CAMDEN GOODS YARD

SUSTAINABLE DESIGN AND CONSTRUCTION STATEMENT

Volume 4

Thermal Comfort Assessment

30 June 2017

Site address

Camden Goods Yard

Chalk Farm Road, London NW1 8AA

Thermal Comfort Report

Appendix C to the Sustainable Design and Construction Statement

Prepared by

BBS Environmental

For

Safeway Stores Limited and BDW Trading Limited

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Contents

1. Executive summary

This preliminary assessment has been carried out to determine whether the apartments in the proposed Camden Goods Yard development will be capable of achieving acceptable levels of thermal comfort subject to the adoption of reasonable and appropriate design specifications.

The TM52 analysis is set against three criteria, and the risk of overheating is deemed acceptable if any two out of the three criteria are satisfied.

The analysis is simulated against historic weather data for the area, the standard named as 'Design Summer Year 1' (DSY1); in addition to DSY1, two additional scenarios have been run in accordance with TM49: Design Summer Years for London.

For the initial assessment, standard glazing types, and typical window opening areas, within the proposed overall fenestration design, were used.

The results of the initial assessment were as follows:

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY1 – 1989 - Near-extreme average summer temperatures	0	0
Pass / Fail	Pass	Pass

Table 1: DSY1 results summary

As shown in the above table, compliance is achieved for the standard weather year to all rooms, under the TM52 methodology and criteria, using the stated assumed parameters within this report. The DSY1 is from 1989 and is designed to assess a 'near-extreme' average summer (five summers have been warmer over the period 1950-2006), and as such it can be demonstrated that the design should be able to achieve acceptable levels of thermal comfort during a standard summer.

Two further sets of simulations were carried out to the DSY2 and DSY3 data detailed in TM49, and the results are detailed in the table below.

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY2 – Brief period of intense heat, max outdoor temperature of 37.4°C	0	25
Pass / Fail	Pass	Fail

Table 2: DSY2 results summary

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY3 – Extended period of sustained warmth, sustained temperatures of 30°C +	0	41
Pass / Fail	Pass	Fail

Table 3: DSY3 results summary

As can be seen above, certain rooms fail the TM52 analysis when assessed against the alternate weather data. The most significant risk is shown within the DSY3 analysis, indicating that the design may have difficulty adapting to extended periods of extreme heat.

The graph below details the DSY3 analysis for the location at the peak time of the year. It shows that for a period of approximately two-weeks, the outdoor dry-bulb temperature and the internal operative temperature both consistently rise above the limiting maximum adaptive temperature. This means, in simple terms, that allowing only for standard glazing types and typical window opening areas within the proposed design, would mean that after extended periods of very hot weather the internal temperatures within certain dwellings would exceed the targets for comfort set out in TM52.

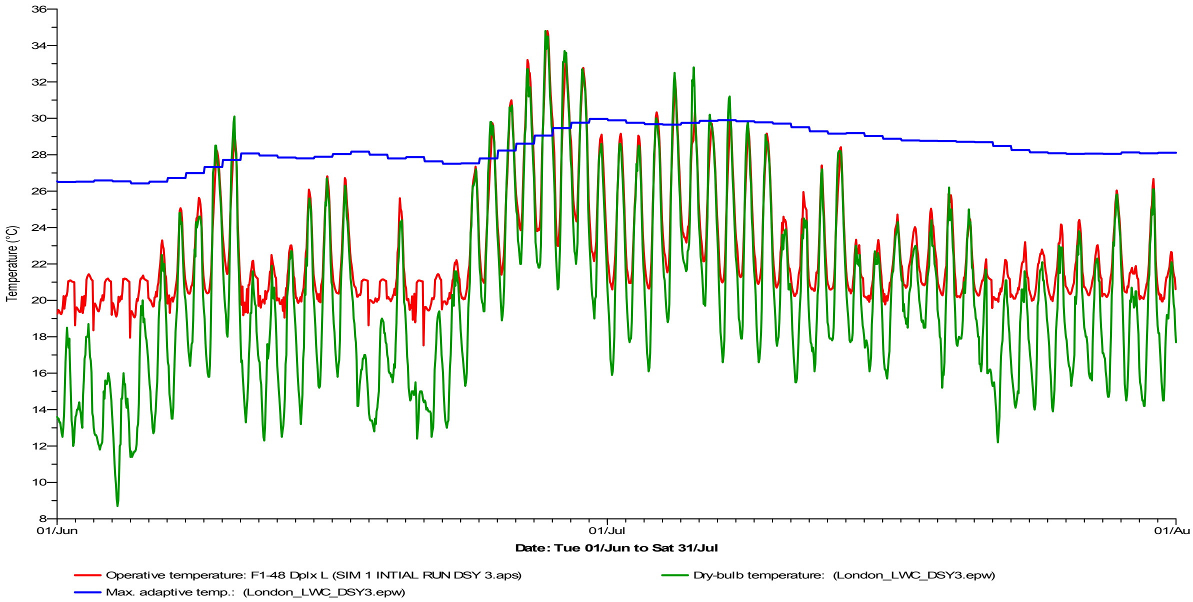


Figure 1. Sample DSY3 period (Jun-Aug)

A second set of simulations was then carried out to establish whether it would be possible to satisfy the thermal comfort criteria if further reasonable design measures were adopted. There are a range of possible design measures that could be incorporated at detailed design in order to increase the buildings ability to adapt to extreme or fluctuating temperatures. These include increasing the buildings exposed thermal mass, limiting solar gains via solar control glazing, external shutters or shading and reduced glazed areas. It is important to note in this regard that the shading effects of specific adjacent blocks within the development and existing surrounding buildings have not been considered as this assessment is designed to be valid for the whole development, and not just the one specific block that has been assessed.

It was found that if solar control glazing with a g-value of 0.40 was used for the rooms in question, this would result in a pass to all but the two most severely affected rooms (the penthouse duplexes), and that with a reduction in overall glazing, or an increase in the buildings thermal mass, every room could be made compliant for all three weather scenarios.

So, in conclusion, it has been demonstrated that during usual summer weather conditions, an acceptable level of thermal comfort should be achievable in all dwellings. The further analyses also demonstrate, that whilst it is not possible to definitively state that the dwellings in this scheme will never become uncomfortable during the hottest weather, it will be possible to comply with TM52 subject to the Applicant incorporating the necessary design details and specifications into the final design of the scheme at the detailed design stage.

2. Introduction

This technical analysis of thermal comfort has been prepared for the joint Applicants, Safeway Stores Limited Ltd and BDW Trading Limited, by BBS Environmental, a construction consultancy specialising in sustainability, energy conservation and the application of renewable energy technologies. It has been prepared to accompany a detailed planning application for the redevelopment of a site currently occupied by a Morrison’s supermarket and a petrol filling station, located just off Chalk Farm Road in the London Borough of Camden.

The proposals for the site comprise the following:

Demolition of existing buildings (Class A1 foodstore and Sui Generis petrol filling station) and associated highways and site works including removal of existing surface level car parking and retaining walls along with road junction alterations.

Redevelopment of petrol filling station site to include the erection of a new building of up to six storeys and up to 11,243 sq m GEA floorspace to accommodate a petrol filling station (Sui Generis), flexible Class A1, A3 and A4 floorspace, Class B1 floorspace and a winter garden; associated cycle parking; public green space; public toilets and other associated works and highways works. For a temporary period of up to thirty months part of the ground and all of the 1st floor of the building will be used for a Class A1 foodstore with associated car parking.

Redevelopment of the main supermarket site to include the erection of buildings (Blocks A to F, including Blocks E1 and E2) of up to 14 storeys accommodating up to 573 homes and up to 60,568 sq m GEA of residential floorspace together with up to 28,333 sq m GEA non-residential floorspace within Class A1 (foodstore), flexible Class A1 and A3, Class B1a and B1c, Class D2 community centre, Sui Generis use at roof level of “Block B” for food and plant growing and production facility (including small scale brewing and distilling) with associated ancillary office, storage, education, training, café and restaurant activities; together with associated new streets and squares; hard and soft landscaping and play space; lifts; public cycle parking and cycle hire facility; and other associated works, including highways works.

The purpose of this report is to assess whether the apartments within the proposed design are likely to suffer from an excessive risk of summer overheating. To assess this risk a representative apartment building has been modelled and run through an overheating analysis. The building selected is the entirety of Block F as this contains a representative range of apartment types, sizes and orientations, and importantly, is located on the south-western perimeter of the site and so does not benefit from significant solar shading from other buildings. Furthermore, any shading potentially provided by nearby buildings has been excluded, along with any shading from the adjacent topographical geometry, so ensuring that the assessment is a “worst case” scenario.

