31 DALEHAM GARDENS, LONDON

Overheating Assessment – Revision B

31 DALEHAM GARDENS, LONDON
Overheating Assessment

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31 DALEHAM GARDENS, LONDON
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Overheating Assessment
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Registration of Amendments

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By
Rev A 30/10/2023	Updated as per the received comments	MB	SS
Rev B 04/12/2023	Addressed Cooling Hierarchy as per the received comments	MB	SS

EXECUTIVE SUMMARY

Create Consulting Engineers Ltd has been appointed to provide an overheating analysis to support the planning application for the proposed residential development located at Hampstead and Kilburn, 31 Daleham Gardens, London.

IES VE (Integrated Environmental Solutions Virtual Environment), a dynamic thermal modelling software tool, has been used to predict the temperatures of the living spaces inside the scheme.

The overheating assessment has been carried out in accordance with TM49: Design Summer Years for London 2014 as stipulated by the GLA (Greater London Authority). This study has also been completed in accordance with TM59: Design Methodology for the assessment of overheating risk in homes and will use the overheating guidelines set out in TM52: The limits of Thermal Comfort: Avoiding Overheating in European Buildings 2013 (the latest guidance from the Chartered Institute of Building Services Engineers (CIBSE) for overheating in non-air-conditioned European buildings).

This assessment finds that the scheme is at limited risk of overheating, caused by heat distribution pipework losses rather than excessive solar gain. All residential spaces pass the relevant criteria for overheating described in TM52 and TM59. Several of the communal corridors were found to have a risk of overheating due to pipework losses, however, according to TM59 guide this is not a major compliance issue as these areas are not habitable rooms. At detailed design stage the heat losses from the pipework will be minimised to reduce the heat gains This assessment finds that the scheme is at very limited risk of overheating, provided that the following overheating mitigation measures are implemented:

- Glazing with low solar thermal transmittance (g-value) of 0.4;
- All buildings are provided with operable windows to aid purge ventilation;
- Internal blinds for rooms that are prone to overheating due to excessive solar heat gain

The above design elements will help the residential spaces pass the relevant criteria for overheating described in TM52 and TM59.

1.0 INTRODUCTION

1.1 Create Consulting Engineers Ltd has been commissioned by Mole Architects Ltd to prepare an overheating analysis to support a full planning application for the proposed development at 31 Daleham Gardens, London.

1.2 The proposal comprises the development of the construction of a new residential development of 14 units in the form of flats.

1.3 This report demonstrates how temperatures reached inside the building were predicted using dynamic simulation modelling and whether these results comply with guidance contained with the London Plan, TM49, TM52, and TM59.

2.0 MODEL INFORMATION

Dynamic Thermal Analysis Software

2.1 The thermal model was produced using IES VE version 2022, a full dynamic simulation modelling software capable of performing simulations for large and complex buildings. IES VE can produce accurate predictions of internal temperatures to allow designers to make decisions on cooling and ventilation strategies.

Site Location and Description

2.2 The Site is located to the East of Daleham Gardens in Hampstead and Kilburn, London. Please refer to the Site Location plan below for details (Figure 2.1).

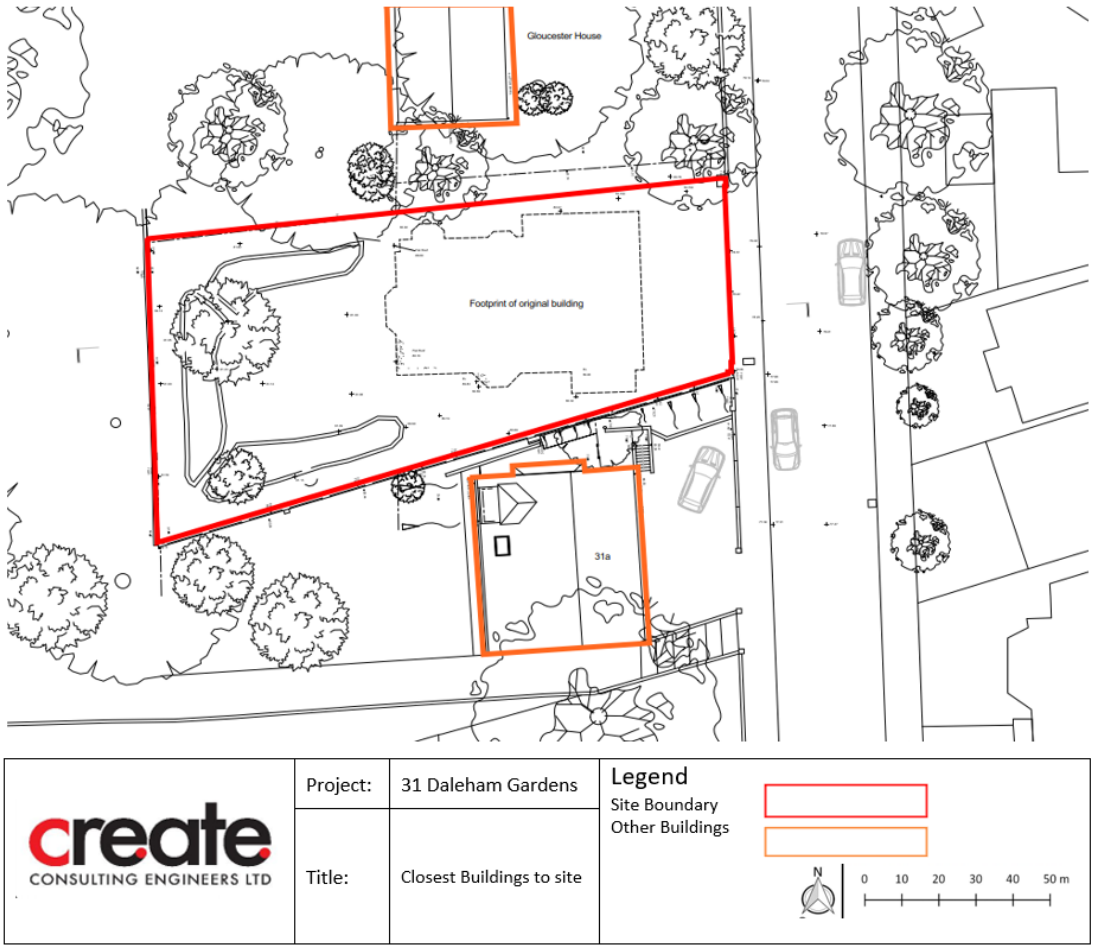

Figure 2.1: Site Location Plan (Source: Mole Architects)

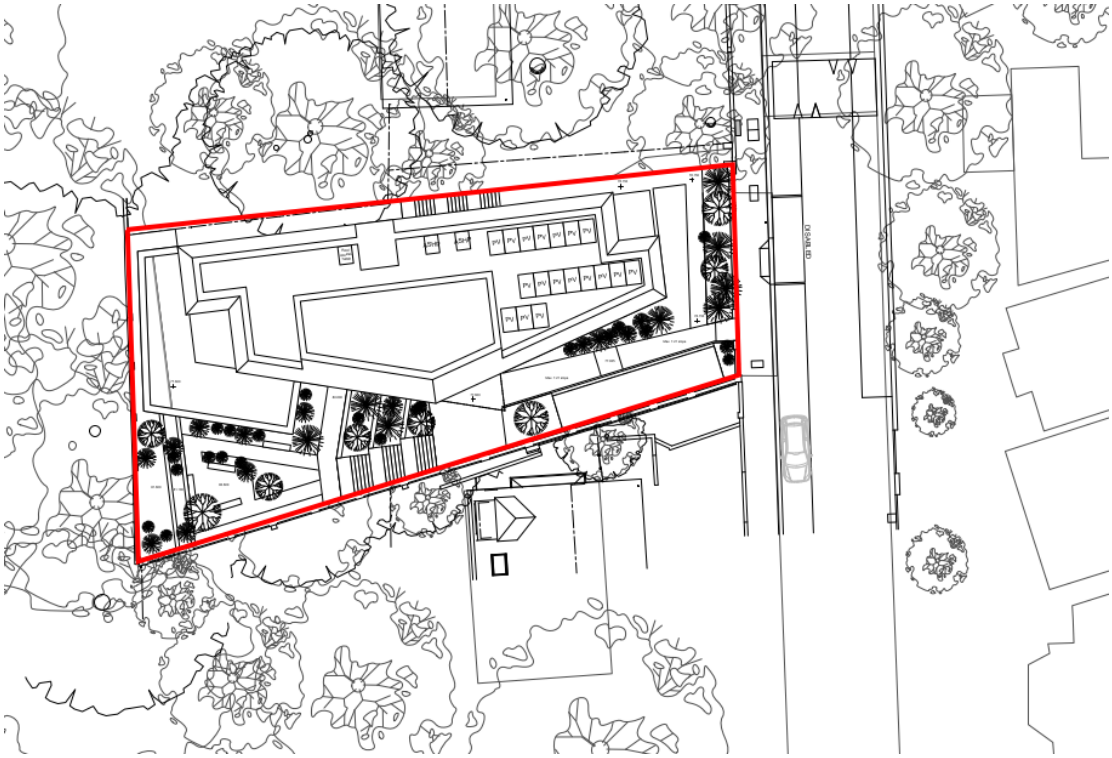

Figure 2.2: Proposed site plan (source: Mole Architects)

2.3 This report details information gathered from consultation with the design team.

Unit Sampling and Layouts

2.4 A sample of buildings have been selected for the study. This sample represents those buildings that are deemed most at risk of overheating. This risk was analysed based on the following criteria:

- Those with large glazing areas
- Those on the topmost floor
- Those having less shading
- Those having large, sun-facing windows
- Those having a single aspect
- Those with limited opening windows

2.5 Based on the above assessment criteria, it has been decided that all flats are to be assessed.

2.6 The software generated images of the site, below, show the location of the selected, assessed spaces within the development.

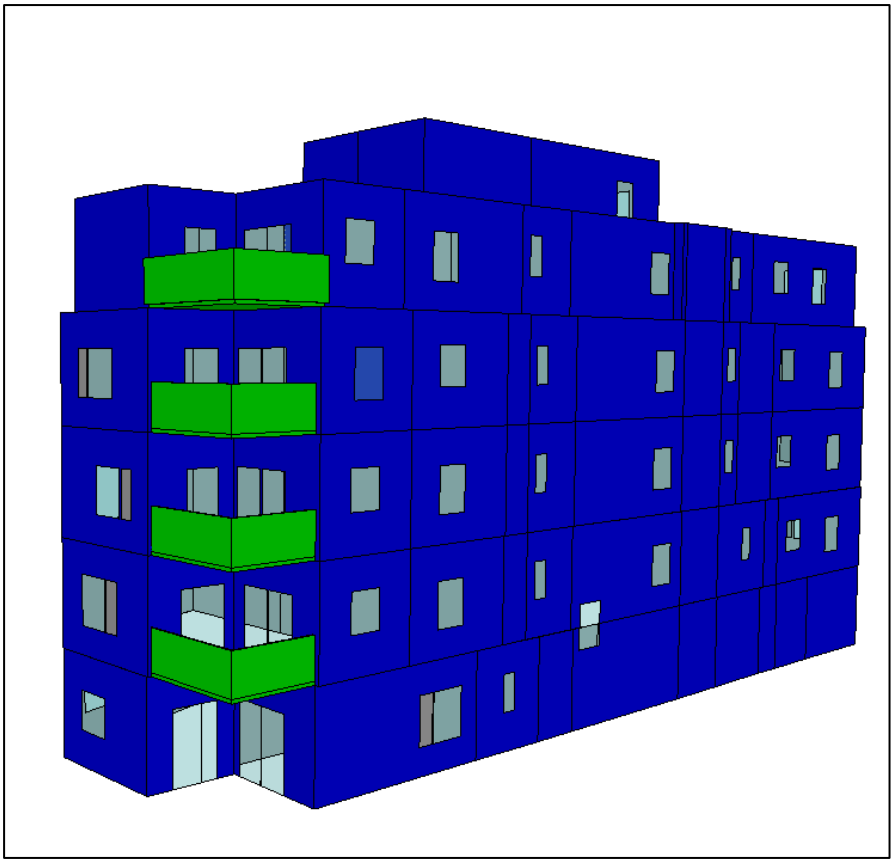

Figure 2.3: IES VE generated model, north-west view (blue areas represent modelled spaces)

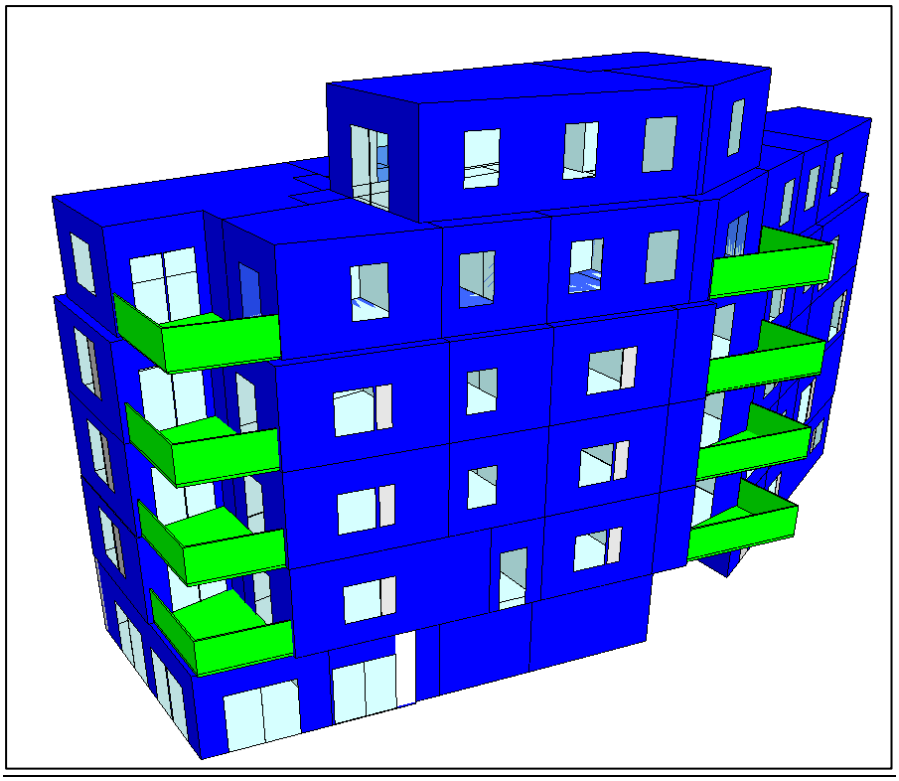

Figure 2.4: IES VE generated model, south-east view (blue areas represent modelled spaces)

GLA Requirements and CIBSE TM49: Design Summer Years for London

2.7 The GLA (Greater London Authority) requires that the overheating assessment be carried out in accordance with TM49 which advises that weather data should be selected based on an appropriate level of risk and probability for the building which can be established through informed discussion between the design team, client and the other stakeholders involved in the project.

2.8 The GLA goes on to state that overheating modelling should be conducted using three design weather years. These weather years are as follows:

- DSY1 for 2020s, high emissions, 50% percentile scenario
- DSY2 – 1989: a moderately warm summer (current design year for London)
- DSY3 – 2003: a year with a very intense single warm spell

CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings

2.9 TM52, released in July 2013, sets out to identify the many different factors that affect thermal comfort and uses these to define a new set of criteria for measuring unacceptable levels of overheating. Until the release of TM52, the standard approach was to use CIBSE Guide A, which was based on not exceeding a single limiting temperature:

- 25°C for >5% of occupied hours
- 28°C for >1% of occupied hours

2.10 TM52 uses an adaptive approach for building occupant comfort. The adaptive approach to thermal comfort is based on the findings of field surveys in workplaces and other building types. It is now accepted as the standard approach to specifying target temperatures in non-air conditioned buildings where indoor conditions are less easy to control.

2.11 TM52 uses three criteria to predict whether a building will over-heat. Two out of three criteria must be met in order for a building to be deemed as not overheating. The three criteria are:

- Threshold temperature exceeded $\not>$ 3% of occupied hours per year
- Daily weighted exceedance (degree hours) $\not>$ 6
- Temperature $\not>$ upper limit

CIBSE TM59: Design methodology for the assessment of overheating risk in homes

2.12 In April 2017, CIBSE released TM59 which defines a peer reviewed methodology for the assessment of overheating risk in residential developments.

