

Overheating Analysis

Sproughton



+44 (0)20 7043 0418
info@eightversa.com

Document information

Document prepared for
Brigitte Clements
LOKI - Architecture & Development

Date of issue
08/09/2023

Issue no.
1

Our reference
10393-Sproughton-Overheating-2309-08nv

Document prepared by
Nikita Vasilev

Quality assured by
Rishika Shroff

Disclaimer
This report is made on behalf of Eight Versa Ltd. By receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

Contents:

Document information	1
Executive summary	2
Introduction.....	3
Modelling Inputs	4
Passive Design	5
Summary of Results.....	7
Conclusions.....	9
Appendix A	10
Appendix B.....	11
Appendix C	13

Overheating Analysis Sproughton

Executive summary

Overview

This report has assessed the proposed scheme in accordance with TM59 requirements relating to overheating and Part O. Results are provided which show how the occupied spaces perform against the thermal comfort standards for overheating.

The scheme has implemented passive design measures and the modelling results indicate that the scheme is compliant with the overheating requirements.

The proposal maximises passive design measures by responding to the local context in the following ways:

- Energy efficient lighting and appliances have been recommended to reduce internal heat gains
- The building fabric will be insulated over and above the standards set out by Building Regulations and reduced solar gains from a glazing solar factor of 0.5 will help to keep heat out of the building
- Fixed shading, shutters and automated overhangs (fenster markisen), as per architectural drawings
- Mechanical ventilation with heat recovery and summer bypass to provide fresh air and purging of heat
- Natural ventilation to supply fresh air to the building through atrium's stack effect and openable windows (as per ventilation rates section of this report) including night-time ventilation through windows on the first and second floor.

Note that the analysis was performed assuming that opening windows were controlled based on the level of occupancy and the operative indoor temperature of the space. To achieve the thermal comfort levels shown in this report the level of occupant control for the opening windows would need to be optimum i.e. fully responsive to indoor temperature.

Overheating Analysis Sproughton

Introduction

Eight Versa has been appointed in order to undertake an overheating analysis of Sproughton project to provide design stage guidance and maximise occupant comfort levels. Consequently, thermal modelling has been undertaken to demonstrate compliance with Part O and TM59 requirements. The current proposal is to minimise overheating risk by following the Cooling Hierarchy.

Building Summary

The proposal comprises demolition of the existing building and construction of three storey dwelling with associated parking and landscaping. The scheme is located Sproughton, Courtenay Avenue, London, N6 4LR in the London Borough of Haringey and has a total gross internal area of approximately 2,739 m².

Planning Context

The Haringey's Development Management DPD (2017) requires that development proposals should seek to integrate the cooling hierarchy in accordance with sustainable design, layout, and construction principles. This will help to ensure that buildings are better equipped to manage their cooling needs in energy efficient ways over their lifetime. This policy is aligned with the cooling hierarchy set out in the London Plan. This report is aligned with national standards and regulations.

Part O

The scheme is required to comply with Part O. Overheating mitigation:

1. Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to:
 - a. limit unwanted solar gains in summer
 - b. provide an adequate means to remove heat from the indoor environment.
2. In meeting the obligations in paragraph (1)
 - a. account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence, and
 - b. mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it

In line with Part O, there are 2 possible approaches, the simplified method and the Dynamic thermal modelling. The Dynamic thermal modelling approach has been used in this assessment.

Methodology

The methodology used within this report has been to establish the thermal comfort levels in the occupied spaces through using dynamic simulation modelling and respond with suitable passive design measures to mitigate solar gains and provide adequate ventilation. National regulations have set high standards and numerous iterations have been undertaken to determine suitable fabric improvements. All assumptions in the modelling are provided in the model inputs section of this report.