The standard industry overheating benchmarks are found within the texts *CIBSE Guide A* and *CIBSE TM52*, published by the Chartered Institution of Building Services Engineers (CIBSE). These texts refer to thermal comfort within “occupied” areas, which are defined as “areas likely to be occupied by the same person for 30 minutes or more”, and as such, bathrooms, circulation areas, and cupboards etc. have been excluded from the assessment.

The methodology used is as set out in CIBSE TM52, which has now also been incorporated into the current edition of *CIBSE Guide A.* This is the methodology that is referenced within the GLA guidance document *Energy Planning, Greater London Authority guidance on preparing energy assessments (March 2016)* and the report is therefore fully compliant with this guidance.

The simulations have been completed using the appropriate weather data sets as set out in *CIBSE TM49: Design Summer Years for London*, and accordingly three sets of calculations have been carried out and the results are detailed within this report.

The thermal model created for the assessment has been produced in line with industry guidelines (CIBSE AM11) and the simulation was carried out using the “Integrated Environmental Solutions: Virtual Environment” (IES ‘VE’) software suite. IES has been used to model the geometry of the building and to simulate the internal environment of the building, the solar gains and the ventilation. The air movement portion of the analysis does not extend to full CFD (computational fluid dynamics) modelling which is beyond the scope of the software and this report.

Where specific performance and other data is not available due to the preliminary stage of the project, default figures and reasonable assumptions have been used as detailed within this report.

3. Assessment criteria and methodology

The overheating criteria for naturally ventilated (free running) buildings is based on guidance in the UK industry wide standard document *CIBSE TM52: The Limits of Thermal Comfort*. The analysis and results presented in this report are all in accordance with that document.

The criteria defined in TM52 are based on the theory of adaptive comfort. This states that the acceptable temperature for occupants in a space "tracks" the mean indoor temperature over a preceding period. Due to the correlation between indoor and outdoor temperature in free-running buildings, this means that comfort temperature also varies with outdoor temperature, and as such it has been found that the *exponentially weighted running mean of the daily mean outdoor temperature* is a more accurate measure of outdoor temperature than the previously used monthly mean. This temperature is calculated using the following equation:

$$T_{rm} = (1 - a)\,(T_{od-1} + aT_{od-2} + a^2\,T_{od-3}\ldots)$$

Where 'a' is constant (<1) and Tod-1, T0d-2 etc. are the daily mean temperatures for yesterday, the day before, and so on.

The optimal value of 'a' has been investigated using data from comfort surveys throughout Europe, and the calculation has been found to correlate best when a = 0.8

This methodology also requires an operative temperature (T_{op}) to be calculated by the software, which combines the air temperature and the mean radiant temperature into a single value, this is accomplished using the following formula:

$$T_{op} = (T_a\,\sqrt{10v} + T_r)\,/\,(1+\sqrt{10v})$$

Where:

Ta = indoor air temperature
Tr = mean radiant temperature
V = summer air speed (m/s)

The maximum acceptable temperature (θmax) is then calculated for new buildings as follows:

$$\theta_{max} = 0.33\,T_{rm} + 21.8$$

Where T_{rm} = the exponentially weighted running mean of the daily mean outdoor air temperature as detailed above.

CIBSE TM52 lays down 3 criteria for the assessment of overheating on new buildings; these criteria are as follows:

1. **Criterion 1 – Hours of Exceedance (He)**

The number of hours the predictive operative temperature exceeds the maximum allowable operative temperature (θ_{max}) by 1K[(1)] or more, must not exceed 3% of the total occupied hours or 40 hours, whichever is the smaller, during the five summer months (May-September).

2. **Criterion 2 – Weighted Exceedance (We)**

The sum of the weighted exceedance for each degree K above θ_{max} must be <6. This criterion covers the severity of overheating, which is arguably more important than its frequency, and sets a daily limit of acceptability.

3. **Criterion 3 – Threshold/Upper limit Temperature (θ_{upp})**

The predicted operative temperature should not exceed the θ_{max} by 4K or more at any time.

To show that the proposed building will not suffer from overheating, two of these three criteria should be met. Further details on this methodology can be found in CIBSE TM52.

For the purposes of this assessment, three sets of calculations have been run, and three sets of results recorded, in order to detail how the building may respond to differing weather conditions. For more details, please see the Section 4.6 of this report.

Note 1: K (degrees Kelvin) is used throughout this report. 1K is numerically equivalent to 1 °C.

4. Building geometry and operative data

4.1 Building geometry

The 3D model has been constructed in IES MODELIT 2016 using the following provided drawings:

- 1095_07_06_100
- 1095_07_06_101
- 1095_07_06_102
- 1095_07_06_103
- 1095_07_06_104
- 1095_07_06_105
- 1095_07_06_106
- 1095_07_06_107
- 1095_07_06_108
- 1095_07_06_109
- 1095_07_06_200
- 1095_07_06_201
- 1095_07_06_202
- 1095_07_06_203
- 1095_07_06_204
- 1095_07_06_205
- 1095_07_06_206
- 1095_07_06_207
- 1095_07_06_300
- 1095_07_06_301
- 1095_07_06_302
- 1095_07_06_303

Images of the assessment model, as constructed in IES MODELIT are provided on the following pages. Please note that due to the preliminary stage of the design, where plans and elevations did not match completely, plans took precedence over elevations and professional judgement together with standard assumptions were used to determine window sizes, locations and operable areas.

The model of the building has been created in accordance with industry and software conventions for the specific purpose of overheating simulation and it is not intended to be an accurate architectural representation of the building.