2.13 Whilst not currently stipulated in any legislation, it is suggested by CIBSE that this methodology be used to ensure a standardised approach to model generation and reporting for the assessment of overheating. The method suggested somewhat differs from the previous approach in that it specifies many of the inputs used to perform the analysis, whereas previously, these inputs have been based on the design team's assumptions of how the building is likely to be used. The methodology has been proven on a number of case study projects in London and is thought to give a better overall picture of the comfort that can be expected within a residential development.

Overheating Criteria

2.14 In accordance with TM59, all domestic spaces (kitchens, living rooms, bedrooms, bathrooms, and halls) should be included in the assessment. Bathrooms and halls do not, however, have to pass any criteria to be compliant but are still included in the assessment.

2.15 The criteria for TM59, for naturally ventilated dwellings, are as follows:

- *"For living rooms, kitchens 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% of occupied hours."* This is CIBSE TM52 Criterion 1.
- *"For bedrooms only: The operative temperature in the bedroom from 22:00 – 07:00 shall not exceed 26°C for more than 1% of annual hours*" (i.e., 33 hours and over is a failure).

2.16 TM59 also requires that where an operative temperature of 28°C occurs within a corridor for more than 3% of total annual hours, this should be flagged as a significant risk. If any such occurrences exist, these will be flagged in Section 3 of this report.

2.17 Corridors are defined as any public areas from which apartments are accessed.

2.18 The non-domestic spaces within the development will be assessed against TM52. TM52 has three criteria, two of which must be passed to reach compliance:

- Criterion 1: Hours of Exceedance
  - 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% of occupied hours.
- Criterion 2: Daily Weighted Exceedance
  - The weighted exceedance shall be less than or equal to 6 in any one day. This criterion deals with the severity of overheating within any one day and is a function of both magnitude and duration.
- Criterion 3: Upper Limit Temperature

- The value of ΔT shall not exceed 4K. This criterion sets an absolute limit for the indoor operative temperature.

Construction Elements and Thermal Mass

2.19 All construction elements/materials in the model have been created according to information agreed with the client and the design team. The following U-Values and design parameters have been used:

Building Element/Characteristic	Part L1A-2021 Reference Values for Notional Building	Proposed values
External Wall - U value (W/m²K)	0.18	**0.15**
Walls to unheated spaces	0.18	**0.15**
Party walls	0.00	**0.00**
Ground/Exposed upper floor	0.13	**0.1**
Flat Roof - U value (W/m²K)	0.11	**0.1**
Windows - U value (W/m²K)	1.2	**1.2** g- 0.4
Doors - U value (W/m²K)	1.0	**0.98**
Design Air Permeability(m³/hr/m² @50Pa)	5	**3**
Thermal Bridges	Accredited Construction Details	**Measured junctions and default psi values**

Table 2.1: Construction Element Information

2.20 Thermal mass calculations have also been included in the model as they are automatically calculated by IES VE. The thermal mass is incorporated into the construction on the basis of the elements/materials information calculated by IES VE.

Ventilation Strategy

2.21 It is proposed that all flats with three bedrooms to be supplied with mechanical ventilation with heat recovery (MVHR) systems with summer bypass facility, and the flats with one bedroom and two bedrooms to be supplied with exhaust air source heat pumps (EAHP), which draw heat from ventilated air leaving a building and are always combined with mechanical ventilation systems. This is done to make sure that the homes retain heat during the winter but release it during the summer when it is not required.

2.22 It is proposed that mechanical ventilation is provided to support natural ventilation. All flats in the development will have openable windows. Should the openable area of windows change at detailed design stage it is advisable that further modelling is undertaken.

2.23 Occupancy profiles prescribed by TM59 stipulate that all bedrooms are occupied at 75% throughout the day. The flats on 31 Daleham Gardens will have all operable windows, as there are no noise-related issues. Windows have been modelled as open continuously during the hours of 00:00 to 24:00, based on the variation profile shown in Appendix B.

2.24 In the context of the overheating assessment, it is essential to determine whether the planned development carries any potential risks related to noise and air quality that might necessitate keeping windows closed, thereby hindering natural ventilation. After reviewing the Noise Impact Assessment report (reference: BD/CS/P23-2822/01) and the Air Quality Assessment report (reference: DRAFT TR/VL/P23-2822/03), it has been verified that there are no significant concerns related to noise and air quality. Consequently, it is safe to conclude that windows can be left open overnight without adverse effects.

2.25 Details of the window opening assumptions and infiltration rates assumed be found in Appendices A and B.

Plans and Elevations

2.26 All plans and elevations have been taken from files received 31/03/2023 from Mole Architect.

Weather files and Thermal Comfort Category

2.27 In accordance with the GLA and TM49, the following files were used:

- DSY 1 for 2020s, high emissions, 50% percentile scenario;
- DSY 2- 1989 London Heathrow Airport (Lower density urban and suburban areas)
- DSY 3- 2003 London Heathrow Airport (Lower density urban and suburban areas)

2.28 The thermal comfort category defined for this project is: Category II, as defined by TM52 Table 2.

2.29 The summer (elevated) air speed ms^{-1} for the calculation of TM52 used in this report is 0.15.

Occupancy and Gain Profiles

2.30 All occupancy and gain profiles for domestic spaces have been modelled according to TM59.

2.31 The TM59 prescribed weekly profiles for occupancy, heating and internal gains have been used.

Exposure Type

2.32 The model has been set up to 'semi-exposed wall' type for the purposes of determining wind pressure coefficient as per IES VE guidance.

Modelling Assumptions

2.33 To complete the modelling and to achieve robust and meaningful results, certain assumptions had to be made. These, along with the information detailed in section 2, form the basis of the overheating analysis carried out for the development.

- Windows opening profiles for the bedrooms are as per Appendix B
- Adjacent buildings were modelled.

3.0 RESULTS OF THE ASSESSMENT

3.1 The performance of the assessed domestic spaces and communal corridors against the relevant criteria can be found below.

Results – Baseline:

3.2 During the baseline scenario, all flats are tested with closed windows and no mechanical ventilation provided.

TM59 Bedroom Compliance

3.3 As stated previously, for bedrooms to comply with TM59 they should not exceed 26°C for more than 1% of annual occupied hours between 22:00 and 07:00.

3.4 Results of the TM59 compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix F1. In summary:

- DSY1 2020High50 – All bedrooms fail the overheating criterion
- DSY2 – All bedrooms fail the overheating criterion
- DSY3 – All bedrooms fail the overheating criterion

TM59 Corridor Checks

3.5 As stated previously, corridors are not required to comply with any specific criteria, but a space should be flagged where an operative temperature of 28°C occurs for more than 3% of total annual hours.

3.6 Results of the TM59 check against the three weather files stated in Section 2.26 and results can be found in Appendix G1. In summary:

- All corridors fail under DSY1_2020H50.
- All corridors fail under DSY2.
- All corridors fail under DSY3.

3.7 The performance of the assessed non-domestic occupied spaces against the relevant criteria can be found in the sections below.

TM52 Kitchen, Living Rooms and Bedrooms Check

3.8 As stated previously, for the domestic kitchens, living rooms and bedroom to comply they are required to pass TM52 criterion 1.

DSY1 2020High50 Compliance

3.9 Results of the compliance check against the three weather files stated in Section 2.26 and the results can be found in Appendix C1. In summary:

- All assessed spaces fail criteria 1 under DSY1_2020H50.

DSY2 Compliance

3.10 Results of the compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix D1. In summary:

- All rooms fail criteria 1 under DSY 2.

3.11 Residential areas are only required to pass criteria 1 for TM52. All units pass the criterion for DSY2.

DSY3 Compliance

3.12 Results of the compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix E1. In summary:

- All rooms fail criteria 1 under DSY 3.

3.13 Residential areas are only required to pass criteria 1 for TM52. All units pass this criterion for DSY3.

3.14 It is noted within the GLA Energy Assessment Guidance documents, that it is challenging to meet CIBSE compliance for DSY 2 & DSY3 weather files. Throughout the development passive measures have been implemented as far as possible. All the bedrooms assessed are running no risk of overheating in the context of TM52.

Results – Baseline+ Strategy 1 (Operable Windows and Mechanical Ventilation):

3.15 During this scenario, all flats are tested with operable windows and mechanical ventilation provided.

3.16 To mitigate the risk of overheating and minimize the impact of internal heat gains, an improved ventilation strategy has been implemented during this stage of analysis. This approach includes assigning supplementary auxiliary ventilation rates to occupied areas, as detailed in Appendix A.

3.17 As outlined in the Part F ventilation guide, a ventilation rate of 4 air changes per hour (ach) can be attained through the utilization of purge ventilation. Purge ventilation can be accomplished using either of the following methods:

a. Openings such as windows or doors.
b. A mechanical extraction ventilation system.

3.18 The performance of the assessed domestic spaces and communal corridors against the relevant criteria can be found below.

TM59 Bedroom Compliance

3.19 As stated previously, for bedrooms to comply with TM59 they should not exceed 26°C for more than 1% of annual occupied hours between 22:00 and 07:00.

3.20 Results of the TM59 compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix F2. In summary:

- DSY1 2020High50 – All bedrooms pass the overheating criterion
- DSY2 – All bedrooms pass the overheating criterion
- DSY3 – 25 out of 28 bedrooms pass the overheating criterion

TM59 Corridor Checks

3.21 As stated previously, corridors are not required to comply with any specific criteria, but a space should be flagged where an operative temperature of 28°C occurs for more than 3% of total annual hours.

3.22 Results of the TM59 check against the three weather files stated in Section 2.26 and results can be found in Appendix G2. In summary:

- 2 out 5 corridors pass under DSY1_2020H50;
- All corridors fail under DSY2;

- All corridors fail under DSY3.

3.23 For the corridors failing to comply with TM59 check, there are number of strategies to mitigate the risk of overheating in corridors which includes:

- Insulated pipework, HIUs and storage vessels
- More efficient control strategies
- Reducing pipe runs, especially in enclosed spaces such as halls and corridors
- Ventilating any enclosed spaces where heat may build

3.24 The performance of the assessed non-domestic occupied spaces against the relevant criteria can be found in the sections below.

TM52 Kitchen, Living Rooms and Bedrooms Check

3.25 As stated previously, for the domestic kitchens, living rooms and bedroom to comply they are required to pass TM52 criterion 1.

DSY1 2020High50 Compliance

3.26 Results of the compliance check against the three weather files stated in Section 2.26 and the results can be found in Appendix C2. In summary:

- All assessed spaces pass criteria 1 under DSY1_2020H50.

DSY2 Compliance

3.27 Results of the compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix D2. In summary:

- All rooms pass criteria 1 under DSY 2.

3.28 Residential areas are only required to pass criteria 1 for TM52. All units pass the criterion for DSY2.

DSY3 Compliance

3.29 Results of the compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix E2. In summary:

- All rooms pass criteria 1 under DSY 3.

3.30 Residential areas are only required to pass criteria 1 for TM52. All units pass this criterion for DSY3.

3.31 During the analysis, it was observed that the Bedrooms which fails the TM59 bedroom compliance check due to high solar and internal gains, as indicated in the graph below from IES.

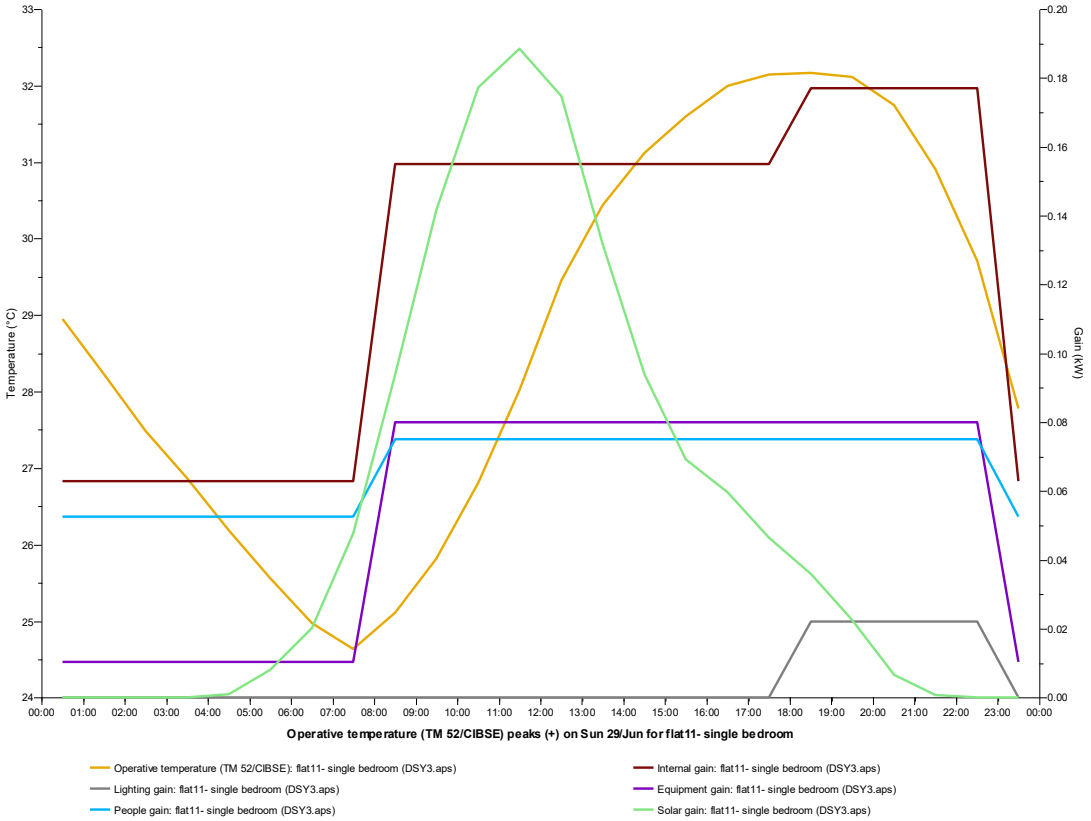

Figure 3.1: Flat 11 Single Bedroom- does not meet the TM59 compliance check due to excessive solar gain.

Results – Baseline+ Strategy 2 (Internal blinds):

3.32 During this scenario, the rooms failed the TM52 criterion 1 check and the TM59 bedroom compliance check for weather file DSY3 are assigned with Internal blinds to mitigate the risk of overheating.

3.33 The Internal blinds in IES have been carefully modelled to strategically minimize the risk of overheating in the habitual rooms. This can be observed in the images provided below.

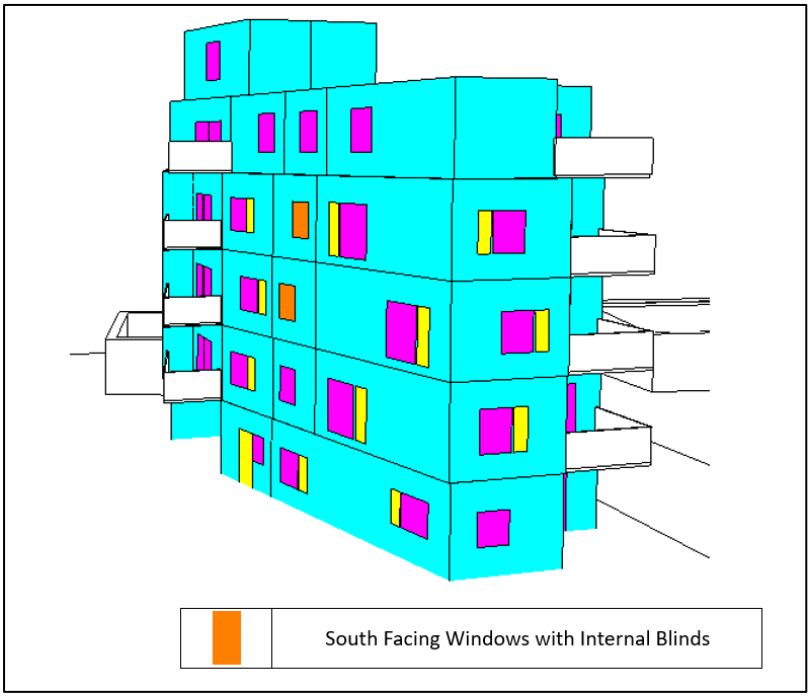

Figure 3.2: Windows with Internal Blinds

TM59 Bedroom Compliance

3.34 As stated previously, for bedrooms to comply with TM59 they should not exceed 26°C for more than 1% of annual occupied hours between 22:00 and 07:00.