Criteria for defining overheating

According to the CIBSE TM59: 2017 - Design methodology for the assessment of overheating risk in homes, to reduce the risk of overheating the space has to comply with the following criteria:

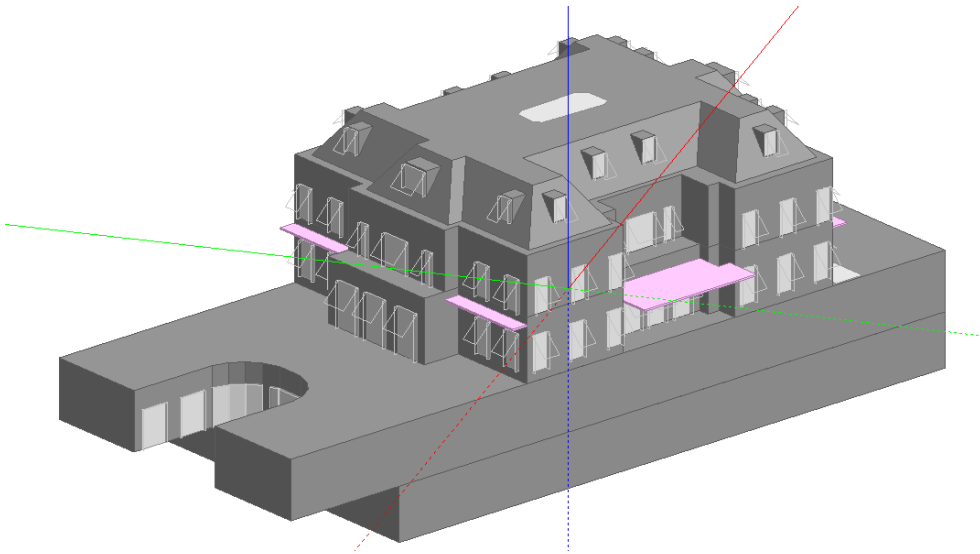
1. For living rooms, kitchen and bedrooms: the number of hours during which ΔT is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3 per cent of occupied hours (Same as Criterion 1 of TM52).
2. For bedrooms only: to guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26 °C for more than 1% of the annual hours (1% of the annual hours between 22:00 and 07:00, equivalent to 32 hours).

Overheating Analysis Sproughton

Modelling Inputs

Simulation Software

An overheating analysis has been undertaken using Dynamic Simulation Modelling, Design Builder has been employed for this. Design Builder is a DCLG approved simulation environment that complies with the requirements of CIBSE Guide A. A screenshot of the model is shown below.



Weather File

The CIBSE Design Summer Year (DSY1), London Heathrow, for the 2020s, high emissions, 50% percentile scenario, has been used for the purposes of this report. DSY2 and DSY3 have also been investigated.

The three DSYs represent summers with different types of hot events.

- DSY1 - Moderately warm summer
- DSY2 - Short intense warm spell
- DSY3 - Long, less intense warm spell

Building Fabric U-Values

Element	Proposed U-value (W/m ² K)
External walls	0.12
Ground floors	0.11
Exposed floors	0.11
Flat Roof	0.11
Pitched Roof	0.11
Openings	1.20(g-value 0.5)
Doors	1.40 (g-value 0.5)
Rooflight	1.40 (g-value 0.5)

Internal Gains

Typical hours based, according to CIBSE TM 59 and CIBSE Guide A on the relative activity for class use, on weekdays and weekends throughout the year have been specified for lighting, equipment and occupancy.

Space	Occupancy people/m ²	Lighting W/m ²	Small power W
Bedroom	0.0229 (2)	2	80
Kitchen	0.0237 (2)	2	450
Living room	0.0188(1-3)	2	150

Overheating Analysis Sproughton

Passive Design

Cooling Hierarchy

Major development proposals should reduce potential overheating and reliance on air conditioning systems and demonstrate this in accordance with the following cooling hierarchy:

1. Minimise internal heat generation through energy efficient design;
2. Reduce the amount of heat entering a building in summer through shading, albedo, fenestration, insulation and green roofs and walls;
3. Manage the heat within the building through exposed internal thermal mass and high ceilings;
4. Passive ventilation;
5. Mechanical ventilation;
6. Active cooling systems (ensuring they are the lowest carbon options).