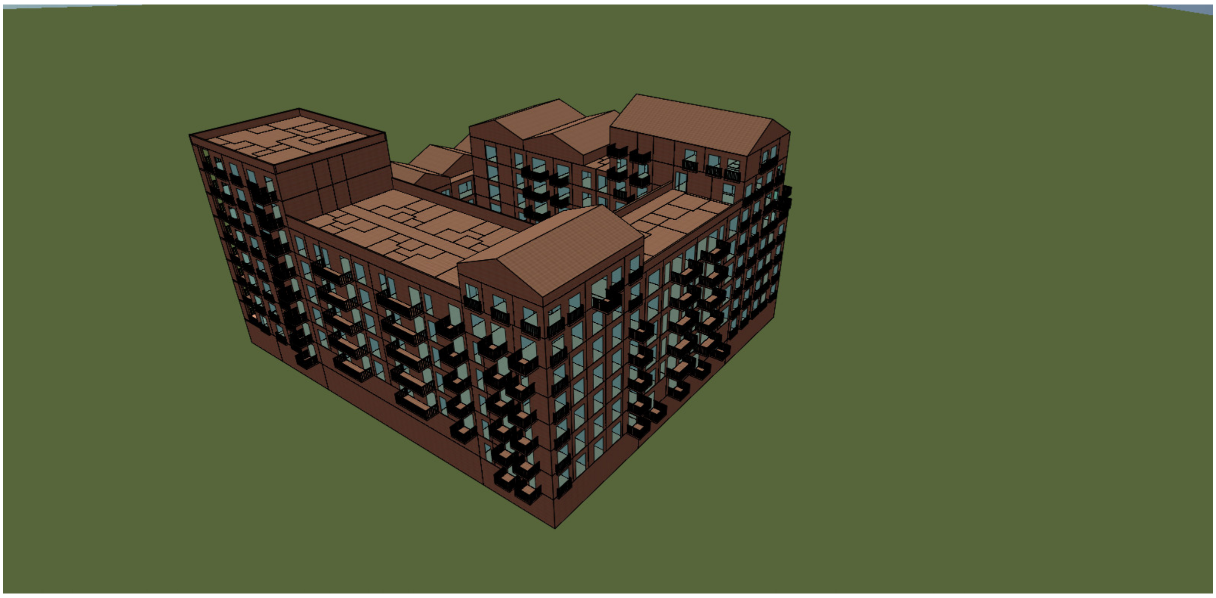


Figure 2. 3d view of the thermal model

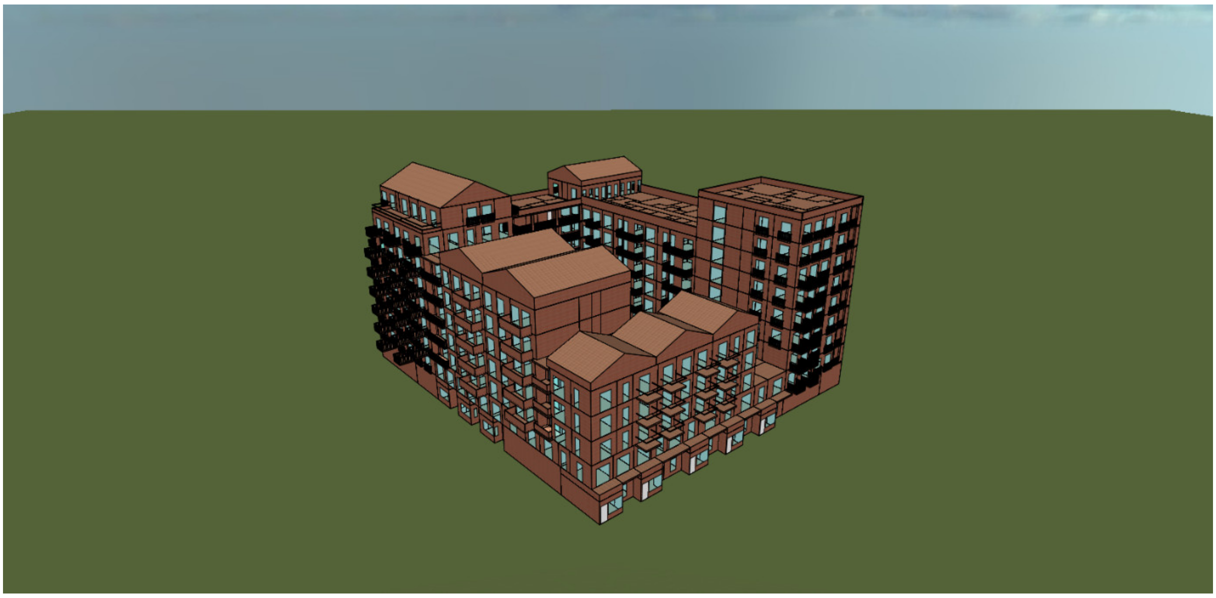


Figure 3. 3d view of the thermal model

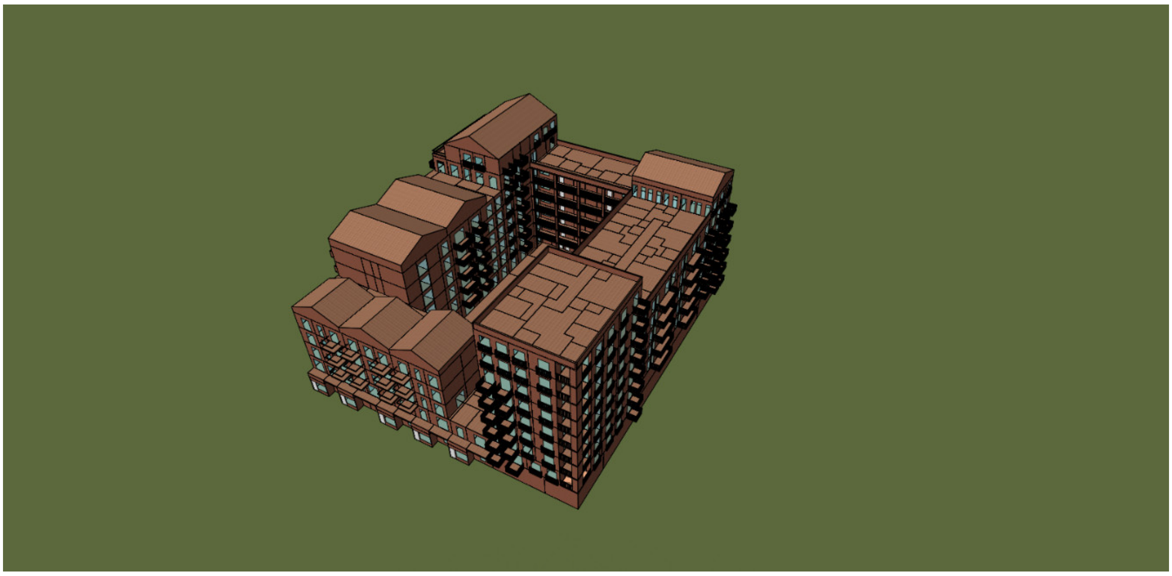


Figure 4. 3d view of the thermal model

4.2 Thermal Envelope

Building fabric information has been derived from the proposed thermal specifications for the project as set out in the Energy Statement that accompanies the application. A summary of the key specifications for the building fabric elements is provided in the table below.

Construction	Detail	U-Value (W/m^2K)	K-Value (kJ/m^2K)
External Walls	RC Frame, brick Clad	0.15	18
Exposed Floors	Insulated RC Slab	0.12	80
Internal Walls	Lightweight Stud Partitioning	-	10
Internal Walls (to unheated areas)	Lightweight Twin stud	0.15	18
Internal Ceiling/Floor	RC Slab (Acoustic Insulation)	-	80
Roofs	Externally insulated RC slab	0.12	10
Windows / Glazed Doors	Uw Value – 1.4 G-value – 0.63	1.4	-

Table 4: Building Fabric Elements

4.3 Building profiles

Building profiles relate to all aspects of building use, from heating/cooling plant operation, to occupancy, lighting and equipment use. As such they form the most important data schedule within a thermal and overheating assessment.

Due to the preliminary stage of the project, the National Calculation Methodology (NCM) profile templates have been assigned to the building. It is important to note that whilst these profiles have been developed by the Building Research Establishment (BRE), they have been developed solely for comparative purposes for use with Building Regulations UK Part L (BRUKL) compliance and Energy Performance Certificate (EPC) assessments, and as such, will not reflect the full range of possible resident usage patterns. The NCM profiles have been assigned to heating, occupancy, lighting, and equipment (unregulated residential small power loads). The ventilation strategy has been separately detailed and is outlined in the following section.

The simulation and analysis assumes no additional internal gains from building services that are external to the dwelling. This includes communal systems supplying heat for domestic hot water that operate throughout the year and may output heat as sensible gains to the common areas. This approach is considered to be valid since the scheme will include common area ventilation designed to ensure that the temperature within the common areas remains at a comfortable level.

A graphical description of each profile used within the assessment can be found in Appendix A and more details on the NCM profiles are available from BRE.

4.4 Solar gain

Due to the geometry of the spaces assessed, solar gain will have a significant impact on overheating risk, and the proposed g-value (the solar energy transmittance factor) to be generally specified for the glazing has been kept as high as possible to benefit from solar gains during the heating season. This assessment has therefore been carried out, in part, to indicate where passive overheating mitigation (such as lower g-values) may be necessary for specific parts of the building.

Detailed solar shading analysis has been undertaken within the VE by IES-SUNCAST, in order to simulate the solar gain to the rooms; this simulation takes account of building fabric specifications and local shading (e.g. balconies) but not trees or other topographical shading. For the purposes of this assessment, any shading from adjacent buildings has been excluded.

Blinds have been assigned to the model and are assumed closed whilst the property is unoccupied. For the purposes of this assessment, the shading coefficient and short wave radiant fraction have both been set to 0.5.

Below are images of the solar model, detailing the sun path and dynamic shading included within the design