3.35 Results of the TM59 compliance check against the three weather files stated in Section 2.26 and results can be found in Appendix F3. In summary:

- DSY3 – All bedrooms pass the overheating criterion

3.36 It is noted within the GLA Energy Assessment Guidance documents, that it is challenging to meet CIBSE compliance for DSY 2 & DSY3 weather files. Throughout the development passive measures have been implemented as far as possible. All the bedrooms assessed are running no risk of overheating in the context of TM52.

Heat Island Effect:

3.37 For the proposed development, it is essential to outline the stages of the cooling hierarchy to address Policy SI4 of the London Plan. The aim is to minimize adverse impacts on the urban heat island through thoughtful design, layout, orientation, materials, and the integration of green infrastructure. To achieve this objective, several strategies have been implemented for the proposed development:

Implemented Strategies:

- Planting Trees: Introducing a diverse range of trees strategically throughout the development enhances aesthetics, provides shade, mitigates heat, and contributes to overall well-being of occupants. Trees will also help in improving microclimate and act as a mitigating factor for climate change. Five new trees are proposed, although these will replace some existing trees.

- Green Roof: Implementing green roofs involves covering building surfaces with vegetation, regulating temperature, reducing energy consumption, and enhancing stormwater management. A green roof is proposed for the bin store.

- Solar Panels: While generating clean energy, solar panels can contribute to reducing heat absorption by converting sunlight into electricity. Solar panels are proposed to be part of the roof.

- Urban Green Spaces: Allocating ample green spaces within the development provides recreational areas and aids in temperature regulation by promoting natural ventilation and shading. The proposed development includes approximately 100m2 of planting beds.

- Shade Structures: Installing shade structures, such as pergolas or awnings, in public spaces and walkways helps create shaded areas, reducing direct exposure to sunlight and lowering ambient temperatures. The proposed development will have balconies that will create shade around the building and lower balconies.

- Energy-Efficient Design: Incorporating energy-efficient building design principles, such as proper insulation and ventilation, can contribute to reducing the need for excessive cooling measures and, consequently, lower the heat island effect. This has been incorporated into the proposed development.

3.38 These strategies collectively aim to mitigate climate change risks, help the scheme to achieve the carbon emissions reduction target and create a sustainable and environmentally friendly development while minimizing the impacts due to the urban heat island effect.

Summary

3.39 The improved building fabric for overheating modelling has been used after discussion with design team. To reduce the risk of overheating some houses were assigned with lower g value to meet all overheating criteria according TM59.

3.40 The addition of MVHR and EAHP units to each flat will ensure that all spaces are purged of hot air when needed and when windows are closed in moments of increased external noise.

3.41 As part of heating strategy all three-bedroom flats are based on individual air source heat pump and all one- or two-bedroom flats are based on exhaust air heat pump.

3.42 Following the cooling hierarchy outlined in the London Plan, the proposed development has implemented various strategies to minimize the impact on the urban heat island and mitigate the risks of climate change and reduce the schemes potential effect on climate change.

3.43 It is therefore concluded that the building will be able to cope with higher temperatures and will provide a comfortable indoor environment without significantly increasing the energy demand of the building.

4.0 DISCLAIMER

4.1 Create Consulting Engineers Ltd disclaims any responsibility to the Client, Mole Architects Ltd and others in respect of any matters outside the scope of this report.

4.2 This modelling activity and report has been written based on a number of assumptions which are detailed in the main body of the report and the associated appendices. This data is assumed to be correct at the time of writing and every effort has been made to ensure this is the case. If, however, any of this data is found to be incorrect, the results and recommendations contained therein may no longer hold true.

4.3 The copyright of this report is vested in Create Consulting Engineers Ltd and Mole Architects Ltd, The Client or its appointed representatives, may copy the report for purposes in connection with the development described herein. It shall not be copied by any other party or used for any other purposes without the written consent of Create Consulting Engineers Ltd or Mole Architects Ltd.

4.4 Create Consulting Engineers Ltd accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

APPENDICES

APPENDIX A

Ventilation			
Infiltration rate			
#	Space Type/Name:	assumed	
1	New build	0.15	ach

Auxilary Ventilation			
assumed			
Rate		Variation profile	Space
4	ach	on continously	Bedrooms- All flats
4	ach	on continously	All -Living / Kitchen

APPENDIX B

31 Daleham Gardens

Window Openings

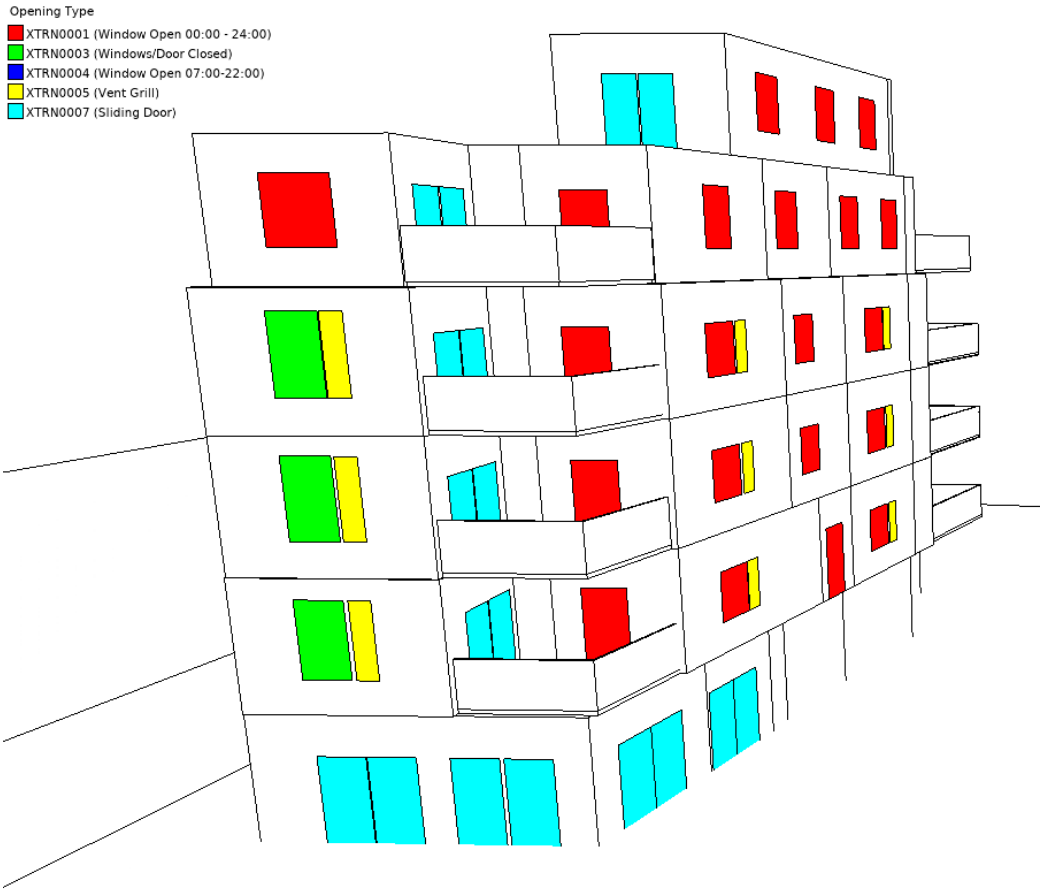

Image 1: Opening type –West Elevation

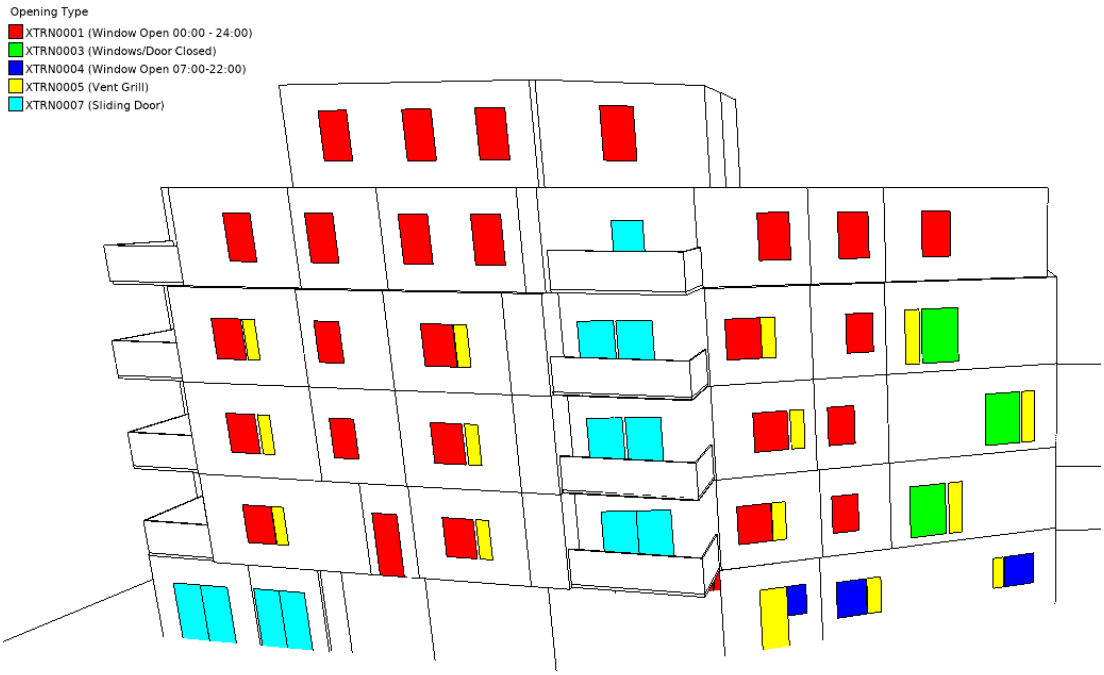

Image 2: Opening type –South Elevation

31 Daleham Gardens

Window Openings

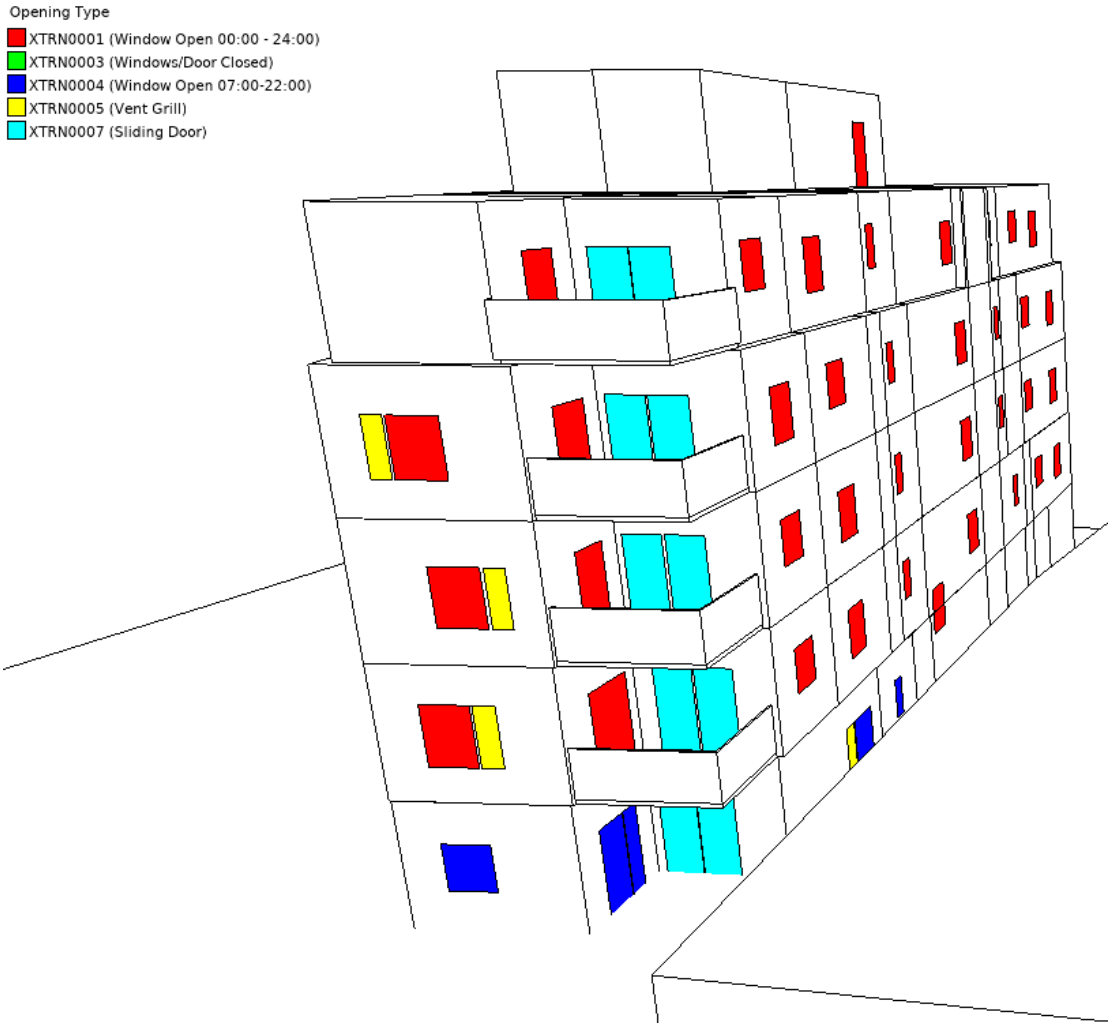

Image 3: Opening type –East Elevation

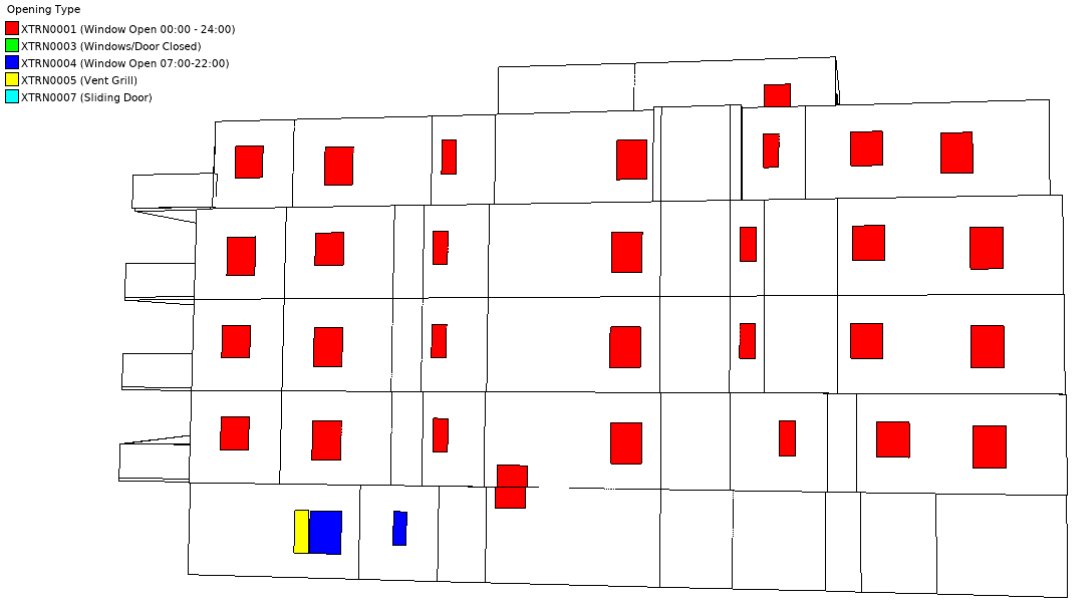

Image 4: Opening type –North Elevation

Operable Windows

Assumed/Info given for all Windows	
Ref. ID	XTRN0001
Description	Window Open 00:00 - 24:00
Exposure Type	05. 1:1 semi-exposed wall
Openable area	80
Max angle opening	20° for Top Hung for all windows
Proportions	0.5 =< Length/Height <1
Equivalent Orifice Area (% of Gross)	50.323
Crack Flow Co-efficient (l/(s·m·Pa^0.6))	0.15
Crack length	75% of opening parameter
Degree of Opening	Window Open 00:00 - 24:00
	All Windows operates on varitation profile between 00:00 to 24:00