Cooling Strategy

The cooling strategy is to implement energy efficient lighting and appliances to reduce internal heat gains; create a super-insulated fabric with shading devices and solar control glazing to keep the heat out.

Windows

Glazing will be a crucial aspect to ensure thermal comfort of the occupied spaces. In order to minimise solar gains, and consequently cooling demand, windows with a solar factor of 0.5 have been modelled for every glazed area.

Shading

Fixed shading, shutters and automated overhangs (fenster markisen) will reduce the solar heat gains in the habitable rooms, especially living rooms.

Thermal Mass

High thermal mass – Interseasonal Underground Thermal Energy Storage “UTES” has been designed. This system acts as ‘thermal batteries’; it absorbs heat gains during the day when the building is occupied and ‘store’ it for an extended period, thereby helping to stabilise daytime temperatures. At night this heat can be dissipated, which ‘resets’ the heating cycle. Ventilation will also be used at night to purge the stored heat within the structure.

Mechanical Ventilation Rates

Mechanical ventilation with heat recovery has been specified. The system has to provide at least an air flow of 0.3 l/s/m² as per Part F.

Natural Ventilation Rates

Natural ventilation through openable windows and via an atrium, with the implementation of cooling towers and an underground thermal storage system, has been adopted for this scheme. The ventilation rate has been calculated by the software according to the percentage of openable windows for each space and the varying environmental conditions throughout the year. This percentage has been estimated as follows:

- Bedrooms: 100%
- Living Rooms: 100%

In accordance with TM59 all windows are assumed to be fully opened when all the following conditions are satisfied:

1. Internal temperatures exceed 22 °C.
2. During occupied and non-occupied periods if any security issues were not identified

Overheating Analysis

Sproughton

In accordance with Part O:

- When a room is occupied during the day (8am to 11 pm), openings are modelled to:
 - Start to open when the internal temperature exceeds 22 °C
 - Be fully open when the internal temperature exceeds 26 °C
 - Start to close when the internal temperature falls below 26 °C
 - Be fully closed when the internal temperature falls below 22 °C
- At night (11pm to 8am), openings are modelled as fully open if both of the following apply:
 - The opening is on the first floor or above and not easily accessible
 - The internal temperature exceeds 23 °C at 11pm
- When a ground floor or easily accessible room is unoccupied
 - In the day windows and doors should be modelled as open if this can be done securely
 - At night, windows and doors should be modelled as closed

In line with requirement O1(2)(a), the building's overheating mitigation strategy for use by occupants should account for the following:

- a. Noise at night: As external noise was not considered to be an issue for this scheme, windows are not likely to remain closed at night allowing night-time ventilation to take place.
- b. Pollution: The scheme isn't located near any significant local pollution source.
- c. Security: To guarantee the security of the occupants, basement and ground floor windows will remain closed at night. Secure night-time vents have been specified for the ground floor apartments allowing night-time ventilation to take place securely during the sleeping hours.
- d. Protection from falling: Openings intended to be opened for long periods to reduce overheating risk have been designed to prevent occupants from falling and therefore meet requirements O1(2)(a).
- e. Protection from entrapment: The ground floor night-time vents have been designed not to allow body parts to become trapped and therefore meet requirement O1(2)(a).

Moreover, the scheme has been modelled with a discharge coefficient rate of 0.65 and a wind factor of 1.

Night-time ventilation has also been specified for the ground floor for staff rooms through the ventilation panels and to the upper floors through openable windows to reduce the overheating risk.

Overheating Analysis Sproughton

Summary of Results

Results

The graphs below present the outdoor, indoor mean air, indoor mean radiant and operative temperature for a sample of the worst performing rooms. A table confirming the results for all rooms is shown in Appendix C.

In summary, all rooms meet TM59 requirements for DSY1 weather file.