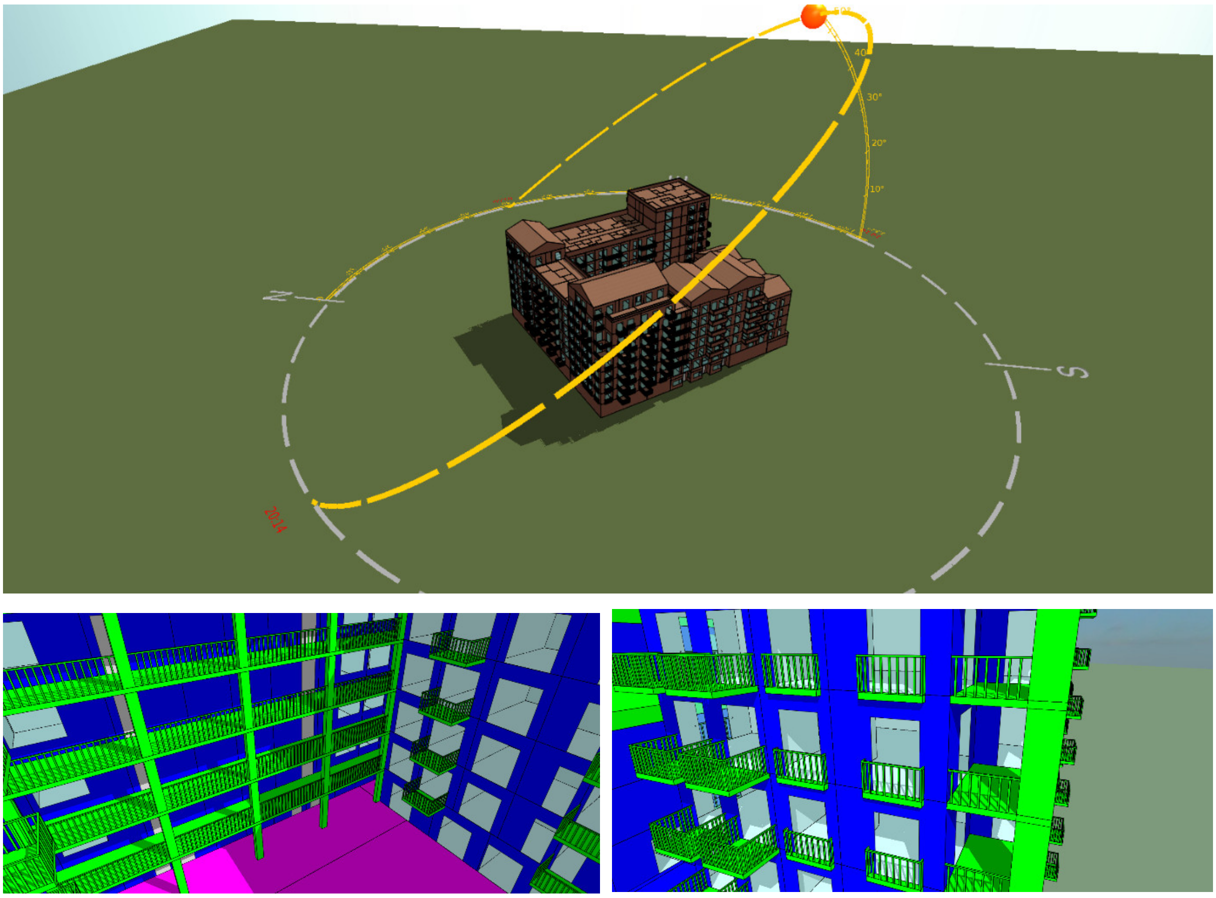


Figure 5. Solar shading model

4.5 Ventilation and infiltration

The building has been modelled as primarily naturally ventilated, along with background mechanical supply ventilation, and the parameters used represent reasonable assumptions that must be made at this early stage in the design process.

The windows within the rooms have been assumed to be manually operated; the windows available for ventilation have been modelled from the application drawings, and for reference, examples are provided

Appendix B. (Note: due to the preliminary nature of the design certain openable window areas have been set as a percentage of total window area, and the percentage used varies depending on the room type. Typically, 25% of the area of bedroom windows and 40% of the area of living room windows has been assumed to be opening. Balcony doors have been assigned as single or double doors, and indicated on the drawings. As such 80% of the structural opening of double doors, and 50% of the structural opening of single doors has been assigned as operable.

Window flow is calculated in IES based on a large array of data, including aerodynamic (equivalent) area, frame percentage, opening angle and pivoting point. For more details regarding window geometry, assumptions and calculations, please see Appendix C.

The openable windows have been assigned the following parameters to simulate manual operation:

Standard Windows – Side/Top Hung, assigned a maximum opening angle of 60°
Balcony Doors – Side hung, assumed openable to 85°.

The windows and doors are treated as openable whilst any part of the dwelling is occupied (as per the NCM occupancy profiles). The non-accessible windows to the upper floor flats have also been assigned as openable whilst the dwellings are unoccupied, however to reflect security concerns the ground floor windows have all been assumed to be closed from 10.00-16.00, when the NCM occupancy templates are set to nil

During openable hours, the windows have been set so that they will begin to open once the internal room temperature reaches 22°C, until fully open at 25°C, this is to simulate manual operation and is considered to be more accurate than open/closed operation set to a single temperature. This process is fully reversible and all windows and doors close proportionally as the internal temperature falls, until fully closed below 22°C. The windows have been set to open only when the external temperature is lower than the internal room temperature.

The balcony doors have been assigned the same opening parameters as the windows above.

To take account of air leakage whilst the windows are closed, a crack flow coefficient of 0.15 l/(s·m·Pa^0.6) has been used, this figure has also been assigned to the doors. Air movement between internal zones has been assumed minimal during usual operation, however internal doors have been assumed to be opened by the occupants if the room temperature rises above 28°C; in order to allow greater inter-room airflow and promote cross-ventilation. The doors between the dwellings and communal corridors have been assumed closed at all times.

For more details of window assumptions, including the calculation methodology for the equivalent openable area (calculated by the software from the modelled geometry), please see Appendix C.

The infiltration rate has been assumed based on the design air permeability of the building. Air leakage has been set at 0.20 ACH, which approximately translates to an air permeability of 4 $m^3/(h.m^2)$ at 50 pa. A mechanical ventilation system will also be specified, which may to contribute further to summer free cooling, but since at the present time the flow rates of these systems are unknown, a global ventilation rate of 0.3 $l/s/m^2$ has been applied within all dwellings.

Since mechanical ventilation will be used to prevent overheating in corridors, the calculation assumes that the communal area temperatures will be kept below 28°C at all times.

4.6 Simulation and weather data

The proposed development is for a location in London, UK. This is a heavily urbanised area of the country which can impact on the risk of overheating in several ways. The key design criteria are linked to orientation with respect to south facing solar gains and prevailing winds. Other aspects such as the effect of disruption to air flow and wind speed from the surrounding urban landscape can be important but is beyond the scope of this report.

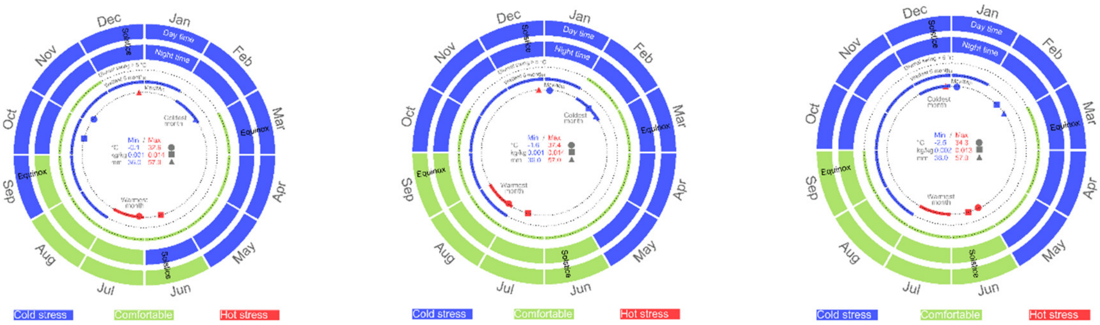
In 2014, the CIBSE published *TM49: Design Summer Years for London* which was aimed to address the question of whether the current Design Summer Year (DSY) was the most appropriate for assessment of the summertime cooling needs of buildings in London. Prior to the publication of TM49, the DSY for London was that of the 1989 summer, recorded at the London Heathrow Weather station, as this represents a near-extreme warm summer over the period 1950-2006 (five summers have been warmer). This has now been deemed an insufficient indicator of summer climactic conditions as it has been recognised that discomfort can also arise from prolonged periods of warmth and also from short, intense periods of heat (heat waves). TM49 has sought to address the issue of the Urban Heat Island effect, and that of managing an uncertain future climate; and as a result, a wider array of data is now available to assist developers in mitigating future overheating risk.

Three weather locations are now available for London; The London Weather Centre, used for assessments within the GLA Central Activity Zone; Heathrow, used for assessments within lower density and suburban areas; and Gatwick, used for assessments in rural and peri-urban areas.

For each of the above locations three separate DSY's have been produced, each representing a differing scenario, DSY1 remains as 1989, which characterises a near-extreme average summer; DSY 2 relates to 2003, and reflects an intense, single warm spell over an otherwise moderate summer; and DSY 3 is 1976, a year with an extended period of persistent warmth. The files referenced and used within this assessment contain hourly weather data for these years.

For the purposes of this assessment, the London Weather Centre weather location has been used, and the results are presented for all three of the scenarios listed above.

Below is a summary chart of three weather metrics: temperature, humidity and rainfall, for each of the three years, and more detail can be found in Appendix D.



DSY1 – 1989 DSY2 – 2003 DSY3 - 1976

Figure 6. Weather metrics - LWC

Further detail on the weather data used can be found within CIBSE TM49.

The results are an indication of the likely response of the building to thermal gains based on the CIBSE weather data and the indicative building information detailed in the preceding section.

The simulation was set to cycle at ten minute intervals, updating the dynamic changes based on alterations to the environment and to report every sixty minutes; during the assessed summer period (1st May – 30th September). Each zone modelled and listed in the attached results is based on the above data sets and the Architect's drawings provided and referenced within this report.