Window Open 00:00 - 24:00		
DAY_0040	Modulating	
	Time	Value
1	00:00	(ta>21)&(ta>to)
2	24:00:00	(ta>21)&(ta>to)

Operable Windows

Assumed/Info given for all Windows	
Ref. ID	XTRN0007
Description	Sliding Door
Exposure Type	05. 1:1 semi-exposed wall
Openable area	80
Max angle opening	
Proportions	
Equivalent Orifice Area (% of Gross)	83.871
Crack Flow Co-efficient (l/(s·m·Pa^0.6))	0.15
Crack length	75% of opening parameter
Degree of Opening (Modulating Profile)	Window Open 00:00 - 24:00
	All Windows operates on varitation profile between 00:00 to 24:00

Window Open 00:00 - 24:00		
DAY_0040	Modulating	
	Time	Value
1	00:00	(ta>21)&(ta>to)
2	24:00:00	(ta>21)&(ta>to)

Operable Windows

Assumed/Info given for all Windows	
Ref. ID	XTRN0005
Description	Louver
Exposure Type	05. 1:1 semi-exposed wall
Openable area	50
Max angle opening	
Coeff. Discharge	0.4
Proportions	
Equivalent Orifice Area (% of Gross)	32.258
Crack Flow Co-efficient (l/(s·m·Pa^0.6))	0.15
Crack length	
Degree of Opening (Modulating Profile)	on continuously

Always on (100%)		
DAY_0040	Modulating	
	Time	Value
1	00:00	1
2	24:00:00	1

Operable Windows

Assumed/Info given for all Windows	
Ref. ID	XTRN0004
Description	Window Open 07:00-22:00
Exposure Type	05. 1:1 semi-exposed wall
Openable area	80
Max angle opening	20° for Top Hung for all windows
Proportions	0.5 =< Length/Height <1
Equivalent Orifice Area (% of Gross)	50.323
Crack Flow Co-efficient (l/(s·m·Pa^0.6))	0.15
Crack length	75% of opening parameter
Degree of Opening	Window Open 00:00 - 24:00
	All Windows operates on varitation profile between 00:70 to 22:00

Window Open 00:00 - 24:00		
DAY_0063	Modulating	
	Time	Value
1	0:00:00	0
2	07:00	0
3	7:00:00	(ta>21)&(ta>to)
4	22:00	(ta>21)&(ta>to)
5	22:00	0
6	24:00:00	0

APPENDIX C

Overall
Passed: 0 rooms:
Failed: 42 rooms:
Unoccupied: 90 rooms:

Data:
Building category: Category II (new builds.)
Weather file: London_LHR_DSY1_2020High50.epw
Days data= 365 01-Jan 31-Dec
Days (summer)= 153 01-May 30-Sep
Data OK? OK Full summer

Occupancy:
Note: This report assesses occupied periods only. Please be aware that TM52 should be conducted for occupied and/or "available hours". Use of educational NCM profiles may be seen as inappropriate due to prolonged unoccupied periods during summer months. See Section 6.1.2 (a) of TM52 for further information.

Passed: 0 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing

Failed: 42 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Flat 02- single Bedroom	FL000002	100	95.8	231	11	1 & 2 & 3
flat 2- kld	FL000003	100	96.9	139	11	1 & 2 & 3
flat 02- bedroom	FL000004	100	95.5	233	11	1 & 2 & 3
flat 05- bedroom	FL00000A	100	96.5	249	11	1 & 2 & 3
flat 05 - single bedroom	FL00000B	100	98.4	292	14	1 & 2 & 3
flat 05 - kld	FL00000C	100	99	166	13	1 & 2 & 3
Flat 06-kld	FL00000D	100	96.2	123	11	1 & 2 & 3
Flat 06-bedroom	FL00000E	100	96.9	244	12	1 & 2 & 3
flat08- single bedroom	FL000013	100	98.7	309	15	1 & 2 & 3
flat 08- bedroom	FL000014	100	97	258	12	1 & 2 & 3
flat 08-kld	FL000015	100	99.3	176	14	1 & 2 & 3
flat 12- bedroom	FL000020	100	98	298	15	1 & 2 & 3
flat 12- single bedroom	FL000021	100	95.8	225	11	1 & 2 & 3
Flat 13-Bedroom	FL000022	100	96.7	247	13	1 & 2 & 3
Flat 13-bedroom	FL000023	100	96.8	250	13	1 & 2 & 3
Flat 14-bedroom	FL000024	100	95.2	211	10	1 & 2 & 3
flat 14-single bedroom	FL000025	100	98.3	298	14	1 & 2 & 3
flat 14- kld	FL000027	100	99.1	177	14	1 & 2 & 3
Flat13 -bedroom	FL000029	100	96.6	241	11	1 & 2 & 3
Flat 01-kld	SP000004	100	95	118	12	1 & 2 & 3
flat 01- bedroom	SP000003	100	92.3	198	13	1 & 2 & 3
flat 05 - bedroom	SP00000A	100	97.8	272	13	1 & 2 & 3
Fkat 04 - kld	SP00000B	100	95.6	129	11	1 & 2 & 3
Flat 04- bedroom	SP00000E	100	93.5	206	10	1 & 2 & 3
Flat 3- kld	SP000017	100	94	108	9	1 & 2 & 3
Flat 03- bedroom	SP000018	100	93.6	197	10	1 & 2 & 3
Flat 06 -Single bedroom	SP00001A	100	96.6	240	12	1 & 2 & 3
Flat 08- bedroom	SP000021	100	98.5	292	13	1 & 2 & 3
flat 07- kld	SP000022	100	97.1	139	12	1 & 2 & 3
Flat 07- bedroom	SP000025	100	97	249	12	1 & 2 & 3
Flat 09-kld	FL000000	100	96.8	132	12	1 & 2 & 3
Flat 09-bedroom	FL000001	100	97.6	255	13	1 & 2 & 3
flat11- single bedroom	FL000005	100	98.7	311	15	1 & 2 & 3
flat 11- bedroom	FL000006	100	95.6	241	11	1 & 2 & 3
flat 11-kld	FL000007	100	99.3	177	14	1 & 2 & 3
Flat 09- single bedroom	SP000026	100	97.5	257	12	1 & 2 & 3
Flat 11- bedroom	SP00002D	100	98.3	284	13	1 & 2 & 3
flat 10- kld	SP00002F	100	97.1	140	12	1 & 2 & 3
Flat 10- bedroom	SP000031	100	97.3	254	12	1 & 2 & 3
Flat 12- kld	SP000034	100	97.2	136	12	1 & 2 & 3
Flat 13- kld	SP000039	100	98	146	13	1 & 2 & 3
flat 14- bedroom	SP00003A	100	95.4	233	10	1 & 2 & 3

Unoccupied: 90 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Electrical Room	LC000000	0	0	0	0	-
lift	LF000000	0	0	0	0	-
BAthroom	BT000000	0	0	0	0	-
ME	ME000000	0	0	0	0	-
ME	ME000001	0	0	0	0	-
bathroom	BT000001	0	0	0	0	-
ME	ME000004	0	0	0	0	-
hall	HL000003	0	0	0	0	-
cupboard	CP000003	0	0	0	0	-
Bathroom	BT000004	0	0	0	0	-
Ensuite	NS000000	0	0	0	0	-
Cupboard	RM000000	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Bathroom	RM000001		0	0	0	0 -
Room	RM000002		0	0	0	0 -
Cupboard	CP000004		0	0	0	0 -
lift	LF000002		0	0	0	0 -
Bathroom	BT000006		0	0	0	0 -
ME	ME000006		0	0	0	0 -
Cupboard	CP000006		0	0	0	0 -
Ensuite	NS000001		0	0	0	0 -
Lift	LF000004		0	0	0	0 -
Cupboard	CP00000A		0	0	0	0 -
Bathroom	BT00000A		0	0	0	0 -
ME	ME00000A		0	0	0	0 -
Hall	HL00000B		0	0	0	0 -
Bathroom	BT00000B		0	0	0	0 -
ME	ME00000B		0	0	0	0 -
hall	HL00000C		0	0	0	0 -
Cupboard	CP00000B		0	0	0	0 -
Bathroom	BT00000C		0	0	0	0 -
Stairs	CR000000		0	0	0	0 -
Stairs	CR000002		0	0	0	0 -
Stairs	CR000003		0	0	0	0 -
Stairs	CR000005		0	0	0	0 -
Corridor 3F	CR00000A		0	0	0	0 -
ME	SP000001		0	0	0	0 -
Energy centre	SP000002		0	0	0	0 -
wet room	SP000005		0	0	0	0 -
Cupboard	SP000006		0	0	0	0 -
Store	SP000007		0	0	0	0 -
Corridor LGF	SP000008		0	0	0	0 -
Cupboard	SP000000		0	0	0	0 -
LIFT	SP000009		0	0	0	0 -
ME	SP00000C		0	0	0	0 -
Cupboard	SP00000D		0	0	0	0 -
Hall	SP00000F		0	0	0	0 -
ME	SP000010		0	0	0	0 -
Bathroom	SP000011		0	0	0	0 -
Cupboard	SP000012		0	0	0	0 -
Bathroom	SP000014		0	0	0	0 -
Corridor GF	SP000013		0	0	0	0 -
Hall	SP000015		0	0	0	0 -
ME	SP000016		0	0	0	0 -
ME	SP000019		0	0	0	0 -
bathroom	SP00001B		0	0	0	0 -
ME	SP00001E		0	0	0	0 -
cupboard	SP00001C		0	0	0	0 -
ME	SP00001D		0	0	0	0 -
Hall	SP00001F		0	0	0	0 -
Corridor 1F	SP000020		0	0	0	0 -
Cupboard	SP000023		0	0	0	0 -
hall	SP000024		0	0	0	0 -
Hall	HL000000		0	0	0	0 -
Hall	HL000001		0	0	0	0 -
Cupboard	CP000000		0	0	0	0 -
Bathroom	BT000002		0	0	0	0 -
Room	RM000025		0	0	0	0 -
Cupboard	CP000001		0	0	0	0 -
lift	LF000001		0	0	0	0 -
Bathroom	BT000003		0	0	0	0 -
ME	ME000002		0	0	0	0 -
Cupboard	CP000002		0	0	0	0 -
Ensuite	NS000003		0	0	0	0 -
Stairs	ST000000		0	0	0	0 -
bathroom	SP000027		0	0	0	0 -
ME	SP000028		0	0	0	0 -
Cupboard	SP000029		0	0	0	0 -
Cupboard	SP00002A		0	0	0	0 -
hall	SP00002B		0	0	0	0 -
Corridor 2F	SP00002C		0	0	0	0 -
Cupboard	SP00002E		0	0	0	0 -
Hall	SP000030		0	0	0	0 -
Hall	HL000002		0	0	0	0 -
Hall	HL000004		0	0	0	0 -
hall	SP000032		0	0	0	0 -
ME	SP000035		0	0	0	0 -
hall	SP000036		0	0	0	0 -
Bathroom	SP000037		0	0	0	0 -
ME	SP000033		0	0	0	0 -
flat 13- hall	SP000038		0	0	0	0 -

Note: A TM 52 2013 analysis provides an assessment of comfort compliance based on bulk air modelling i.e. each space is considered idealised and the air in the space perfectly mixed. The assessment does not assess placement of space features e.g. windows & openings, airflow patterns or discomfort issues. The user should assess these design aspects outside of the TM52 analysis.

Overall
Passed: 42 rooms:
Failed: 0 rooms:
Unoccupied: 90 rooms:

Data:
Building category: Category II (new builds.)
Weather file: London_LHR_DSY1_2020High50.epw
Days data= 365 01-Jan 31-Dec
Days (summer)= 153 01-May 30-Sep
Data OK? OK Full summer

Occupancy:
Note: This report assesses occupied periods only. Please be aware that TM52 should be conducted for occupied and/or “available hours”. Use of educational NCM profiles may be seen as inappropriate due to prolonged unoccupied periods during summer months. See Section 6.1.2 (a) of TM52 for further information.

Passed: 42 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Flat 02- single Bedroom	FL000002	100	0.4	13	2	2
flat 2- kld	FL000003	100	0.6	9	2	2
flat 02- bedroom	FL000004	100	0.2	7	2	2
flat 05- bedroom	FL00000A	100	0.2	6	1	-
flat 05 - single bedroom	FL00000B	100	0.5	14	2	2
flat 05 - kld	FL00000C	100	1	19	3	2
Flat 06-kld	FL00000D	100	1	12	2	2
Flat 06-bedroom	FL00000E	100	0.5	13	2	2
flat08- single bedroom	FL000013	100	0.6	14	2	2
flat 08- bedroom	FL000014	100	0.2	6	1	-
flat 08-kld	FL000015	100	1	18	3	2
flat 12- bedroom	FL000020	100	0.5	10	2	2
flat 12- single bedroom	FL000021	100	0	0	0	-
Flat 13-Bedroom	FL000022	100	0.3	7	1	2
Flat 13-bedroom	FL000023	100	0.1	4	1	-
Flat 14-bedroom	FL000024	100	0	0	0	-
flat 14-single bedroom	FL000025	100	0.4	8	1	2
flat 14- kld	FL000027	100	0.8	10	2	2
Flat13 -bedroom	FL000029	100	0.2	6	1	-
Flat 01-kld	SP000004	100	1.4	15	2	2
flat 01- bedroom	SP000003	100	0.8	15	2	2
flat 05 - bedroom	SP00000A	100	0.4	12	2	2
Fkat 04 - kld	SP00000B	100	0.4	8	2	2
Flat 04- bedroom	SP00000E	100	0.3	11	2	2
Flat 3- kld	SP000017	100	0.6	8	2	2
Flat 03- bedroom	SP000018	100	0.2	7	2	2
Flat 06 -Single bedroom	SP00001A	100	0.4	9	2	2
Flat 08- bedroom	SP000021	100	0.5	13	2	2
flat 07- kld	SP000022	100	0.5	8	2	2
Flat 07- bedroom	SP000025	100	0.4	12	2	2
Flat 09-kld	FL000000	100	1	13	2	2
Flat 09-bedroom	FL000001	100	0.6	13	2	2
flat11- single bedroom	FL000005	100	0.6	15	2	2
flat 11- bedroom	FL000006	100	0.2	6	1	-
flat 11-kld	FL000007	100	1	19	3	2
Flat 09- single bedroom	SP000026	100	0.4	8	2	2
Flat 11- bedroom	SP00002D	100	0.4	13	2	2
flat 10- kld	SP00002F	100	0.5	8	2	2
Flat 10- bedroom	SP000031	100	0.4	12	2	2
Flat 12- kld	SP000034	100	0.9	10	2	2
Flat 13- kld	SP000039	100	1.4	14	2	2
flat 14- bedroom	SP00003A	100	0.1	4	1	-