In summary:

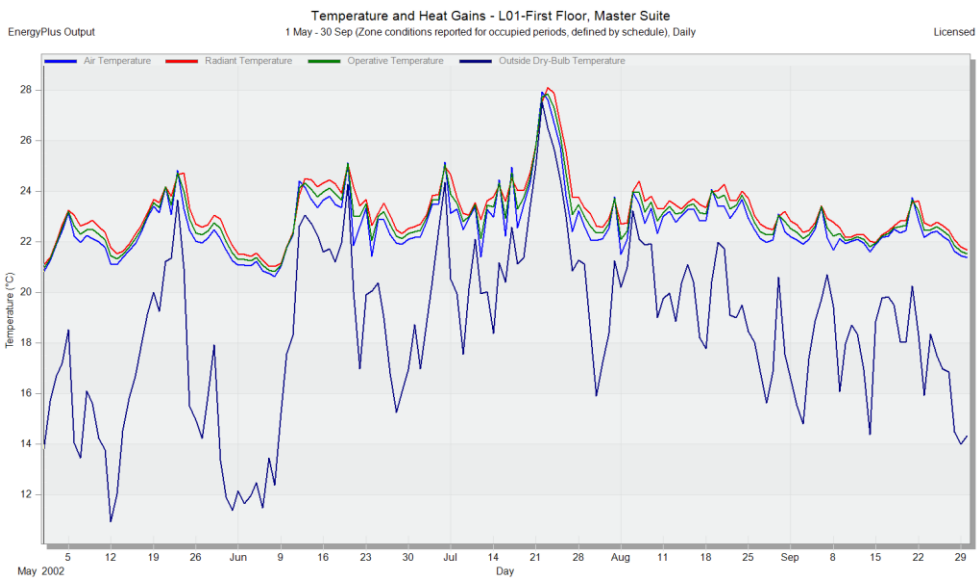
- 100% of the modelled rooms meet TM 59 requirements for DSY1
- 50% of rooms meet TM59 requirements for DSY2 overall. However, it is seen that all living rooms meet the overheating criteria, and all failing bedrooms meet criterion 1.
- 45.4% of rooms meet TM59 requirements for DSY3 most living rooms meet the overheating criteria and all failing bedrooms meet criterion 1.