5. Results

5.1 Overview

The simulation results below outline the risk of overheating based on the CIBSE TM52 methodology. It is important to note that the pass/fail annotation does not currently relate to any statutory legislation for dwellings and is only an indication of compliance with regards to the TM52 criteria, which are used as methods of assessing the risk of overheating in buildings during hot summer weather, and are primarily focussed on workspaces. As detailed previously TM52 is the guidance referenced by the GLA, and as such has been used for the purposes of this report

The rooms assessed for overheating are the “occupied spaces” only and exclude bathrooms, circulation areas, utility areas, and storage cupboards etc. These ancillary areas have been included within the simulations to account for the full geometry of each apartment and to more accurately reflect the internal heat transfer, but they are excluded from the results and the analysis.

Within the assessed model a total of 425 rooms have been assessed for compliance. The simulation results below outline the risk of overheating based on the CIBSE TM52 methodology. The pass/fail annotation does not relate to any statutory legislation for dwellings and is only an indication of compliance with regards to the TM52 criteria, which is used as one method of assessing the risk of overheating during hot summer weather.

The rooms assessed for overheating are the “occupied spaces” only and exclude bathrooms, circulation areas, utility areas, and storage cupboards etc. These ancillary areas have been included within the simulations to account for the full geometry of each apartment and to accurately reflect the internal heat transfer, but they are excluded from the results and the analysis.

5.2 Simulation results summary

The tables below summarise the results for TM52 for the 3 TM49 weather files. For the full room by room results tables please refer to Appendix E.

The dwellings have been referenced as per the unit numbers on the provided plans. Room types have been identified in the results tables with the suffixes - L = living area, and B = bedroom.

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY 1 – 1989 - Near-extreme average summer temperatures	0	0
Pass / Fail	Pass	Pass

Table 5: DSY1 results summary

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY 2 – Brief period of intense heat, max outdoor temperature of 37.4°C	0	25
Pass / Fail	Pass	Fail

Table 6: DSY2 results summary

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY 3 – Extended period of sustained warmth, sustained temperatures of 30°C +	0	41
Pass / Fail	Pass	Fail

Table 7: DSY3 results summary

The most significant overheating risk occurs for the third weather scenario (DSY 3), simulating an extended period of sustained warmth. The simulation indicates that certain rooms will be unable to maintain a comfortable temperature in this scenario.

6. Conclusions and observations

Of the rooms that fail the analysis, all suffer from excessive solar gain due to the window sizes and orientation. Certain rooms (F1-43 Dplx L for example), currently fail all three weather scenarios. It should be noted that the two penthouse duplexes currently incorporate significantly larger glazed areas than other plots, in addition to being glazed on multiple façades. As such a reduction in window area, larger opening proportion, or increase in thermal mass will likely be required to maintain a comfortable temperature.

An additional simulation was run with a reduced glazing g-value to the failing plots, the g-value was set at 0.40 and the following results were reported

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY 2 – Brief period of intense heat, max outdoor temperature of 37.4°C	0	2
Pass / Fail	Pass	Fail

Table 8: DSY2 results summary

Weather Scenario	Number of Bedrooms Failing 2 of 3 criteria	Number of Living Areas Failing 2 out of 3 criteria
DSY 3 – Extended period of sustained warmth, sustained temperatures of 30°C +	0	2
Pass / Fail	Pass	Fail

Table 9: DSY3 results summary

As can be seen from these results, the g-value change has a dramatic effect, achieving compliance in all but the most severely affected rooms. It is also calculated that reducing the total glazed area by approximately 15-20% will achieve TM52 compliance in the remaining areas. However, as previously noted, the precise changes necessary can only be determined at the detailed design stage, once the specific characteristics of each block, including the actual shading from the surrounding environment, thermal mass of the building envelope, and final window design, have been modelled in detail.

So, in conclusion, while it is not possible to definitively state that the dwellings will never become uncomfortable during the hottest weather, it has been demonstrated that it will be possible to comply with TM52 using the NCM profile templates, subject to the Applicant incorporating the necessary design details and specifications into the final design of the scheme.

Appendix A: NCM profiles

<table>
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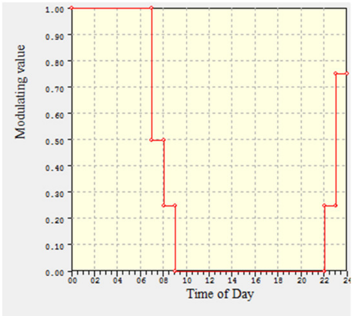
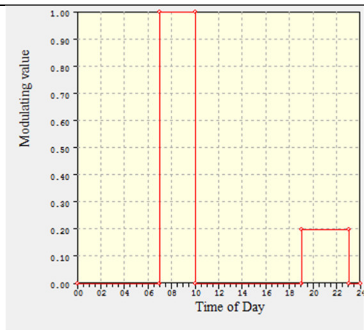
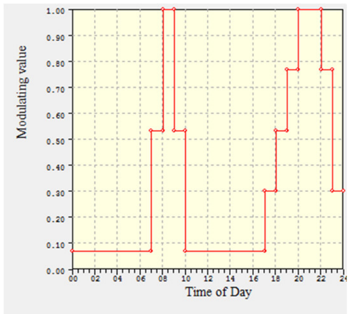
<tr><td colspan="2">
</td><td colspan="2">
</td><td colspan="2">
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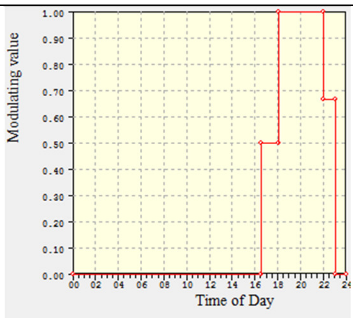
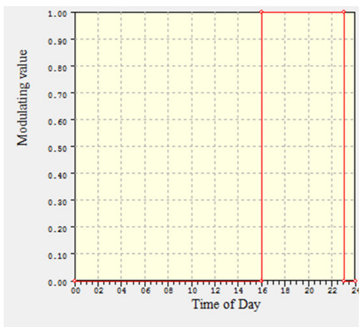
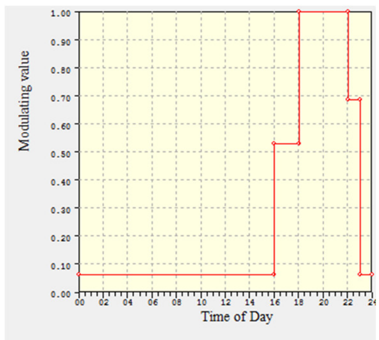
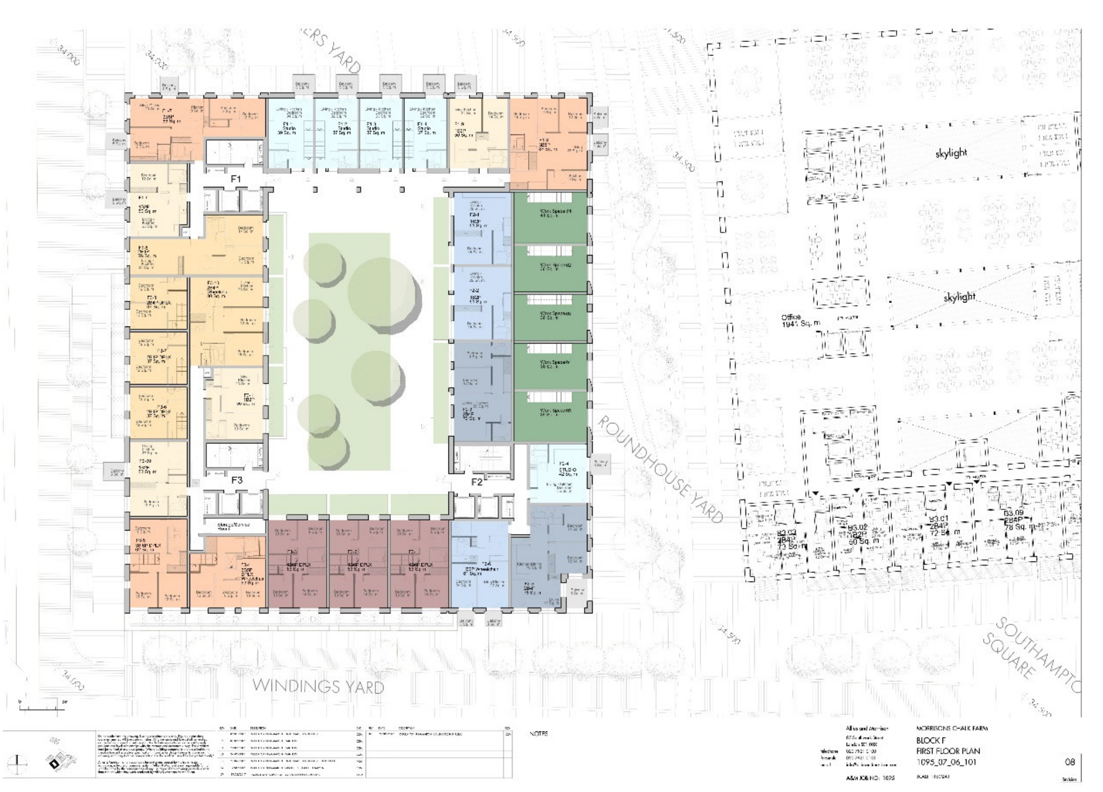
<table>
<tr><th colspan="6">Living Areas</th></tr>
<tr><th colspan="2">Occupancy profile: adjusted to max No. people</th><th colspan="2">Lighting profile</th><th colspan="2">Equipment usage profile</th></tr>
<tr><td colspan="2">