Failed: 0 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing

Unoccupied: 90 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Electrical Room	LC000000	0	0	0	0	-
lift	LF000000	0	0	0	0	-
BAthroom	BT000000	0	0	0	0	-
ME	ME000000	0	0	0	0	-
ME	ME000001	0	0	0	0	-
bathroom	BT000001	0	0	0	0	-
ME	ME000004	0	0	0	0	-
hall	HL000003	0	0	0	0	-
cupboard	CP000003	0	0	0	0	-
Bathroom	BT000004	0	0	0	0	-
Ensuite	NS000000	0	0	0	0	-
Cupboard	RM000000	0	0	0	0	-
Bathroom	RM000001	0	0	0	0	-
Room	RM000002	0	0	0	0	-
Cupboard	CP000004	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
lift	LF000002	0	0	0	0	-
Bathroom	BT000006	0	0	0	0	-
ME	ME000006	0	0	0	0	-
Cupboard	CP000006	0	0	0	0	-
Ensuite	NS000001	0	0	0	0	-
Lift	LF000004	0	0	0	0	-
Cupboard	CP00000A	0	0	0	0	-
Bathroom	BT00000A	0	0	0	0	-
ME	ME00000A	0	0	0	0	-
Hall	HL00000B	0	0	0	0	-
Bathroom	BT00000B	0	0	0	0	-
ME	ME00000B	0	0	0	0	-
hall	HL00000C	0	0	0	0	-
Cupboard	CP00000B	0	0	0	0	-
Bathroom	BT00000C	0	0	0	0	-
Stairs	CR000000	0	0	0	0	-
Stairs	CR000002	0	0	0	0	-
Stairs	CR000003	0	0	0	0	-
Stairs	CR000005	0	0	0	0	-
Corridor 3F	CR00000A	0	0	0	0	-
ME	SP000001	0	0	0	0	-
Energy centre	SP000002	0	0	0	0	-
wet room	SP000005	0	0	0	0	-
Cupboard	SP000006	0	0	0	0	-
Store	SP000007	0	0	0	0	-
Corridor LGF	SP000008	0	0	0	0	-
Cupboard	SP000000	0	0	0	0	-
LIFT	SP000009	0	0	0	0	-
ME	SP00000C	0	0	0	0	-
Cupboard	SP00000D	0	0	0	0	-
Hall	SP00000F	0	0	0	0	-
ME	SP000010	0	0	0	0	-
Bathroom	SP000011	0	0	0	0	-
Cupboard	SP000012	0	0	0	0	-
Bathroom	SP000014	0	0	0	0	-
Corridor GF	SP000013	0	0	0	0	-
Hall	SP000015	0	0	0	0	-
ME	SP000016	0	0	0	0	-
ME	SP000019	0	0	0	0	-
bathroom	SP00001B	0	0	0	0	-
ME	SP00001E	0	0	0	0	-
cupboard	SP00001C	0	0	0	0	-
ME	SP00001D	0	0	0	0	-
Hall	SP00001F	0	0	0	0	-
Corridor 1F	SP000020	0	0	0	0	-
Cupboard	SP000023	0	0	0	0	-
hall	SP000024	0	0	0	0	-
Hall	HL000000	0	0	0	0	-
Hall	HL000001	0	0	0	0	-
Cupboard	CP000000	0	0	0	0	-
Bathroom	BT000002	0	0	0	0	-
Room	RM000025	0	0	0	0	-
Cupboard	CP000001	0	0	0	0	-
lift	LF000001	0	0	0	0	-
Bathroom	BT000003	0	0	0	0	-
ME	ME000002	0	0	0	0	-
Cupboard	CP000002	0	0	0	0	-
Ensuite	NS000003	0	0	0	0	-
Stairs	ST000000	0	0	0	0	-
bathroom	SP000027	0	0	0	0	-
ME	SP000028	0	0	0	0	-
Cupboard	SP000029	0	0	0	0	-
Cupboard	SP00002A	0	0	0	0	-
hall	SP00002B	0	0	0	0	-
Corridor 2F	SP00002C	0	0	0	0	-
Cupboard	SP00002E	0	0	0	0	-
Hall	SP000030	0	0	0	0	-
Hall	HL000002	0	0	0	0	-
Hall	HL000004	0	0	0	0	-
hall	SP000032	0	0	0	0	-
ME	SP000035	0	0	0	0	-
hall	SP000036	0	0	0	0	-
Bathroom	SP000037	0	0	0	0	-
ME	SP000033	0	0	0	0	-
flat 13- hall	SP000038	0	0	0	0	-

Note: A TM 52 2013 analysis provides an assessment of comfort compliance based on bulk air modelling i.e. each space is considered idealised and the air in the space perfectly mixed. The assessment does not assess placement of space features e.g. windows & openings, airflow patterns or discomfort issues. The user should assess these design aspects outside of the TM52 analysis.

APPENDIX D

Overall
Passed: 0 rooms:
Failed: 42 rooms:
Unoccupied: 90 rooms:

Data:
Building category: Category II (new builds.)
Weather file: London_LHR_DSY2.epw
Days data= 365 01-Jan 31-Dec
Days (summer)= 153 01-May 30-Sep
Data OK? OK Full summer

Occupancy:
Note: This report assesses occupied periods only. Please be aware that TM52 should be conducted for occupied and/or “available hours”. Use of educational NCM profiles may be seen as inappropriate due to prolonged unoccupied periods during summer months. See Section 6.1.2 (a) of TM52 for further information.

Passed: 0 rooms:
Room Name Room ID Occupied day: Criteria 1 (%Hrs Top-T Criteria 2 (Max. Dai Criteria 3 (Max. De Criteria failing

Failed: 42 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Flat 02- single Bedroom	FL000002	100	96.5	223	10	1 & 2 & 3
flat 2- kld	FL000003	100	98.9	129	10	1 & 2 & 3
flat 02- bedroom	FL000004	100	95.2	213	10	1 & 2 & 3
flat 05- bedroom	FL00000A	100	99.4	234	11	1 & 2 & 3
flat 05 - single bedroom	FL00000B	100	100	285	14	1 & 2 & 3
flat 05 - kld	FL00000C	100	100	163	13	1 & 2 & 3
Flat 06-kld	FL00000D	100	92.5	116	10	1 & 2 & 3
Flat 06-bedroom	FL00000E	100	97.4	244	12	1 & 2 & 3
flat08- single bedroom	FL000013	100	100	305	15	1 & 2 & 3
flat 08- bedroom	FL000014	100	100	253	11	1 & 2 & 3
flat 08-kld	FL000015	100	100	171	14	1 & 2 & 3
flat 12- bedroom	FL000020	100	100	284	15	1 & 2 & 3
flat 12- single bedroom	FL000021	100	95	228	11	1 & 2 & 3
Flat 13-Bedroom	FL000022	100	96.9	247	13	1 & 2 & 3
Flat 13-bedroom	FL000023	100	96.1	251	13	1 & 2 & 3
Flat 14-bedroom	FL000024	100	93.5	211	10	1 & 2 & 3
flat 14-single bedroom	FL000025	100	100	292	14	1 & 2 & 3
flat 14- kld	FL000027	100	100	168	13	1 & 2 & 3
Flat13 -bedroom	FL000029	100	96.8	242	11	1 & 2 & 3
Flat 01-kld	SP000004	100	84.3	117	12	1 & 2 & 3
flat 01- bedroom	SP000003	100	81.9	192	12	1 & 2 & 3
flat 05 - bedroom	SP00000A	100	100	265	13	1 & 2 & 3
Fkat 04 - kld	SP00000B	100	98.5	127	10	1 & 2 & 3
Flat 04- bedroom	SP00000E	100	89.2	203	10	1 & 2 & 3
Flat 3- kld	SP000017	100	83.6	102	9	1 & 2 & 3
Flat 03- bedroom	SP000018	100	84.1	194	10	1 & 2 & 3
Flat 06 -Single bedroom	SP00001A	100	98.2	241	12	1 & 2 & 3
Flat 08- bedroom	SP000021	100	100	286	13	1 & 2 & 3
flat 07- kld	SP000022	100	99.9	135	11	1 & 2 & 3
Flat 07- bedroom	SP000025	100	100	249	12	1 & 2 & 3
Flat 09-kld	FL000000	100	95.9	126	11	1 & 2 & 3
Flat 09-bedroom	FL000001	100	98.9	258	13	1 & 2 & 3
flat11- single bedroom	FL000005	100	100	306	15	1 & 2 & 3
flat 11- bedroom	FL000006	100	100	234	10	1 & 2 & 3
flat 11-kld	FL000007	100	100	174	14	1 & 2 & 3
Flat 09- single bedroom	SP000026	100	100	263	12	1 & 2 & 3
Flat 11- bedroom	SP00002D	100	100	284	13	1 & 2 & 3
flat 10- kld	SP00002F	100	99.9	137	11	1 & 2 & 3
Flat 10- bedroom	SP000031	100	100	259	12	1 & 2 & 3
Flat 12- kld	SP000034	100	94.9	132	11	1 & 2 & 3
Flat 13- kld	SP000039	100	98.6	147	13	1 & 2 & 3
flat 14- bedroom	SP00003A	100	98.1	222	10	1 & 2 & 3

Unoccupied: 90 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Electrical Room	LC000000	0	0	0	0	-
lift	LF000000	0	0	0	0	-
BAthroom	BT000000	0	0	0	0	-
ME	ME000000	0	0	0	0	-
ME	ME000001	0	0	0	0	-
bathroom	BT000001	0	0	0	0	-
ME	ME000004	0	0	0	0	-
hall	HL000003	0	0	0	0	-
cupboard	CP000003	0	0	0	0	-
Bathroom	BT000004	0	0	0	0	-
Ensuite	NS000000	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Cupboard	RM000000	0	0	0	0	-
Bathroom	RM000001	0	0	0	0	-
Room	RM000002	0	0	0	0	-
Cupboard	CP000004	0	0	0	0	-
lift	LF000002	0	0	0	0	-
Bathroom	BT000006	0	0	0	0	-
ME	ME000006	0	0	0	0	-
Cupboard	CP000006	0	0	0	0	-
Ensuite	NS000001	0	0	0	0	-
Lift	LF000004	0	0	0	0	-
Cupboard	CP00000A	0	0	0	0	-
Bathroom	BT00000A	0	0	0	0	-
ME	ME00000A	0	0	0	0	-
Hall	HL00000B	0	0	0	0	-
Bathroom	BT00000B	0	0	0	0	-
ME	ME00000B	0	0	0	0	-
hall	HL00000C	0	0	0	0	-
Cupboard	CP00000B	0	0	0	0	-
Bathroom	BT00000C	0	0	0	0	-
Stairs	CR000000	0	0	0	0	-
Stairs	CR000002	0	0	0	0	-
Stairs	CR000003	0	0	0	0	-
Stairs	CR000005	0	0	0	0	-
Corridor 3F	CR00000A	0	0	0	0	-
ME	SP000001	0	0	0	0	-
Energy centre	SP000002	0	0	0	0	-
wet room	SP000005	0	0	0	0	-
Cupboard	SP000006	0	0	0	0	-
Store	SP000007	0	0	0	0	-
Corridor LGF	SP000008	0	0	0	0	-
Cupboard	SP000000	0	0	0	0	-
LIFT	SP000009	0	0	0	0	-
ME	SP00000C	0	0	0	0	-
Cupboard	SP00000D	0	0	0	0	-
Hall	SP00000F	0	0	0	0	-
ME	SP000010	0	0	0	0	-
Bathroom	SP000011	0	0	0	0	-
Cupboard	SP000012	0	0	0	0	-
Bathroom	SP000014	0	0	0	0	-
Corridor GF	SP000013	0	0	0	0	-
Hall	SP000015	0	0	0	0	-
ME	SP000016	0	0	0	0	-
ME	SP000019	0	0	0	0	-
bathroom	SP00001B	0	0	0	0	-
ME	SP00001E	0	0	0	0	-
cupboard	SP00001C	0	0	0	0	-
ME	SP00001D	0	0	0	0	-
Hall	SP00001F	0	0	0	0	-
Corridor 1F	SP000020	0	0	0	0	-
Cupboard	SP000023	0	0	0	0	-
hall	SP000024	0	0	0	0	-
Hall	HL000000	0	0	0	0	-
Hall	HL000001	0	0	0	0	-
Cupboard	CP000000	0	0	0	0	-
Bathroom	BT000002	0	0	0	0	-
Room	RM000025	0	0	0	0	-
Cupboard	CP000001	0	0	0	0	-
lift	LF000001	0	0	0	0	-
Bathroom	BT000003	0	0	0	0	-
ME	ME000002	0	0	0	0	-
Cupboard	CP000002	0	0	0	0	-
Ensuite	NS000003	0	0	0	0	-
Stairs	ST000000	0	0	0	0	-
bathroom	SP000027	0	0	0	0	-
ME	SP000028	0	0	0	0	-
Cupboard	SP000029	0	0	0	0	-
Cupboard	SP00002A	0	0	0	0	-
hall	SP00002B	0	0	0	0	-
Corridor 2F	SP00002C	0	0	0	0	-
Cupboard	SP00002E	0	0	0	0	-
Hall	SP000030	0	0	0	0	-
Hall	HL000002	0	0	0	0	-
Hall	HL000004	0	0	0	0	-
hall	SP000032	0	0	0	0	-
ME	SP000035	0	0	0	0	-
hall	SP000036	0	0	0	0	-
Bathroom	SP000037	0	0	0	0	-
ME	SP000033	0	0	0	0	-
flat 13- hall	SP000038	0	0	0	0	-

Note: A TM 52 2013 analysis provides an assessment of comfort compliance based on bulk air modelling i.e. each space is considered idealised and the air in the space perfectly mixed. The assessment does not assess placement of space features e.g. windows & openings, airflow patterns or discomfort issues. The user should assess these design aspects outside of the TM52 analysis.

Overall
Passed: 38 rooms:
Failed: 4 rooms:
Unoccupied: 90 rooms:

Data:
Building category: Category II (new builds.)
Weather file: London_LHR_DSY2.epw
Days data= 365 01-Jan 31-Dec
Days (summer)= 153 01-May 30-Sep
Data OK? OK Full summer

Occupancy:
Note: This report assesses occupied periods only. Please be aware that TM52 should be conducted for occupied and/or "available hours". Use of educational NCM profiles may be seen as inappropriate due to prolonged unoccupied periods during summer months. See Section 6.1.2 (a) of TM52 for further information.

Passed: 38 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Flat 02- single Bedroom	FL000002	100	0.8	22	4	2
flat 2- kld	FL000003	100	1.1	18	3	2
flat 02- bedroom	FL000004	100	0.6	16	3	2
flat 05- bedroom	FL00000A	100	0.5	14	3	2
flat 05 - single bedroom	FL00000B	100	1	24	4	2
Flat 06-kld	FL00000D	100	1.5	18	3	2
Flat 06-bedroom	FL00000E	100	0.9	23	4	2
flat08- single bedroom	FL000013	100	1	25	4	2
flat 08- bedroom	FL000014	100	0.6	14	3	2
flat 12- bedroom	FL000020	100	0.8	17	3	2
flat 12- single bedroom	FL000021	100	0.4	11	2	2
Flat 13-Bedroom	FL000022	100	0.8	19	3	2
Flat 13-bedroom	FL000023	100	0.5	14	2	2
Flat 14-bedroom	FL000024	100	0.2	7	1	2
flat 14-single bedroom	FL000025	100	0.9	20	3	2
flat 14- kld	FL000027	100	1.5	19	3	2
Flat13 -bedroom	FL000029	100	0.7	16	3	2
Flat 01-kld	SP000004	100	2	24	4	2
flat 05 - bedroom	SP00000A	100	0.8	21	3	2
Fkat 04 - kld	SP00000B	100	1	16	3	2
Flat 04- bedroom	SP00000E	100	0.8	18	3	2
Flat 3- kld	SP000017	100	1.2	18	3	2
Flat 03- bedroom	SP000018	100	0.7	17	3	2
Flat 06 -Single bedroom	SP00001A	100	0.8	18	3	2
Flat 08- bedroom	SP000021	100	0.9	24	4	2
flat 07- kld	SP000022	100	1	16	3	2
Flat 07- bedroom	SP000025	100	0.8	21	3	2
Flat 09-kld	FL000000	100	1.6	19	4	2
Flat 09-bedroom	FL000001	100	1	25	4	2
flat11- single bedroom	FL000005	100	1	25	4	2
flat 11- bedroom	FL000006	100	0.6	14	3	2
Flat 09- single bedroom	SP000026	100	0.8	18	3	2
Flat 11- bedroom	SP00002D	100	0.8	22	4	2
flat 10- kld	SP00002F	100	1.1	17	3	2
Flat 10- bedroom	SP000031	100	0.8	22	4	2
Flat 12- kld	SP000034	100	1.6	20	3	2
Flat 13- kld	SP000039	100	2	23	4	2
flat 14- bedroom	SP00003A	100	0.4	11	2	2

Failed: 4 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
flat 05 - kld	FL00000C	100	2.3	28	5	2 & 3
flat 08-kld	FL000015	100	2.3	28	5	2 & 3
flat 01- bedroom	SP000003	100	1.3	27	5	2 & 3
flat 11-kld	FL000007	100	2.3	28	5	2 & 3