Overheating Analysis Sproughton

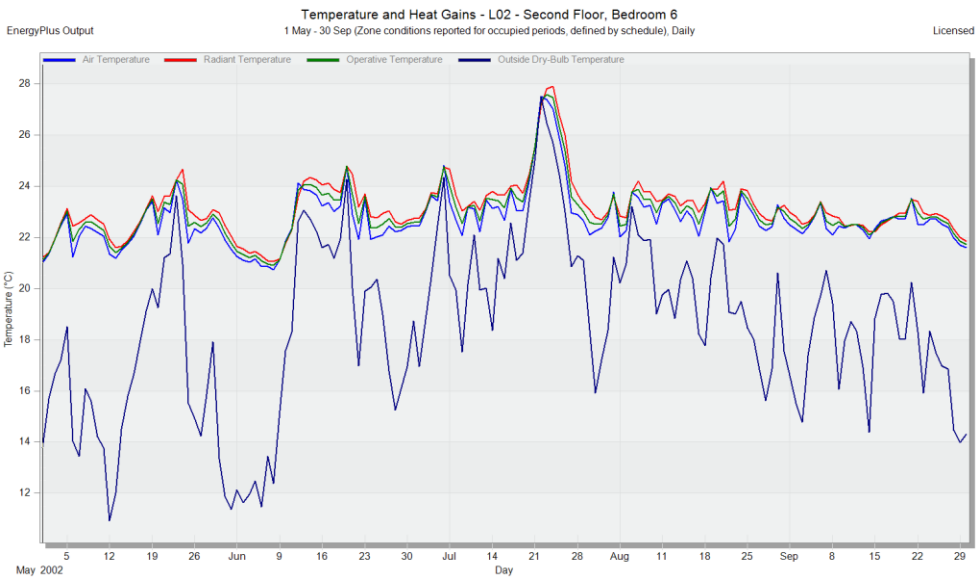


+44 (0)20 7043 0418
info@eightversa.com

First Floor, Master Suite



Second Floor, Bedroom 6



Overheating Analysis

Sproughton

Conclusions

The proposal has responded to CIBSE TM59 and Part O requirements relating to overheating. The report has set out how the occupied spaces perform against strict thermal comfort standards for overheating. The scheme has implemented passive design measures and the modelling results indicate that the scheme is compliant with the overheating requirements as set out in CIBSE TM59 and Part O.

The proposal maximises passive design measures by responding to the local context in the following ways:

- Energy efficient lighting and appliances have been recommended to reduce internal heat gains
- The building fabric will be insulated over and above the standards set out by Building Regulations and reduced solar gains from a glazing solar factor of 0.5 will help to keep heat out of the building
- Fixed shading, shutters and automated overhangs (fenster markisen), as per architectural drawings
- Mechanical ventilation with heat recovery and summer bypass to provide fresh air and purging of heat
- Natural ventilation to supply fresh air to the building through atrium's stack effect and openable windows (as per ventilation rates section of this report) including night-time ventilation through windows on the first and second floor.

The overheating risk has also been investigated for DSY2 and DSY3. DSY2 includes a short and intense warm spell. DSY3 includes a long and less intense warm spell. All living rooms meet TM59 requirements for DSY2. Six bedrooms fail to meet Criterion 2.

Almost all rooms fail the TM59 requirements because of the intensity of the DSY2 and DSY3 weather file. It must be considered that it is very difficult to be able to address these variables in the future without substantially changing the design or retrofitting active cooling which is not considered viable. Moreover, as seen from the assessment, most living spaces meet overheating requirements in the future climate scenario and these spaces are more likely to be used during daytime, which is the warmest part of the day.

Future occupants will be made aware of overheating risks via the home user guide and that they would need to activate internal shading devices and open windows at a lower temperature set point than assumed for this study. Moreover, night ventilation for living rooms/kitchen could improve the overheating results. Plug-in fans could be used as an additional measure during heatwaves.

Note that the analysis was performed assuming that opening windows were controlled based on the level of occupancy and the operative indoor temperature of the space. To achieve the thermal comfort levels shown in this report the level of occupant control for the opening windows would need to be optimum i.e. fully responsive to indoor temperature.

Overheating Analysis Sproughton

Appendix A

Appendix A

Appendix A - Heat gain profile

Number of people	Description	Peak load (W)		Period																							
		Sensible	Latent	Hour-ending																							
				00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	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
				1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00
1	Single bedroom occupancy	75	55	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
2	Double bedroom occupancy	150	110	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.7
2	Studio occupancy	150	110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1-bed: living/kitchen occupancy	75	55	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
1	1-bed: living occupancy	75	55	0	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0	0
1	1-bed: kitchen occupancy	75	55	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0
2	2-bed: living/kitchen occupancy	150	110	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
2	2-bed: living occupancy	150	110	0	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0	0
2	2-bed: kitchen occupancy	150	110	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0
3	3-bed: living/kitchen occupancy	225	165	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
3	3-bed: living occupancy	225	165	0	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0	0
3	3-bed: kitchen occupancy	225	165	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0
	Single bedroom equipment	80		0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.13	
	Double bedroom equipment	80		0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.13	
	Studio equipment	450		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	
	Living/kitchen equipment	450		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	
	Living equipment	150		0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
	Kitchen equipment	300		0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17		
	Lighting profile	2 (W/m2)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Overheating Analysis Sproughton