Note – Simulation 2 incorporates no occupancy between 10:00 and 16:00</td><td colspan="2">
</td><td colspan="2">
</td></tr>
<tr><td>Sensible gain (W/Person)</td><td>67.1</td><td rowspan="2">Sensible gain (W/m²)</td><td rowspan="2">4.5</td><td rowspan="2">Sensible gain (W/m²)</td><td rowspan="2">3.9</td></tr>
<tr><td>Latent gain (W/person)</td><td>42.9</td></tr>
</table>

The NCM profiles used for Bathrooms, ancillary areas, and other “unoccupied spaces” can be provided by BBS Environmental upon request.

Appendix B: Reference drawings




WINDINGS YARD
ROUNDHOUSE YARD
SOUTHAMPTON SQUARE
F1
F2
F3
NOTES
Allies and Morrison
MORRISONS CHALK FARM
BLOCK F
SECOND FLOOR PLAN
1095_07_06_102
09


WINDINGS YARD
ROUNDHOUSE YARD
SOUTHAMPTON SQUARE
F1
F2
F3
NOTES
Allies and Morrison
MORRISONS CHALK FARM
BLOCK F
THIRTH FLOOR PLAN
1095_07_06_103
A&M JOB NO: 1095
04

ROUNDHOUSE YARD
WINDINGS YARD
SOUTHAMPTO
SQUARE
F1
F2
F3
NOTES
MORRISONS CHALK FARM
BLOCK F
FOURTH FLOOR PLAN
1095_07_06_104
04

ROUNDHOUSE YARD
WINDINGS YARD
SOUTHAMPTO
SQUARE
F1
F3
NOTES
MORRISONS CHALK FARM
BLOCK F
FIFTH FLOOR PLAN
1095_07_06_105
04


WINDINGS YARD
ROUNDHOUSE YARD
SOUTHAMPTON SQUARE
MORRISONS CHALK FARM
BLOCK F
SIXTH FLOOR PLAN
1095_07_06_106
04


WINDINGS YARD
ROUNDHOUSE YARD
SOUTHAMPTON SQUARE
MORRISONS CHALK FARM
BLOCK F
SEVENTH FLOOR PLAN
1095_07_06_107
04


ERS YARD
ROUNDHOUSE YARD
WINDINGS YARD
SOUTHAMPTO SQUARE
F2
MORRISONS CHALK FARM
BLOCK F
EIGHTH FLOOR PLAN
1095_07_06_108
06

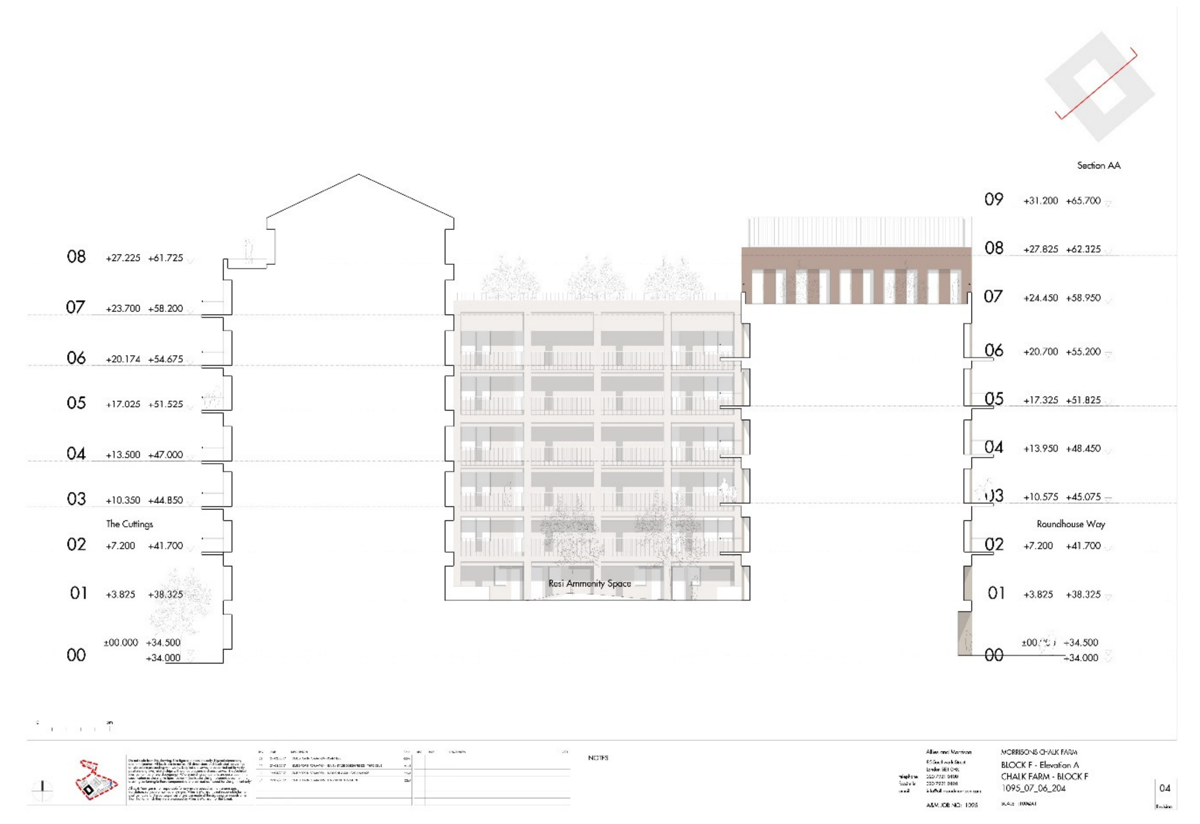

ERS YARD
ROUNDHOUSE YARD
WINDINGS YARD
SOUTHAMPTO SQUARE
MORRISONS CHALK FARM
BLOCK F
ROOF PLAN
1095_07_06_109
05


North Elevation
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
NOTES
MORRISONS CHALK FARM
BLOCK F
NORTH ELEVATION
1095_07_06_200
07


East Elevation
09 +31.200 +65.700
08 +27.825 +62.325
07 +24.450 +58.950
06 +20.700 +55.200
05 +17.325 +51.825
04 +13.950 +48.450
03 +10.575 +45.075
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.000
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
NOTES
MORRISONS CHALK FARM
BLOCK F
EAST ELEVATION
1095_07_06_201
07