Unoccupied: 90 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Electrical Room	LC000000	0	0	0	0	-
lift	LF000000	0	0	0	0	-
BAthroom	BT000000	0	0	0	0	-
ME	ME000000	0	0	0	0	-
ME	ME000001	0	0	0	0	-
bathroom	BT000001	0	0	0	0	-
ME	ME000004	0	0	0	0	-
hall	HL000003	0	0	0	0	-
cupboard	CP000003	0	0	0	0	-
Bathroom	BT000004	0	0	0	0	-
Ensuite	NS000000	0	0	0	0	-
Cupboard	RM000000	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Bathroom	RM000001	0	0	0	0	-
Room	RM000002	0	0	0	0	-
Cupboard	CP000004	0	0	0	0	-
lift	LF000002	0	0	0	0	-
Bathroom	BT000006	0	0	0	0	-
ME	ME000006	0	0	0	0	-
Cupboard	CP000006	0	0	0	0	-
Ensuite	NS000001	0	0	0	0	-
Lift	LF000004	0	0	0	0	-
Cupboard	CP00000A	0	0	0	0	-
Bathroom	BT00000A	0	0	0	0	-
ME	ME00000A	0	0	0	0	-
Hall	HL00000B	0	0	0	0	-
Bathroom	BT00000B	0	0	0	0	-
ME	ME00000B	0	0	0	0	-
hall	HL00000C	0	0	0	0	-
Cupboard	CP00000B	0	0	0	0	-
Bathroom	BT00000C	0	0	0	0	-
Stairs	CR000000	0	0	0	0	-
Stairs	CR000002	0	0	0	0	-
Stairs	CR000003	0	0	0	0	-
Stairs	CR000005	0	0	0	0	-
Corridor 3F	CR00000A	0	0	0	0	-
ME	SP000001	0	0	0	0	-
Energy centre	SP000002	0	0	0	0	-
wet room	SP000005	0	0	0	0	-
Cupboard	SP000006	0	0	0	0	-
Store	SP000007	0	0	0	0	-
Corridor LGF	SP000008	0	0	0	0	-
Cupboard	SP000000	0	0	0	0	-
LIFT	SP000009	0	0	0	0	-
ME	SP00000C	0	0	0	0	-
Cupboard	SP00000D	0	0	0	0	-
Hall	SP00000F	0	0	0	0	-
ME	SP000010	0	0	0	0	-
Bathroom	SP000011	0	0	0	0	-
Cupboard	SP000012	0	0	0	0	-
Bathroom	SP000014	0	0	0	0	-
Corridor GF	SP000013	0	0	0	0	-
Hall	SP000015	0	0	0	0	-
ME	SP000016	0	0	0	0	-
ME	SP000019	0	0	0	0	-
bathroom	SP00001B	0	0	0	0	-
ME	SP00001E	0	0	0	0	-
cupboard	SP00001C	0	0	0	0	-
ME	SP00001D	0	0	0	0	-
Hall	SP00001F	0	0	0	0	-
Corridor 1F	SP000020	0	0	0	0	-
Cupboard	SP000023	0	0	0	0	-
hall	SP000024	0	0	0	0	-
Hall	HL000000	0	0	0	0	-
Hall	HL000001	0	0	0	0	-
Cupboard	CP000000	0	0	0	0	-
Bathroom	BT000002	0	0	0	0	-
Room	RM000025	0	0	0	0	-
Cupboard	CP000001	0	0	0	0	-
lift	LF000001	0	0	0	0	-
Bathroom	BT000003	0	0	0	0	-
ME	ME000002	0	0	0	0	-
Cupboard	CP000002	0	0	0	0	-
Ensuite	NS000003	0	0	0	0	-
Stairs	ST000000	0	0	0	0	-
bathroom	SP000027	0	0	0	0	-
ME	SP000028	0	0	0	0	-
Cupboard	SP000029	0	0	0	0	-
Cupboard	SP00002A	0	0	0	0	-
hall	SP00002B	0	0	0	0	-
Corridor 2F	SP00002C	0	0	0	0	-
Cupboard	SP00002E	0	0	0	0	-
Hall	SP000030	0	0	0	0	-
Hall	HL000002	0	0	0	0	-
Hall	HL000004	0	0	0	0	-
hall	SP000032	0	0	0	0	-
ME	SP000035	0	0	0	0	-
hall	SP000036	0	0	0	0	-
Bathroom	SP000037	0	0	0	0	-
ME	SP000033	0	0	0	0	-
flat 13- hall	SP000038	0	0	0	0	-

Note: A TM 52 2013 analysis provides an assessment of comfort compliance based on bulk air modelling i.e. each space is considered idealised and the air in the space perfectly mixed. The assessment does not assess placement of space features e.g. windows & openings, airflow patterns or discomfort issues. The user should assess these design aspects outside of the TM52 analysis.

APPENDIX E

Overall
Passed: 0 rooms:
Failed: 42 rooms:
Unoccupied: 90 rooms:

Data:
Building category: Category II (new builds.)
Weather file: London_LHR_DSY3.epw
Days data= 365 01-Jan 31-Dec
Days (summer)= 153 01-May 30-Sep
Data OK? OK Full summer

Occupancy:
Note: This report assesses occupied periods only. Please be aware that TM52 should be conducted for occupied and/or “available hours”. Use of educational NCM profiles may be seen as inappropriate due to prolonged unoccupied periods during summer months. See Section 6.1.2 (a) of TM52 for further information.

Passed: 0 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing

Failed: 42 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Flat 02- single Bedroom	FL000002	100	93.4	244	11	1 & 2 & 3
flat 2- kld	FL000003	100	95.1	142	11	1 & 2 & 3
flat 02- bedroom	FL000004	100	93.2	242	12	1 & 2 & 3
flat 05- bedroom	FL00000A	100	95.2	264	12	1 & 2 & 3
flat 05 - single bedroom	FL00000B	100	97.6	302	14	1 & 2 & 3
flat 05 - kld	FL00000C	100	98.3	174	14	1 & 2 & 3
Flat 06-kld	FL00000D	100	94.2	131	12	1 & 2 & 3
Flat 06-bedroom	FL00000E	100	95.2	254	12	1 & 2 & 3
flat08- single bedroom	FL000013	100	98.9	321	15	1 & 2 & 3
flat 08- bedroom	FL000014	100	95.9	277	12	1 & 2 & 3
flat 08-kld	FL000015	100	99	181	14	1 & 2 & 3
flat 12- bedroom	FL000020	100	97.8	309	15	1 & 2 & 3
flat 12- single bedroom	FL000021	100	93.7	239	11	1 & 2 & 3
Flat 13-Bedroom	FL000022	100	95	253	12	1 & 2 & 3
Flat 13-bedroom	FL000023	100	94.8	258	13	1 & 2 & 3
Flat 14-bedroom	FL000024	100	91.1	216	10	1 & 2 & 3
flat 14-single bedroom	FL000025	100	97.5	314	15	1 & 2 & 3
flat 14- kld	FL000027	100	98.9	183	15	1 & 2 & 3
Flat13 -bedroom	FL000029	100	94.8	255	12	1 & 2 & 3
Flat 01-kld	SP000004	100	83.1	123	12	1 & 2 & 3
flat 01- bedroom	SP000003	100	81.4	207	12	1 & 2 & 3
flat 05 - bedroom	SP00000A	100	96.4	278	13	1 & 2 & 3
Fkat 04 - kld	SP00000B	100	93.7	130	11	1 & 2 & 3
Flat 04- bedroom	SP00000E	100	89.7	212	10	1 & 2 & 3
Flat 3- kld	SP000017	100	86.5	114	10	1 & 2 & 3
Flat 03- bedroom	SP000018	100	87.8	212	10	1 & 2 & 3
Flat 06 -Single bedroom	SP00001A	100	94.8	254	12	1 & 2 & 3
Flat 08- bedroom	SP000021	100	98.1	298	14	1 & 2 & 3
flat 07- kld	SP000022	100	95.4	141	12	1 & 2 & 3
Flat 07- bedroom	SP000025	100	95.4	259	12	1 & 2 & 3
Flat 09-kld	FL000000	100	95.2	139	12	1 & 2 & 3
Flat 09-bedroom	FL000001	100	96.1	271	13	1 & 2 & 3
flat11- single bedroom	FL000005	100	98.7	323	15	1 & 2 & 3
flat 11- bedroom	FL000006	100	94.8	257	11	1 & 2 & 3
flat 11-kld	FL000007	100	99	187	15	1 & 2 & 3
Flat 09- single bedroom	SP000026	100	96.4	270	12	1 & 2 & 3
Flat 11- bedroom	SP00002D	100	97.9	295	13	1 & 2 & 3
flat 10- kld	SP00002F	100	95.6	141	12	1 & 2 & 3
Flat 10- bedroom	SP000031	100	96.1	267	12	1 & 2 & 3
Flat 12- kld	SP000034	100	95	145	12	1 & 2 & 3
Flat 13- kld	SP000039	100	96.3	152	13	1 & 2 & 3
flat 14- bedroom	SP00003A	100	94.1	252	11	1 & 2 & 3

Unoccupied: 90 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Electrical Room	LC000000	0	0	0	0	-
lift	LF000000	0	0	0	0	-
BAthroom	BT000000	0	0	0	0	-
ME	ME000000	0	0	0	0	-
ME	ME000001	0	0	0	0	-
bathroom	BT000001	0	0	0	0	-
ME	ME000004	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
hall	HL000003	0	0	0	0	-
cupboard	CP000003	0	0	0	0	-
Bathroom	BT000004	0	0	0	0	-
Ensuite	NS000000	0	0	0	0	-
Cupboard	RM000000	0	0	0	0	-
Bathroom	RM000001	0	0	0	0	-
Room	RM000002	0	0	0	0	-
Cupboard	CP000004	0	0	0	0	-
lift	LF000002	0	0	0	0	-
Bathroom	BT000006	0	0	0	0	-
ME	ME000006	0	0	0	0	-
Cupboard	CP000006	0	0	0	0	-
Ensuite	NS000001	0	0	0	0	-
Lift	LF000004	0	0	0	0	-
Cupboard	CP00000A	0	0	0	0	-
Bathroom	BT00000A	0	0	0	0	-
ME	ME00000A	0	0	0	0	-
Hall	HL00000B	0	0	0	0	-
Bathroom	BT00000B	0	0	0	0	-
ME	ME00000B	0	0	0	0	-
hall	HL00000C	0	0	0	0	-
Cupboard	CP00000B	0	0	0	0	-
Bathroom	BT00000C	0	0	0	0	-
Stairs	CR000000	0	0	0	0	-
Stairs	CR000002	0	0	0	0	-
Stairs	CR000003	0	0	0	0	-
Stairs	CR000005	0	0	0	0	-
Corridor 3F	CR00000A	0	0	0	0	-
ME	SP000001	0	0	0	0	-
Energy centre	SP000002	0	0	0	0	-
wet room	SP000005	0	0	0	0	-
Cupboard	SP000006	0	0	0	0	-
Store	SP000007	0	0	0	0	-
Corridor LGF	SP000008	0	0	0	0	-
Cupboard	SP000000	0	0	0	0	-
LIFT	SP000009	0	0	0	0	-
ME	SP00000C	0	0	0	0	-
Cupboard	SP00000D	0	0	0	0	-
Hall	SP00000F	0	0	0	0	-
ME	SP000010	0	0	0	0	-
Bathroom	SP000011	0	0	0	0	-
Cupboard	SP000012	0	0	0	0	-
Bathroom	SP000014	0	0	0	0	-
Corridor GF	SP000013	0	0	0	0	-
Hall	SP000015	0	0	0	0	-
ME	SP000016	0	0	0	0	-
ME	SP000019	0	0	0	0	-
bathroom	SP00001B	0	0	0	0	-
ME	SP00001E	0	0	0	0	-
cupboard	SP00001C	0	0	0	0	-
ME	SP00001D	0	0	0	0	-
Hall	SP00001F	0	0	0	0	-
Corridor 1F	SP000020	0	0	0	0	-
Cupboard	SP000023	0	0	0	0	-
hall	SP000024	0	0	0	0	-
Hall	HL000000	0	0	0	0	-
Hall	HL000001	0	0	0	0	-
Cupboard	CP000000	0	0	0	0	-
Bathroom	BT000002	0	0	0	0	-
Room	RM000025	0	0	0	0	-
Cupboard	CP000001	0	0	0	0	-
lift	LF000001	0	0	0	0	-
Bathroom	BT000003	0	0	0	0	-
ME	ME000002	0	0	0	0	-
Cupboard	CP000002	0	0	0	0	-
Ensuite	NS000003	0	0	0	0	-
Stairs	ST000000	0	0	0	0	-
bathroom	SP000027	0	0	0	0	-
ME	SP000028	0	0	0	0	-
Cupboard	SP000029	0	0	0	0	-
Cupboard	SP00002A	0	0	0	0	-
hall	SP00002B	0	0	0	0	-
Corridor 2F	SP00002C	0	0	0	0	-
Cupboard	SP00002E	0	0	0	0	-
Hall	SP000030	0	0	0	0	-
Hall	HL000002	0	0	0	0	-
Hall	HL000004	0	0	0	0	-
hall	SP000032	0	0	0	0	-
ME	SP000035	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
hall	SP000036	0	0	0	0	-
Bathroom	SP000037	0	0	0	0	-
ME	SP000033	0	0	0	0	-
flat 13- hall	SP000038	0	0	0	0	-

Note: A TM 52 2013 analysis provides an assessment of comfort compliance based on bulk air modelling i.e. each space is considered idealised and the air in the space perfectly mixed. The assessment does not assess placement of space features e.g. windows & openings, airflow patterns or discomfort issues. The user should assess these design aspects outside of the TM52 analysis.

Overall

Passed:	42 rooms:
Failed:	0 rooms:
Unoccupied:	90 rooms:

Data:

Building category:	Category II (new builds.)		
Weather file:	London_LHR_DSY3.epw		
Days data=	365	01-Jan	31-Dec
Days (summer)=	153	01-May	30-Sep
Data OK?	OK	Full summer	

Occupancy:

Note: This report assesses occupied periods only. Please be aware that TM52 should be conducted for occupied and/or "available hours".
Use of educational NCM profiles may be seen as inappropriate due to prolonged unoccupied periods during summer months.
See Section 6.1.2 (a) of TM52 for further information.

Passed: 42 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Flat 02- single Bedroom	FL000002	100	1	17	2	2
flat 2- kld	FL000003	100	1.4	13	2	2
flat 02- bedroom	FL000004	100	0.8	14	2	2
flat 05- bedroom	FL00000A	100	0.7	14	2	2
flat 05 - single bedroom	FL00000B	100	1.1	26	3	2
flat 05 - kld	FL00000C	100	2.9	24	3	2
Flat 06-kld	FL00000D	100	1.8	19	3	2
Flat 06-bedroom	FL00000E	100	1.1	24	3	2
flat08- single bedroom	FL000013	100	1.2	26	3	2
flat 08- bedroom	FL000014	100	0.7	15	2	2
flat 08-kld	FL000015	100	2.7	24	3	2
flat 12- bedroom	FL000020	100	1.3	20	3	2
flat 12- single bedroom	FL000021	100	0.5	7	1	2
Flat 13-Bedroom	FL000022	100	0.8	15	2	2
Flat 13-bedroom	FL000023	100	0.7	10	1	2
Flat 14-bedroom	FL000024	100	0.2	4	1	-
flat 14-single bedroom	FL000025	100	0.9	19	2	2
flat 14- kld	FL000027	100	1.8	19	3	2
Flat13 -bedroom	FL000029	100	0.8	14	2	2
Flat 01-kld	SP000004	100	2.6	24	3	2
flat 01- bedroom	SP000003	100	1.7	26	3	2
flat 05 - bedroom	SP00000A	100	1	19	2	2
Fkat 04 - kld	SP00000B	100	1.2	10	2	2
Flat 04- bedroom	SP00000E	100	0.9	17	2	2
Flat 3- kld	SP000017	100	1.5	17	3	2
Flat 03- bedroom	SP000018	100	0.8	16	2	2
Flat 06 -Single bedroom	SP00001A	100	0.9	17	2	2
Flat 08- bedroom	SP000021	100	1	22	3	2
flat 07- kld	SP000022	100	1.3	11	2	2
Flat 07- bedroom	SP000025	100	1	19	2	2
Flat 09-kld	FL000000	100	2	20	3	2
Flat 09-bedroom	FL000001	100	1.3	25	3	2
flat11- single bedroom	FL000005	100	1.3	26	3	2
flat 11- bedroom	FL000006	100	0.7	15	2	2
flat 11-kld	FL000007	100	2.7	24	3	2
Flat 09- single bedroom	SP000026	100	0.9	18	2	2
Flat 11- bedroom	SP00002D	100	1	20	3	2
flat 10- kld	SP00002F	100	1.4	14	3	2
Flat 10- bedroom	SP000031	100	1	19	2	2
Flat 12- kld	SP000034	100	1.9	19	3	2
Flat 13- kld	SP000039	100	2.6	23	3	2
flat 14- bedroom	SP00003A	100	0.6	9	2	2

