Living Peak								✓	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓		
Kitchenette								✓	✓			✓	✓			✓		✓	✓					

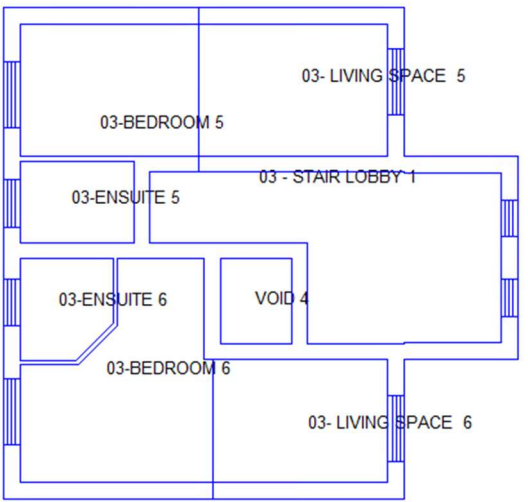
12.0 CIBSE TM59 ASSESSMENT SUMMARY – 2020 WEATHER FILE

12.1 All bedrooms passed the CIBSE TM59 assessment with the use of the baseline specification, internal gains and occupancies proposed without the need or use of any additional measures to enable any of the rooms to pass. The results from this baseline assessment can be found in Appendix D.

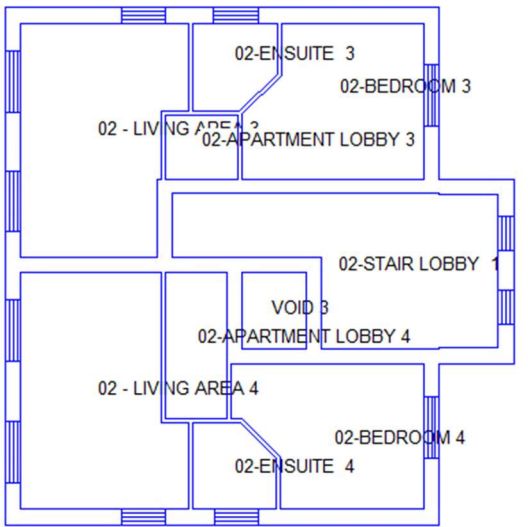
APPENDIX A – GROUND FLOOR PLAN



APPENDIX B – FIRST FLOOR PLAN



APPENDIX C – SECOND FLOOR PLAN



APPENDIX D – CIBSE TM59 ASSESSMENT

Domestic Overheating (CIBSE TM59)

Project Details

Building Designer File (.tbd): 1916 - Apartments.tbd

Simulation Results File (.tsd): 1916 - Apartments - Orientation Update.tsd

Date: 15 September 2023

Building Category: Category I

Natural Ventilation Overheating Results

Zone Name	Room Use	Occupied Summer Hours	Max. Exceedable Hours	Criterion 1: #Hours Exceeding Comfort Range	Annual Night Occupied Hours for Bedroom	Max Exceedable Night Hours	Criterion 2: Number of Night Hours Exceeding 26 °C for Bedrooms	Result
01-BEDROOM 1	Bedroom	3672	110	107	3285	32	9	Pass
01-BEDROOM 2	Bedroom	3672	110	70	3285	32	6	Pass
01-LIVING AREA 1	Bedroom	3672	110	31	3285	32	1	Pass
01-LIVING AREA 2	Bedroom	3672	110	28	3285	32	1	Pass
02 - LIVING AREA 3	Bedroom	3672	110	32	3285	32	1	Pass
02 - LIVING AREA 4	Bedroom	3672	110	30	3285	32	2	Pass
02-BEDROOM 3	Bedroom	3672	110	101	3285	32	10	Pass
02-BEDROOM 4	Bedroom	3672	110	80	3285	32	8	Pass
03- LIVING SPACE 5	Bedroom	3672	110	91	3285	32	5	Pass
03- LIVING SPACE 6	Bedroom	3672	110	80	3285	32	3	Pass
03-BEDROOM 5	Bedroom	3672	110	78	3285	32	4	Pass
03-BEDROOM 6	Bedroom	3672	110	54	3285	32	3	Pass

*Zone names that have an orange coloured font are bedrooms which do not have 24/7 365 days a year occupancy, as per the TM59 guidance.