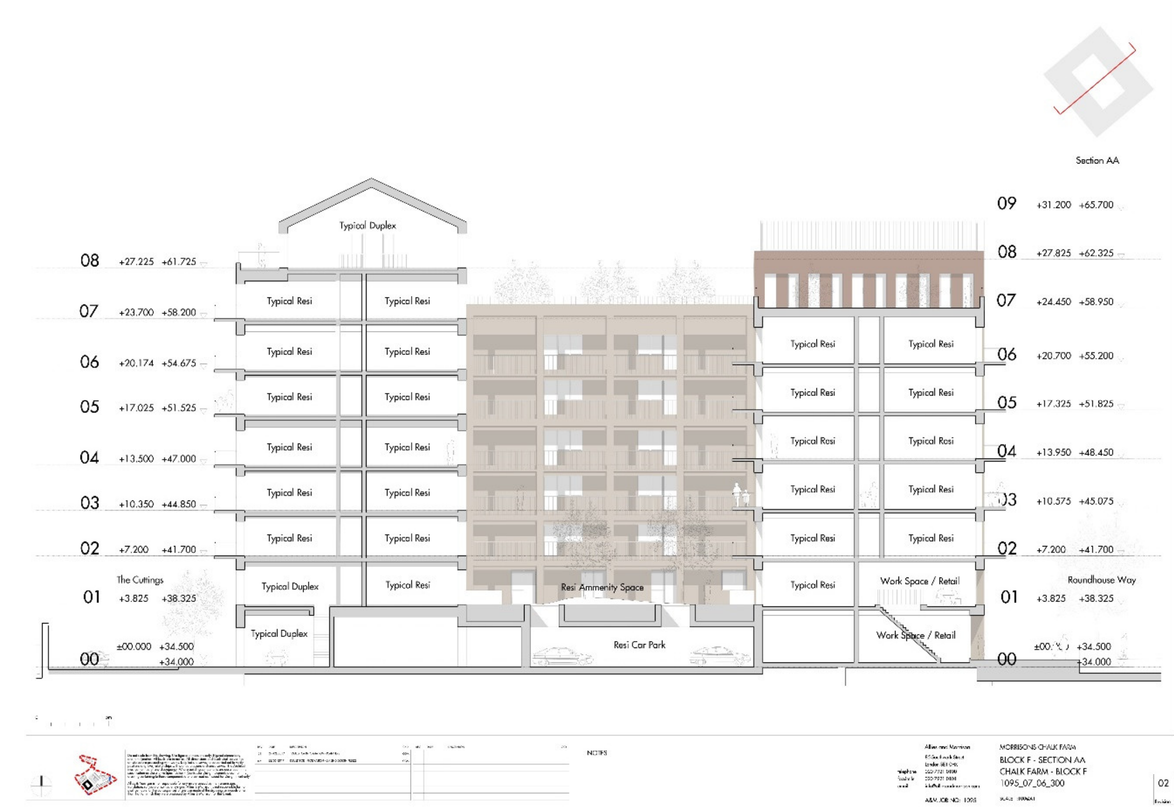
South Elevation
09 +31.200 +65.700
08 +27.225 +61.725
08 +27.825 +62.325
07 +23.700 +58.200
07 +24.450 +58.950
06 +20.174 +54.675
06 +20.700 +55.200
05 +17.025 +51.525
05 +17.325 +51.825
04 +13.500 +47.000
04 +13.950 +48.450
03 +10.350 +44.850
03 +10.575 +45.075
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
NOTES
MORRISONS CHALK FARM
BLOCK F
SOUTH ELEVATION
1095_07_06_203
07

West Elevation
08 +27.225
07 +23.700
06 +20.174
05 +17.025
04 +13.500
03 +10.350
02 +7.200
01 +3.825
00 ±00.000
NOTES
MORRISONS CHALK FARM
BLOCK F
WEST ELEVATION
1095_07_06_204
07




Section CC
09 +31.200 +65.700
08 +27.825 +62.325
07 +24.450 +58.950
06 +20.700 +55.200
05 +17.325 +51.825
04 +13.950 +48.450
03 +10.575 +45.075
02 +7.200 +41.700
Roundhouse Way
01 +3.825 +38.325
±00.000 +34.500
00 +34.000
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
02 +7.200 +41.700
The Cuttings
01 +3.825 +38.325
±00.000 +34.500
00 +34.000
NOTES
MORRISONS CHALK FARM
BLOCK F - SECTION CC
CHALK FARM - BLOCK F
1095_07_06_206
05


Section DD
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
02 +7.200 +41.700
Makers Place
01 +3.825 +38.325
±00.000 +34.500
00 +34.000
-1 +28.000
The Windings
NOTES
MORRISONS CHALK FARM
BLOCK F - SECTION DD
CHALK FARM - BLOCK F
1095_07_06_207
05


Section AA
Typical Duplex
Typical Resi
Resi Ammenity Space
Resi Car Park
Work Space / Retail
The Cuttings
Roundhouse Way
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
09 +31.200 +65.700
08 +27.825 +62.325
07 +24.450 +58.950
06 +20.700 +55.200
05 +17.325 +51.825
04 +13.950 +48.450
03 +10.575 +45.075
NOTES
MORRISONS CHALK FARM
BLOCK F - SECTION AA
CHALK FARM - BLOCK F
1095_07_06_300
02


Section BB
Typical Resi
Work Space
Residential Ammenity Space
Car Park Ventilation
Duplex Resi
Makers Place
Windings Way
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
09 +31.200 +65.700
08 +27.825 +62.325
07 +24.450 +58.950
06 +20.700 +55.200
05 +17.325 +51.825
04 +13.950 +48.450
03 +10.575 +45.075
NOTES
MORRISONS CHALK FARM
BLOCK F - SECTION BB
CHALK FARM - BLOCK F
1095_07_06_301
02


Section CC
09 +31.200 +65.700
08 +27.825 +62.325
07 +24.450 +58.950
06 +20.700 +55.200
05 +17.325 +51.825
04 +13.950 +48.450
03 +10.575 +45.075
Roundhouse Way
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
Typical Resi
Core F2
Resi Car Park
Bin Store
Typical Duplex
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
The Cuttings
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
NOTES
MORRISONS CHALK FARM
BLOCK F - SECTION CC
CHALK FARM - BLOCK F
1095 07 06 302
02


Section DD
08 +27.225 +61.725
07 +23.700 +58.200
06 +20.174 +54.675
05 +17.025 +51.525
04 +13.500 +47.000
03 +10.350 +44.850
Makers Place
02 +7.200 +41.700
01 +3.825 +38.325
00 ±00.000 +34.500 +34.000
The Windings
Typical Resi
Resi Duplex
Bike Store
Resi Car Park
Office / Workshops
NOTES
MORRISONS CHALK FARM
BLOCK F - SECTION DD
CHALK FARM - BLOCK F
1095_07_06_303
02

Appendix C: Ventilation area calculation

The information required to simulate airflow through windows in the IES software suite is the window area, openable window area, ratio of width to height, maximum opening angle and pivoting point (side hung/top hung etc.)

IES uses Equivalent Area (aerodynamic area) to simulate airflow through openings. The aerodynamic or equivalent area is a measure of the aerodynamic performance of a ventilator. It is the area of a sharp-edged orifice which air would pass at the same volume flow rate, under an identical applied pressure difference, as the opening under consideration. Typically for windows even when fully open the opening will perform with a higher pressure drop than a sharp-edged orifice. These definitions are consistent with definitions used by the UK Building Regulations and window manufacturers.

Note: geometric free area is not the same as aerodynamic (or equivalent) area – it usually defines the smallest area through which air can pass and unlike aerodynamic or equivalent area does not describe the actual pressure relationship of the opening.

The equivalent area (EQA) is calculated using the following equation:

$$F = (Cv/Cd)*fa/100$$

Where:

F	is the equivalent area fraction (expressed as a percentage of the modelled Area)
fa	is the openable area percentage of the window as modelled
Cv	is a coefficient imported from IES database that reflects the window hinge location its it's opening angle and proportional geometry (collated from real world test data)
Cd	is the discharge coefficient for a sharp-edged orifice (0.62)

Sample Example of a window 0.75m x 0.95m (not from this assessment)

$$F = (0.6/0.62)*80/100 = 0.77$$

$$EQA = (0.75*0.95) * 0.77 = 0.549m^2$$

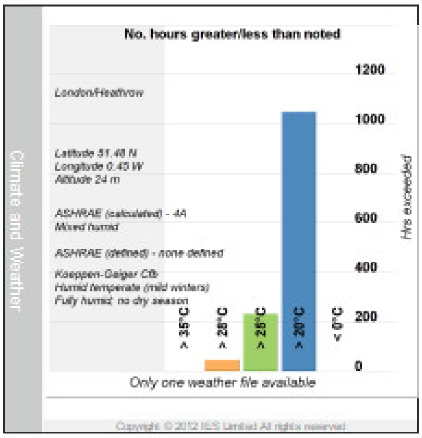
Technical details relating to the above, or the equations used to simulate the window flow characteristics can be provided by BBS Environmental on request.