Failed: 0 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing

Unoccupied: 90 rooms:

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Electrical Room	LC000000	0	0	0	0	-
lift	LF000000	0	0	0	0	-
BAthroom	BT000000	0	0	0	0	-
ME	ME000000	0	0	0	0	-
ME	ME000001	0	0	0	0	-
bathroom	BT000001	0	0	0	0	-
ME	ME000004	0	0	0	0	-
hall	HL000003	0	0	0	0	-
cupboard	CP000003	0	0	0	0	-
Bathroom	BT000004	0	0	0	0	-
Ensuite	NS000000	0	0	0	0	-
Cupboard	RM000000	0	0	0	0	-
Bathroom	RM000001	0	0	0	0	-

Room Name	Room ID	Occupied days (%)	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Room	RM000002	0	0	0	0	-
Cupboard	CP000004	0	0	0	0	-
lift	LF000002	0	0	0	0	-
Bathroom	BT000006	0	0	0	0	-
ME	ME000006	0	0	0	0	-
Cupboard	CP000006	0	0	0	0	-
Ensuite	NS000001	0	0	0	0	-
Lift	LF000004	0	0	0	0	-
Cupboard	CP00000A	0	0	0	0	-
Bathroom	BT00000A	0	0	0	0	-
ME	ME00000A	0	0	0	0	-
Hall	HL00000B	0	0	0	0	-
Bathroom	BT00000B	0	0	0	0	-
ME	ME00000B	0	0	0	0	-
hall	HL00000C	0	0	0	0	-
Cupboard	CP00000B	0	0	0	0	-
Bathroom	BT00000C	0	0	0	0	-
Stairs	CR000000	0	0	0	0	-
Stairs	CR000002	0	0	0	0	-
Stairs	CR000003	0	0	0	0	-
Stairs	CR000005	0	0	0	0	-
Corridor 3F	CR00000A	0	0	0	0	-
ME	SP000001	0	0	0	0	-
Energy centre	SP000002	0	0	0	0	-
wet room	SP000005	0	0	0	0	-
Cupboard	SP000006	0	0	0	0	-
Store	SP000007	0	0	0	0	-
Corridor LGF	SP000008	0	0	0	0	-
Cupboard	SP000000	0	0	0	0	-
LIFT	SP000009	0	0	0	0	-
ME	SP00000C	0	0	0	0	-
Cupboard	SP00000D	0	0	0	0	-
Hall	SP00000F	0	0	0	0	-
ME	SP000010	0	0	0	0	-
Bathroom	SP000011	0	0	0	0	-
Cupboard	SP000012	0	0	0	0	-
Bathroom	SP000014	0	0	0	0	-
Corridor GF	SP000013	0	0	0	0	-
Hall	SP000015	0	0	0	0	-
ME	SP000016	0	0	0	0	-
ME	SP000019	0	0	0	0	-
bathroom	SP00001B	0	0	0	0	-
ME	SP00001E	0	0	0	0	-
cupboard	SP00001C	0	0	0	0	-
ME	SP00001D	0	0	0	0	-
Hall	SP00001F	0	0	0	0	-
Corridor 1F	SP000020	0	0	0	0	-
Cupboard	SP000023	0	0	0	0	-
hall	SP000024	0	0	0	0	-
Hall	HL000000	0	0	0	0	-
Hall	HL000001	0	0	0	0	-
Cupboard	CP000000	0	0	0	0	-
Bathroom	BT000002	0	0	0	0	-
Room	RM000025	0	0	0	0	-
Cupboard	CP000001	0	0	0	0	-
lift	LF000001	0	0	0	0	-
Bathroom	BT000003	0	0	0	0	-
ME	ME000002	0	0	0	0	-
Cupboard	CP000002	0	0	0	0	-
Ensuite	NS000003	0	0	0	0	-
Stairs	ST000000	0	0	0	0	-
bathroom	SP000027	0	0	0	0	-
ME	SP000028	0	0	0	0	-
Cupboard	SP000029	0	0	0	0	-
Cupboard	SP00002A	0	0	0	0	-
hall	SP00002B	0	0	0	0	-
Corridor 2F	SP00002C	0	0	0	0	-
Cupboard	SP00002E	0	0	0	0	-
Hall	SP000030	0	0	0	0	-
Hall	HL000002	0	0	0	0	-
Hall	HL000004	0	0	0	0	-
hall	SP000032	0	0	0	0	-
ME	SP000035	0	0	0	0	-
hall	SP000036	0	0	0	0	-
Bathroom	SP000037	0	0	0	0	-
ME	SP000033	0	0	0	0	-
flat 13- hall	SP000038	0	0	0	0	-

Note:

A TM 52 2013 analysis provides an assessment of comfort compliance based on bulk air modelling i.e. each space is considered idealised and the air in the space perfectly mixed. The assessment does not assess placement of space features e.g. windows & openings, airflow patterns or discomfort issues. The user should assess these design aspects outside of the TM52 analysis.

APPENDIX F

Baseline						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range 22:00-24:00			Operative temperature (TM 52/CIBSE) (°C) - hours in range 00:00-07:00	
File	Location	> 26.00	File	Location	> 26.00	
S1-DSY1_2020H50.aps	Flat 02- single Bedroom	369	S1-DSY1_2020H50.aps	Flat 02- single Bedroom	1265	1634
S1-DSY1_2020H50.aps	flat 02- bedroom	364	S1-DSY1_2020H50.aps	flat 02- bedroom	1236	1600
S1-DSY1_2020H50.aps	flat 05- bedroom	375	S1-DSY1_2020H50.aps	flat 05- bedroom	1288	1663
S1-DSY1_2020H50.aps	flat 05 - single bedroom	405	S1-DSY1_2020H50.aps	flat 05 - single bedroom	1310	1715
S1-DSY1_2020H50.aps	Flat 06-bedroom	375	S1-DSY1_2020H50.aps	Flat 06-bedroom	1286	1661
S1-DSY1_2020H50.aps	flat08- single bedroom	439	S1-DSY1_2020H50.aps	flat08- single bedroom	1353	1792
S1-DSY1_2020H50.aps	flat 08- bedroom	382	S1-DSY1_2020H50.aps	flat 08- bedroom	1302	1684
S1-DSY1_2020H50.aps	flat 12- bedroom	376	S1-DSY1_2020H50.aps	flat 12- bedroom	1297	1673
S1-DSY1_2020H50.aps	flat 12- single bedroom	374	S1-DSY1_2020H50.aps	flat 12- single bedroom	1281	1655
S1-DSY1_2020H50.aps	Flat 13-Bedroom	375	S1-DSY1_2020H50.aps	Flat 13-Bedroom	1289	1664
S1-DSY1_2020H50.aps	Flat 13-bedroom	369	S1-DSY1_2020H50.aps	Flat 13-bedroom	1270	1639
S1-DSY1_2020H50.aps	Flat 14-bedroom	372	S1-DSY1_2020H50.aps	Flat 14-bedroom	1279	1651
S1-DSY1_2020H50.aps	flat 14-single bedroom	388	S1-DSY1_2020H50.aps	flat 14-single bedroom	1308	1696
S1-DSY1_2020H50.aps	Flat13 -bedroom	373	S1-DSY1_2020H50.aps	Flat13 -bedroom	1277	1650
S1-DSY1_2020H50.aps	flat 01- bedroom	335	S1-DSY1_2020H50.aps	flat 01- bedroom	1046	1381
S1-DSY1_2020H50.aps	flat 05 - bedroom	393	S1-DSY1_2020H50.aps	flat 05 - bedroom	1322	1715
S1-DSY1_2020H50.aps	Flat 04- bedroom	369	S1-DSY1_2020H50.aps	Flat 04- bedroom	1254	1623
S1-DSY1_2020H50.aps	Flat 03- bedroom	360	S1-DSY1_2020H50.aps	Flat 03- bedroom	1195	1555
S1-DSY1_2020H50.aps	Flat 06 -Single bedroom	378	S1-DSY1_2020H50.aps	Flat 06 -Single bedroom	1295	1673
S1-DSY1_2020H50.aps	Flat 08- bedroom	430	S1-DSY1_2020H50.aps	Flat 08- bedroom	1370	1800
S1-DSY1_2020H50.aps	Flat 07- bedroom	390	S1-DSY1_2020H50.aps	Flat 07- bedroom	1319	1709
S1-DSY1_2020H50.aps	Flat 09-bedroom	378	S1-DSY1_2020H50.aps	Flat 09-bedroom	1293	1671
S1-DSY1_2020H50.aps	flat11- single bedroom	436	S1-DSY1_2020H50.aps	flat11- single bedroom	1346	1782
S1-DSY1_2020H50.aps	flat 11- bedroom	376	S1-DSY1_2020H50.aps	flat 11- bedroom	1298	1674
S1-DSY1_2020H50.aps	Flat 09- single bedroom	391	S1-DSY1_2020H50.aps	Flat 09- single bedroom	1318	1709
S1-DSY1_2020H50.aps	Flat 11- bedroom	421	S1-DSY1_2020H50.aps	Flat 11- bedroom	1355	1776
S1-DSY1_2020H50.aps	Flat 10- bedroom	395	S1-DSY1_2020H50.aps	Flat 10- bedroom	1329	1724
S1-DSY1_2020H50.aps	flat 14- bedroom	369	S1-DSY1_2020H50.aps	flat 14- bedroom	1272	1641
S1-DSY1_2020H50.aps	Total hours	10757	S1-DSY1_2020H50.aps	Total hours	36053	

Baseline						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range			Operative temperature (TM 52/CIBSE) (°C) - hours in range	
File	Location	> 26.00	File	Location	> 26.00	
S1-DSY2.aps	Flat 02- single Bedroom	367	S1-DSY2.aps	Flat 02- single Bedroo	1173	1540
S1-DSY2.aps	flat 02- bedroom	345	S1-DSY2.aps	flat 02- bedroom	1104	1449
S1-DSY2.aps	flat 05- bedroom	381	S1-DSY2.aps	flat 05- bedroom	1280	1661
S1-DSY2.aps	flat 05 - single bedroom	409	S1-DSY2.aps	flat 05 - single bedroo	1337	1746
S1-DSY2.aps	Flat 06-bedroom	383	S1-DSY2.aps	Flat 06-bedroom	1251	1634
S1-DSY2.aps	flat08- single bedroom	444	S1-DSY2.aps	flat08- single bedroom	1409	1853
S1-DSY2.aps	flat 08- bedroom	386	S1-DSY2.aps	flat 08- bedroom	1323	1709
S1-DSY2.aps	flat 12- bedroom	402	S1-DSY2.aps	flat 12- bedroom	1338	1740
S1-DSY2.aps	flat 12- single bedroom	384	S1-DSY2.aps	flat 12- single bedroo	1189	1573
S1-DSY2.aps	Flat 13-Bedroom	394	S1-DSY2.aps	Flat 13-Bedroom	1261	1655
S1-DSY2.aps	Flat 13-bedroom	383	S1-DSY2.aps	Flat 13-bedroom	1205	1588
S1-DSY2.aps	Flat 14-bedroom	365	S1-DSY2.aps	Flat 14-bedroom	1130	1495
S1-DSY2.aps	flat 14-single bedroom	405	S1-DSY2.aps	flat 14-single bedroom	1329	1734
S1-DSY2.aps	Flat13 -bedroom	385	S1-DSY2.aps	Flat13 -bedroom	1244	1629
S1-DSY2.aps	flat 01- bedroom	290	S1-DSY2.aps	flat 01- bedroom	919	1209
S1-DSY2.aps	flat 05 - bedroom	405	S1-DSY2.aps	flat 05 - bedroom	1343	1748
S1-DSY2.aps	Flat 04- bedroom	348	S1-DSY2.aps	Flat 04- bedroom	1059	1407
S1-DSY2.aps	Flat 03- bedroom	309	S1-DSY2.aps	Flat 03- bedroom	1006	1315
S1-DSY2.aps	Flat 06 -Single bedroom	391	S1-DSY2.aps	Flat 06 -Single bedroo	1309	1700
S1-DSY2.aps	Flat 08- bedroom	446	S1-DSY2.aps	Flat 08- bedroom	1424	1870
S1-DSY2.aps	Flat 07- bedroom	410	S1-DSY2.aps	Flat 07- bedroom	1352	1762
S1-DSY2.aps	Flat 09-bedroom	390	S1-DSY2.aps	Flat 09-bedroom	1324	1714
S1-DSY2.aps	flat11- single bedroom	445	S1-DSY2.aps	flat11- single bedroom	1408	1853
S1-DSY2.aps	flat 11- bedroom	380	S1-DSY2.aps	flat 11- bedroom	1286	1666
S1-DSY2.aps	Flat 09- single bedroom	418	S1-DSY2.aps	Flat 09- single bedroo	1356	1774
S1-DSY2.aps	Flat 11- bedroom	442	S1-DSY2.aps	Flat 11- bedroom	1425	1867
S1-DSY2.aps	Flat 10- bedroom	427	S1-DSY2.aps	Flat 10- bedroom	1376	1803
S1-DSY2.aps	flat 14- bedroom	366	S1-DSY2.aps	flat 14- bedroom	1190	1556
S1-DSY2.aps	Total hours	10900	S1-DSY2.aps	Total hours	35350	

Baseline						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range 22:00-24:00			Operative temperature (TM 52/CIBSE) (°C) - hours in range 00:00-07:00	
File	Location	> 26.00	File	Location	> 26.00	
S1-DSY3.aps	Flat 02- single Bedroom	333	S1-DSY3.aps	Flat 02- single Bedroom	1126	1459
S1-DSY3.aps	flat 02- bedroom	323	S1-DSY3.aps	flat 02- bedroom	1109	1432
S1-DSY3.aps	flat 05- bedroom	340	S1-DSY3.aps	flat 05- bedroom	1154	1494
S1-DSY3.aps	flat 05 - single bedroom	376	S1-DSY3.aps	flat 05 - single bedroom	1192	1568
S1-DSY3.aps	Flat 06-bedroom	337	S1-DSY3.aps	Flat 06-bedroom	1134	1471
S1-DSY3.aps	flat08- single bedroom	388	S1-DSY3.aps	flat08- single bedroom	1258	1646
S1-DSY3.aps	flat 08- bedroom	351	S1-DSY3.aps	flat 08- bedroom	1177	1528
S1-DSY3.aps	flat 12- bedroom	363	S1-DSY3.aps	flat 12- bedroom	1175	1538
S1-DSY3.aps	flat 12- single bedroom	331	S1-DSY3.aps	flat 12- single bedroom	1122	1453
S1-DSY3.aps	Flat 13-Bedroom	333	S1-DSY3.aps	Flat 13-Bedroom	1128	1461
S1-DSY3.aps	Flat 13-bedroom	326	S1-DSY3.aps	Flat 13-bedroom	1117	1443
S1-DSY3.aps	Flat 14-bedroom	330	S1-DSY3.aps	Flat 14-bedroom	1128	1458
S1-DSY3.aps	flat 14-single bedroom	361	S1-DSY3.aps	flat 14-single bedroom	1180	1541
S1-DSY3.aps	Flat13 -bedroom	331	S1-DSY3.aps	Flat13 -bedroom	1121	1452
S1-DSY3.aps	flat 01- bedroom	305	S1-DSY3.aps	flat 01- bedroom	901	1206
S1-DSY3.aps	flat 05 - bedroom	366	S1-DSY3.aps	flat 05 - bedroom	1194	1560
S1-DSY3.aps	Flat 04- bedroom	330	S1-DSY3.aps	Flat 04- bedroom	1106	1436
S1-DSY3.aps	Flat 03- bedroom	318	S1-DSY3.aps	Flat 03- bedroom	1068	1386
S1-DSY3.aps	Flat 06 -Single bedroom	339	S1-DSY3.aps	Flat 06 -Single bedroom	1157	1496
S1-DSY3.aps	Flat 08- bedroom	387	S1-DSY3.aps	Flat 08- bedroom	1260	1647
S1-DSY3.aps	Flat 07- bedroom	354	S1-DSY3.aps	Flat 07- bedroom	1177	1531
S1-DSY3.aps	Flat 09-bedroom	348	S1-DSY3.aps	Flat 09-bedroom	1147	1495
S1-DSY3.aps	flat11- single bedroom	386	S1-DSY3.aps	flat11- single bedroom	1245	1631
S1-DSY3.aps	flat 11- bedroom	343	S1-DSY3.aps	flat 11- bedroom	1176	1519
S1-DSY3.aps	Flat 09- single bedroom	364	S1-DSY3.aps	Flat 09- single bedroom	1179	1543
S1-DSY3.aps	Flat 11- bedroom	383	S1-DSY3.aps	Flat 11- bedroom	1237	1620
S1-DSY3.aps	Flat 10- bedroom	368	S1-DSY3.aps	Flat 10- bedroom	1188	1556
S1-DSY3.aps	flat 14- bedroom	332	S1-DSY3.aps	flat 14- bedroom	1130	1462
S1-DSY3.aps	Total hours	9746	S1-DSY3.aps	Total hours	32286	