Appendix B

Appendix B

Appendix B – Compliance checklist in line with Part O

Part 1 – Building details and declarations

1.1 Building and site details	
Residential building name/number	Sproughton
Street	22 Courtenay Avenue
Town	London
County	Greater London
Postcode	N6 4LR
Proposed building use/type of building	Residential
Are there any security, noise or pollution issues?	No
1.2 Designer's details	
Designer's name	Brigitte Clements
Company	LOKI Architecture
Address line 1	Broxwood Way
Address line 2	
Postcode	London NW8 7QJ
Telephone number	+44 (0) 7340009811
Email address	brigitte@loki-architecture.com

Overheating Analysis Sproughton

Part 2b – Dynamic thermal modelling method

2b.1 Modelling details	
Dynamic software name and version	Design Builder v7.1.4.5
Weather file location used, including any additional, more extreme weather files	London_LHR_DSY1_2020High50 London_LHR_DSY2_2020High50 London_LHR_DSY3_2020High50
Number of sample units modelled, including an explanation of why the size/selection has been chosen	1 dwelling (whole scheme)
2b.2 Modelled occupancy	
Has the project passed the assessment described in CIBSE's TM59, taking into account the limits detailed in paragraphs 2.5 and 2.6?(1)	Yes
Details of the occupancy profiles used	As per CIBSE TM59, See Appendix A
Details of the equipment profiles used	As per CIBSE TM59, See Appendix A
Details of the opening profiles used	Ground floor: ON 24/7 for secured ventilation panels and ON during the day only (8-11am) for windows First floor and above: ON 24/7
2b.3 Modelled overheating mitigation strategy	
Free areas	100% (mostly)
Infiltration and mechanical flow rates	Infiltration: 1.5 m ³ /hm ² at 50 Pa Mechanical ventilation: 10l/s/person and 0.3 l/s/m ²
Window g-value	0.5
Shading strategy	Overhangs, (balconies) and fixed angled overhangs
Mechanical cooling	No

2b.4 Modelling results	
Has the project passed the assessment described in CIBSE's TM59, taking into account the limits detailed in paragraphs 2.5 and 2.6?	Yes
What is the overall overheating strategy (i.e. what design features are key to the project passing)?	Limiting solar gains by fixed shading devices (overhangs, (balconies) and fixed angled overhangs) and glazing design (g-value of 0.5). Removing excess heat by natural ventilation through atrium's stack effect, openable windows including night-time ventilation through ventilation panels, and mechanical ventilation
2b.5 Thermal modeller's declaration	
Has the building construction proposal been modelled accurately?	Yes
Thermal modeller's name	Nikita Vasilev
Thermal modeller's organisation	Eight Versa
Thermal modeller's signature	NV
Registration number (if applicable)	N/A
Date of design	04/09/2023

Overheating Analysis Sproughton

Appendix C

Appendix C

Appendix C – Results tables

DSY1 2020 High 50%

Block	Zone	Criterion A (%)	Criterion B (hr)	Pass/Fail
B01X1BasementLevel	BoardRoom	0.59	N/A	Pass
B01X1BasementLevel	CateringKitchen	0.1	N/A	Pass
B01X1BasementLevel	Cinema	0	N/A	Pass
B01X1BasementLevel	ClubRoom	0.13	N/A	Pass
B01X1BasementLevel	SpaArea	0	N/A	Pass
B01X1BasementLevel	Staff1	0.07	15.75	Pass
B01X1BasementLevel	Staff2	0.14	25.5	Pass
B01X1BasementLevel	StaffKitchenLiving	0.19	N/A	Pass
L00XGroundFloor	LivingSpaces	0.31	N/A	Pass
L00XGroundFloor	TVLounge	0.29	N/A	Pass
L01XFirstFloor	Bedroom1	0.23	20.5	Pass
L01XFirstFloor	Bedroom2	0.18	27.5	Pass
L01XFirstFloor	Bedroom3	0.21	25	Pass
L01XFirstFloor	FamilyRoom	0.3	N/A	Pass
L01XFirstFloor	MasterSuite	0.12	26.25	Pass
L01XFirstFloor	ReadingSnug	0.33	N/A	Pass
L02XSecondFloor	Bedroom4	0.1	22.25	Pass
L02XSecondFloor	Bedroom5	0	22.75	Pass
L02XSecondFloor	Bedroom6	0	28.75	Pass
L02XSecondFloor	Bedroom7	0.12	25.75	Pass
L02XSecondFloor	Bedroom8	0.13	23	Pass
L02XSecondFloor	PlayRoom	0.26	N/A	Pass