Baseline+ Strategy 1						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range 22:00-24:00			Operative temperature (TM 52/CIBSE) (°C) - hours in range 00:00-07:00	
File	Location	> 26.00	File	Location	> 26.00	
DSY1.aps	Flat 02- single Bedroom	11	DSY1.aps	Flat 02- single Bedroom	4	15
DSY1.aps	flat 02- bedroom	8	DSY1.aps	flat 02- bedroom	3	11
DSY1.aps	flat 05- bedroom	12	DSY1.aps	flat 05- bedroom	4	16
DSY1.aps	flat 05 - single bedroom	14	DSY1.aps	flat 05 - single bedroom	4	18
DSY1.aps	Flat 06-bedroom	10	DSY1.aps	Flat 06-bedroom	4	14
DSY1.aps	flat08- single bedroom	16	DSY1.aps	flat08- single bedroom	6	22
DSY1.aps	flat 08- bedroom	13	DSY1.aps	flat 08- bedroom	4	17
DSY1.aps	flat 12- bedroom	10	DSY1.aps	flat 12- bedroom	4	14
DSY1.aps	flat 12- single bedroom	9	DSY1.aps	flat 12- single bedroom	4	13
DSY1.aps	Flat 13-Bedroom	10	DSY1.aps	Flat 13-Bedroom	4	14
DSY1.aps	Flat 13-bedroom	9	DSY1.aps	Flat 13-bedroom	3	12
DSY1.aps	Flat 14-bedroom	10	DSY1.aps	Flat 14-bedroom	5	15
DSY1.aps	flat 14-single bedroom	12	DSY1.aps	flat 14-single bedroom	4	16
DSY1.aps	Flat13 -bedroom	13	DSY1.aps	Flat13 -bedroom	4	17
DSY1.aps	flat 01- bedroom	10	DSY1.aps	flat 01- bedroom	3	13
DSY1.aps	flat 05 - bedroom	13	DSY1.aps	flat 05 - bedroom	4	17
DSY1.aps	Flat 04- bedroom	11	DSY1.aps	Flat 04- bedroom	4	15
DSY1.aps	Flat 03- bedroom	8	DSY1.aps	Flat 03- bedroom	4	12
DSY1.aps	Flat 06 -Single bedroom	12	DSY1.aps	Flat 06 -Single bedroom	4	16
DSY1.aps	Flat 08- bedroom	13	DSY1.aps	Flat 08- bedroom	4	17
DSY1.aps	Flat 07- bedroom	12	DSY1.aps	Flat 07- bedroom	4	16
DSY1.aps	Flat 09-bedroom	10	DSY1.aps	Flat 09-bedroom	4	14
DSY1.aps	flat11- single bedroom	16	DSY1.aps	flat11- single bedroom	7	23
DSY1.aps	flat 11- bedroom	13	DSY1.aps	flat 11- bedroom	7	20
DSY1.aps	Flat 09- single bedroom	13	DSY1.aps	Flat 09- single bedroom	5	18
DSY1.aps	Flat 11- bedroom	13	DSY1.aps	Flat 11- bedroom	4	17
DSY1.aps	Flat 10- bedroom	12	DSY1.aps	Flat 10- bedroom	4	16
DSY1.aps	flat 14- bedroom	10	DSY1.aps	flat 14- bedroom	4	14
DSY1.aps	Total hours	323	DSY1.aps	Total hours	119	

Baseline+ Strategy 1						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range			Operative temperature (TM 52/CIBSE) (°C) - hours in range	
File	Location	> 26.00	File	Location	> 26.00	
DSY2.aps	Flat 02- single Bedroom	14	DSY2.aps	Flat 02- single Bedroo	4	18
DSY2.aps	flat 02- bedroom	10	DSY2.aps	flat 02- bedroom	2	12
DSY2.aps	flat 05- bedroom	15	DSY2.aps	flat 05- bedroom	4	19
DSY2.aps	flat 05 - single bedroom	15	DSY2.aps	flat 05 - single bedroo	5	20
DSY2.aps	Flat 06-bedroom	12	DSY2.aps	Flat 06-bedroom	2	14
DSY2.aps	flat08- single bedroom	15	DSY2.aps	flat08- single bedroom	5	20
DSY2.aps	flat 08- bedroom	15	DSY2.aps	flat 08- bedroom	4	19
DSY2.aps	flat 12- bedroom	12	DSY2.aps	flat 12- bedroom	2	14
DSY2.aps	flat 12- single bedroom	14	DSY2.aps	flat 12- single bedroo	4	18
DSY2.aps	Flat 13-Bedroom	13	DSY2.aps	Flat 13-Bedroom	4	17
DSY2.aps	Flat 13-bedroom	10	DSY2.aps	Flat 13-bedroom	2	12
DSY2.aps	Flat 14-bedroom	14	DSY2.aps	Flat 14-bedroom	4	18
DSY2.aps	flat 14-single bedroom	15	DSY2.aps	flat 14-single bedroom	4	19
DSY2.aps	Flat13 -bedroom	15	DSY2.aps	Flat13 -bedroom	4	19
DSY2.aps	flat 01- bedroom	11	DSY2.aps	flat 01- bedroom	2	13
DSY2.aps	flat 05 - bedroom	15	DSY2.aps	flat 05 - bedroom	4	19
DSY2.aps	Flat 04- bedroom	14	DSY2.aps	Flat 04- bedroom	4	18
DSY2.aps	Flat 03- bedroom	12	DSY2.aps	Flat 03- bedroom	2	14
DSY2.aps	Flat 06 -Single bedroom	15	DSY2.aps	Flat 06 -Single bedroo	4	19
DSY2.aps	Flat 08- bedroom	15	DSY2.aps	Flat 08- bedroom	5	20
DSY2.aps	Flat 07- bedroom	15	DSY2.aps	Flat 07- bedroom	4	19
DSY2.aps	Flat 09-bedroom	12	DSY2.aps	Flat 09-bedroom	2	14
DSY2.aps	flat11- single bedroom	15	DSY2.aps	flat11- single bedroom	5	20
DSY2.aps	flat 11- bedroom	15	DSY2.aps	flat 11- bedroom	6	21
DSY2.aps	Flat 09- single bedroom	15	DSY2.aps	Flat 09- single bedroo	5	20
DSY2.aps	Flat 11- bedroom	15	DSY2.aps	Flat 11- bedroom	5	20
DSY2.aps	Flat 10- bedroom	15	DSY2.aps	Flat 10- bedroom	5	20
DSY2.aps	flat 14- bedroom	14	DSY2.aps	flat 14- bedroom	4	18
DSY2.aps	Total hours	387	DSY2.aps	Total hours	107	

Baseline+ Strategy 1						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range 22:00-24:00			Operative temperature (TM 52/CIBSE) (°C) - hours in range 00:00-07:00	
File	Location	> 26.00	File	Location	> 26.00	
DSY3.aps	Flat 02- single Bedroom	16	DSY3.aps	Flat 02- single Bedroom	12	28
DSY3.aps	flat 02- bedroom	14	DSY3.aps	flat 02- bedroom	5	19
DSY3.aps	flat 05- bedroom	18	DSY3.aps	flat 05- bedroom	13	31
DSY3.aps	flat 05 - single bedroom	18	DSY3.aps	flat 05 - single bedroom	14	32
DSY3.aps	Flat 06-bedroom	15	DSY3.aps	Flat 06-bedroom	6	21
DSY3.aps	flat08- single bedroom	19	DSY3.aps	flat08- single bedroom	15	34
DSY3.aps	flat 08- bedroom	18	DSY3.aps	flat 08- bedroom	14	32
DSY3.aps	flat 12- bedroom	15	DSY3.aps	flat 12- bedroom	7	22
DSY3.aps	flat 12- single bedroom	16	DSY3.aps	flat 12- single bedroom	10	26
DSY3.aps	Flat 13-Bedroom	16	DSY3.aps	Flat 13-Bedroom	9	25
DSY3.aps	Flat 13-bedroom	14	DSY3.aps	Flat 13-bedroom	6	20
DSY3.aps	Flat 14-bedroom	17	DSY3.aps	Flat 14-bedroom	12	29
DSY3.aps	flat 14-single bedroom	17	DSY3.aps	flat 14-single bedroom	12	29
DSY3.aps	Flat13 -bedroom	18	DSY3.aps	Flat13 -bedroom	14	32
DSY3.aps	flat 01- bedroom	15	DSY3.aps	flat 01- bedroom	5	20
DSY3.aps	flat 05 - bedroom	17	DSY3.aps	flat 05 - bedroom	13	30
DSY3.aps	Flat 04- bedroom	17	DSY3.aps	Flat 04- bedroom	11	28
DSY3.aps	Flat 03- bedroom	14	DSY3.aps	Flat 03- bedroom	6	20
DSY3.aps	Flat 06 -Single bedroom	18	DSY3.aps	Flat 06 -Single bedroom	12	30
DSY3.aps	Flat 08- bedroom	18	DSY3.aps	Flat 08- bedroom	14	32
DSY3.aps	Flat 07- bedroom	17	DSY3.aps	Flat 07- bedroom	12	29
DSY3.aps	Flat 09-bedroom	15	DSY3.aps	Flat 09-bedroom	7	22
DSY3.aps	flat11- single bedroom	19	DSY3.aps	flat11- single bedroom	15	34
DSY3.aps	flat 11- bedroom	20	DSY3.aps	flat 11- bedroom	15	35
DSY3.aps	Flat 09- single bedroom	18	DSY3.aps	Flat 09- single bedroom	14	32
DSY3.aps	Flat 11- bedroom	18	DSY3.aps	Flat 11- bedroom	14	32
DSY3.aps	Flat 10- bedroom	17	DSY3.aps	Flat 10- bedroom	13	30
DSY3.aps	flat 14- bedroom	17	DSY3.aps	flat 14- bedroom	12	29
DSY3.aps	Total hours	471	DSY3.aps	Total hours	312	
					Bedrooms Passing:	89%
					Bedrooms Failing:	11%

Baseline+ Strategy 2						
		Operative temperature (TM 52/CIBSE) (°C) - hours in range 22:00-24:00			Operative temperature (TM 52/CIBSE) (°C) - hours in range 00:00-07:00	
File	Location	> 26.00	File	Location	> 26.00	
DSY3.aps	Flat 02- single Bedroom	16	DSY3.aps	Flat 02- single Bedroom	12	28
DSY3.aps	flat 02- bedroom	14	DSY3.aps	flat 02- bedroom	5	19
DSY3.aps	flat 05- bedroom	18	DSY3.aps	flat 05- bedroom	13	31
DSY3.aps	flat 05 - single bedroom	18	DSY3.aps	flat 05 - single bedroom	14	32
DSY3.aps	Flat 06-bedroom	15	DSY3.aps	Flat 06-bedroom	6	21
DSY3.aps	flat08- single bedroom	18	DSY3.aps	flat08- single bedroom	14	32
DSY3.aps	flat 08- bedroom	18	DSY3.aps	flat 08- bedroom	14	32
DSY3.aps	flat 12- bedroom	15	DSY3.aps	flat 12- bedroom	7	22
DSY3.aps	flat 12- single bedroom	16	DSY3.aps	flat 12- single bedroom	10	26
DSY3.aps	Flat 13-Bedroom	16	DSY3.aps	Flat 13-Bedroom	9	25
DSY3.aps	Flat 13-bedroom	14	DSY3.aps	Flat 13-bedroom	6	20
DSY3.aps	Flat 14-bedroom	17	DSY3.aps	Flat 14-bedroom	12	29
DSY3.aps	flat 14-single bedroom	17	DSY3.aps	flat 14-single bedroom	12	29
DSY3.aps	Flat13 -bedroom	18	DSY3.aps	Flat13 -bedroom	14	32
DSY3.aps	flat 01- bedroom	15	DSY3.aps	flat 01- bedroom	5	20
DSY3.aps	flat 05 - bedroom	17	DSY3.aps	flat 05 - bedroom	13	30
DSY3.aps	Flat 04- bedroom	17	DSY3.aps	Flat 04- bedroom	11	28
DSY3.aps	Flat 03- bedroom	14	DSY3.aps	Flat 03- bedroom	6	20
DSY3.aps	Flat 06 -Single bedroom	18	DSY3.aps	Flat 06 -Single bedroom	12	30
DSY3.aps	Flat 08- bedroom	17	DSY3.aps	Flat 08- bedroom	14	31
DSY3.aps	Flat 07- bedroom	17	DSY3.aps	Flat 07- bedroom	12	29
DSY3.aps	Flat 09-bedroom	15	DSY3.aps	Flat 09-bedroom	7	22
DSY3.aps	flat11- single bedroom	18	DSY3.aps	flat11- single bedroom	14	32
DSY3.aps	flat 11- bedroom	18	DSY3.aps	flat 11- bedroom	14	32
DSY3.aps	Flat 09- single bedroom	18	DSY3.aps	Flat 09- single bedroom	14	32
DSY3.aps	Flat 11- bedroom	17	DSY3.aps	Flat 11- bedroom	14	31
DSY3.aps	Flat 10- bedroom	17	DSY3.aps	Flat 10- bedroom	13	30
DSY3.aps	flat 14- bedroom	17	DSY3.aps	flat 14- bedroom	12	29
DSY3.aps	Total hours	465	DSY3.aps	Total hours	309	

APPENDIX G

DSY1

File	Location	Operative temperature (TM 52/CIBSE) (°C) - hours in range > 28.00
S1-DSY1_2020H50.aps	Corridor 3F	2563
S1-DSY1_2020H50.aps	Corridor LGF	2462
S1-DSY1_2020H50.aps	Corridor GF	3177
S1-DSY1_2020H50.aps	Corridor 1F	2873
S1-DSY1_2020H50.aps	Corridor 2F	3280
S1-DSY1_2020H50.aps	Total hours	14355

DSY2

File	Location	Operative temperature (TM 52/CIBSE) (°C) - hours in range > 28.00
S1-DSY2.aps	Corridor 3F	2421
S1-DSY2.aps	Corridor LGF	2204
S1-DSY2.aps	Corridor GF	2795
S1-DSY2.aps	Corridor 1F	2553
S1-DSY2.aps	Corridor 2F	2882
S1-DSY2.aps	Total hours	12855

DSY3

File	Location	Operative temperature (TM 52/CIBSE) (°C) - hours in range > 28.00
S1-DSY3.aps	Corridor 3F	2037
S1-DSY3.aps	Corridor LGF	1876
S1-DSY3.aps	Corridor GF	2424
S1-DSY3.aps	Corridor 1F	2245
S1-DSY3.aps	Corridor 2F	2405
S1-DSY3.aps	Total hours	10987

DSY1

File	Location	Operative temperature (TM 52/CIBSE) (°C) - hours in range > 28.00
DSY1.aps	Corridor 3F	3
DSY1.aps	Corridor LGF	10
DSY1.aps	Corridor GF	22
DSY1.aps	Corridor 1F	2
DSY1.aps	Corridor 2F	15
DSY1.aps	Total hours	52

DSY2

File	Location	Operative temperature (TM 52/CIBSE) (°C) - hours in range > 28.00
DSY2.aps	Corridor 3F	19
DSY2.aps	Corridor LGF	26
DSY2.aps	Corridor GF	35
DSY2.aps	Corridor 1F	21
DSY2.aps	Corridor 2F	31
DSY2.aps	Total hours	132

DSY3

File	Location	Operative temperature (TM 52/CIBSE) (°C) - hours in range > 28.00
DSY3.aps	Corridor 3F	22
DSY3.aps	Corridor LGF	32
DSY3.aps	Corridor GF	59
DSY3.aps	Corridor 1F	21
DSY3.aps	Corridor 2F	44
DSY3.aps	Total hours	178