Overheating Analysis Sproughton

DSY2 2020 High 50%

Block	Zone	Criterion A (%)	Criterion B (hr)	Pass/Fail
B01X1BasementLevel	BoardRoom	2.37	N/A	Pass
B01X1BasementLevel	CateringKitchen	0.87	N/A	Pass
B01X1BasementLevel	Cinema	0.39	N/A	Pass
B01X1BasementLevel	ClubRoom	0.53	N/A	Pass
B01X1BasementLevel	SpaArea	0.14	N/A	Pass
B01X1BasementLevel	Staff1	0.36	32.5	Fail
B01X1BasementLevel	Staff2	0.53	52.25	Fail
B01X1BasementLevel	StaffKitchenLiving	0.86	N/A	Pass
L00XGroundFloor	LivingSpaces	1.61	N/A	Pass
L00XGroundFloor	TVLounge	1.09	N/A	Pass
L01XFirstFloor	Bedroom1	0.97	49.75	Fail
L01XFirstFloor	Bedroom2	0.86	55.5	Fail
L01XFirstFloor	Bedroom3	0.86	44.5	Fail
L01XFirstFloor	FamilyRoom	1.04	N/A	Pass
L01XFirstFloor	MasterSuite	0.61	49.75	Fail
L01XFirstFloor	ReadingSnug	1.8	N/A	Pass
L02XSecondFloor	Bedroom4	0.65	59.25	Fail
L02XSecondFloor	Bedroom5	0.6	52	Fail
L02XSecondFloor	Bedroom6	0.4	62	Fail
L02XSecondFloor	Bedroom7	0.36	45.75	Fail
L02XSecondFloor	Bedroom8	0.56	45.5	Fail
L02XSecondFloor	PlayRoom	1.3	N/A	Pass

Overheating Analysis Sproughton

DSY3 2020 High 50%

Block	Zone	Criterion A (%)	Criterion B (hr)	Pass/Fail
B01X1BasementLevel	BoardRoom	3.77	N/A	Fail
B01X1BasementLevel	CateringKitchen	0.46	N/A	Pass
B01X1BasementLevel	Cinema	0.18	N/A	Pass
B01X1BasementLevel	ClubRoom	0.58	N/A	Pass
B01X1BasementLevel	SpaArea	0	N/A	Pass
B01X1BasementLevel	Staff1	0.29	46.25	Fail
B01X1BasementLevel	Staff2	0.55	68.75	Fail
B01X1BasementLevel	StaffKitchenLiving	0.71	N/A	Pass
L00XGroundFloor	LivingSpaces	1.54	N/A	Pass
L00XGroundFloor	TVLounge	1.02	N/A	Pass
L01XFirstFloor	Bedroom1	1.1	56	Fail
L01XFirstFloor	Bedroom2	0.73	71.25	Fail
L01XFirstFloor	Bedroom3	0.72	57.5	Fail
L01XFirstFloor	FamilyRoom	1.02	N/A	Pass
L01XFirstFloor	MasterSuite	0.76	78	Fail
L01XFirstFloor	ReadingSnug	1.94	N/A	Pass
L02XSecondFloor	Bedroom4	0.67	73.75	Fail
L02XSecondFloor	Bedroom5	0.47	83.75	Fail
L02XSecondFloor	Bedroom6	0.19	88	Fail
L02XSecondFloor	Bedroom7	0.49	67.5	Fail
L02XSecondFloor	Bedroom8	0.49	62.5	Fail
L02XSecondFloor	PlayRoom	1.11	N/A	Pass