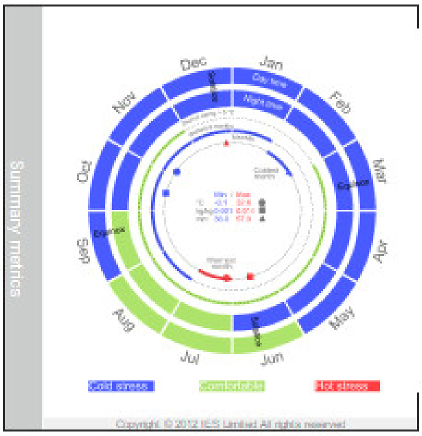
Appendix D: Climate metrics

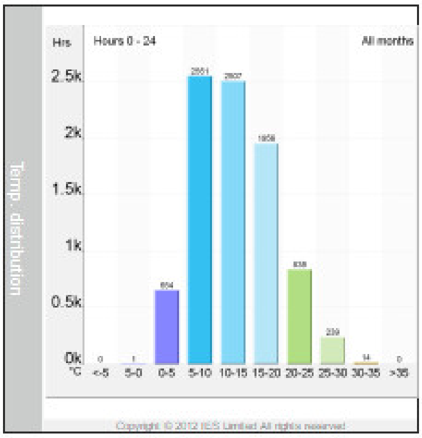
The following summary data, which is as used for the simulations, is derived directly from the IES software suite. There are three sheets – one for each of the three following weather files that were used in the simulations:

London _LWC_DSY1
London _LWC_DSY2
London _LWC_DSY3

Climate metrics







London/Heathrow

ASHRAE 90.1[1] (calculated)	4A	Mixed humid
ASHRAE 90.1[1] (defined)	none defined	
Koeppen-Geiger[1]	Cfb	Humid temperate (mild winters), Fully humid; no dry season, Warm summer (marine), Mild winters with heavy precipitation, warm/short/dry summers, on western continental coasts

Chosen weather file is London_LWC_DSY1.epw
Rainfall location: London -Heathrow, United Kingdom
Winter is potentially most dominant - the design must minimise heating energy.
Latitude is mid - solar radiation on south/east/west walls is significant. Solar radiation on roofs is significant.
Summer is warm. Summer also has a moderate diurnal range. Summer also has cool summer nights.
Winter is mild.
Winter prevailing winds typically from the north. Summer prevailing winds typically from the south. Wind patterns: Typically westerly winds.

Temperature[2]:

Warmest month Jul
Max annual temperature (Jul) 32.6 °C
Warmest six months Jul Aug Sep Jun May Oct
Coldest month Feb
Min annual temperature (Nov) -0.1 °C
Coldest six months Feb Dec Jan Apr Nov Mar
Number of months warmer than 10.0°C mean = 6

Diurnal temperature swing[3]:

0 months swing > 20 °C, of which 0 are in the warmest 6M
0 months swing 15 to 20 °C, of which 0 are in the warmest 6M
0 months swing 10 to 15 °C, of which 0 are in the warmest 6M
9 months swing 5 to 10 °C, of which 6 are in the warmest 6M
3 months swing < 5 °C

Moisture and humidity[4]:

Max. moisture content 0.014 kg/kg
Min. moisture content 0.001 kg/kg
Mean moisture content 0.006 kg/kg
Mean relative humidity 70.1 %

Wind[5]:

Annual mean speed 4.7 m/s
Annual mean direction E of N 229.5°

Precipitation[6]:

Annual rainfall 611.0 mm
Driest month Feb with 36.0 mm rainfall
Wettest month Dec with 57.0 mm rainfall
Wettest summer month Oct
Wettest winter month Nov
Driest summer month Jul
Driest winter month Feb
Wettest six months Dec Nov Oct Aug Sep Jan

Solar energy[7]:

Annual hourly mean global radiation(a) 122.0 W/m^2
Mean daily global radiation(b) 2917.4 Wh/m^2
Annual solar resource(c) 1068.3 $kWh/m^2.yr$
Annual mean cloud cover(d) 5.2 oktas

Degree days[8]:

HDD(18.3) = 2201.2
CDD(10.0) = 1384.5

The climate report provides the headlines you need to know about the weather file you have selected

1. The Ashrae 90.1 climate classes are based around the Koeppen-Geiger classification system, but provide better definition in temperate and maritime zones. See also Koeppen Geiger and Kottek, Greiser,Beck, Rudolf and Rubel. Both the climate zone defined by ASHRAE and the climate zone calculated from the assigned weather data are displayed. The analysis in this report is based on the calculated climate zone.

2. Note the coincidence of wet or dry seasons and warm or cold seasons e.g. Wet summers, dry summers, wet winters etc

3. A good diurnal swing (monthly mean of the daily swing) during the warmest months indicates the potential for passive night time cooling and the use of thermal mass

4. Moisture content the nominal comfort range is 0.004-0.012 kg/kg If moisture content is 0.020 kg/kg or above either all year or in summertime it is an issue. High humidity high temp. cause comfort stress.

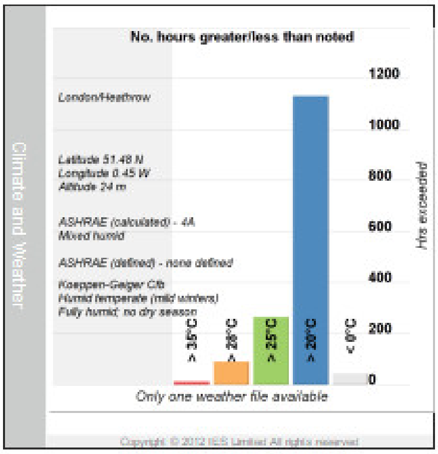
5. Wind speeds:
less than 1.5 ms light and calm
1.5-8 ms breeze
8-14 ms strong breeze
greater than 14 ms gale and above

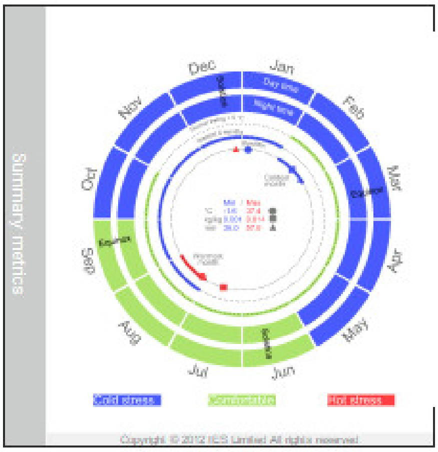
6. Typically what does annual rainfall mean:
Wet 1700mm
Temperate 500 to 1500mm
Dry 300mm
Desert 100mm

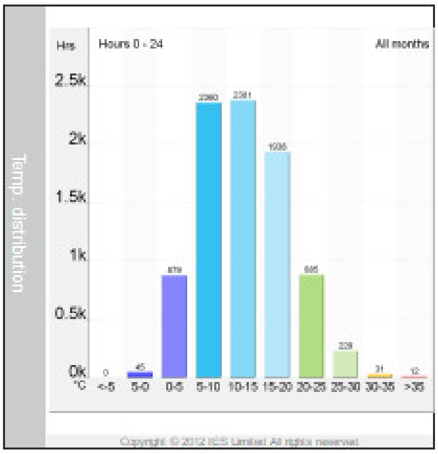
7. Globally what is the range?
a. 150 to 450
b. 2000 to 6500
c. 800 to 2200
d. 1.5 to 8

8. Globally what is the range?
HDD 0 to 8000
CDD 0 to 6500

Climate metrics







London/Heathrow

ASHRAE 90.1[1] (calculated)	4A	Mixed humid
ASHRAE 90.1[1] (defined)	none defined	
Koeppen-Geiger[1]	Cfb	Humid temperate (mild winters), Fully humid; no dry season, Warm summer (marine), Mild winters with heavy precipitation, warm/short/dry summers, on western continental coasts

Chosen weather file is London_LWC_DSY2.epw
Rainfall location: London -Heathrow, United Kingdom
Winter is potentially most dominant - the design must minimise heating energy.
Latitude is mid - solar radiation on south/east/west walls is significant. Solar radiation on roofs is significant.
Summer is warm. Summer also has a moderate diurnal range. Summer also has cool summer nights.
Winter is mild.
Winter prevailing winds typically from the north. Summer prevailing winds typically from the south. Wind patterns: Typically westerly winds.

Temperature[2]:

Warmest month Aug
Max annual temperature (Aug) 37.4 °C
Warmest six months Aug Jul Jun Sep May Oct
Coldest month Feb
Min annual temperature (Jan) -1.6 °C
Coldest six months Feb Jan Dec Mar Nov Apr
Number of months warmer than 10.0°C mean = 8

Diurnal temperature swing[3]:
0 months swing > 20 °C, of which 0 are in the warmest 6M
0 months swing 15 to 20 °C, of which 0 are in the warmest 6M
0 months swing 10 to 15 °C, of which 0 are in the warmest 6M
9 months swing 5 to 10 °C, of which 6 are in the warmest 6M
3 months swing < 5 °C

Moisture and humidity[4]:

Max. moisture content 0.014 kg/kg
Min. moisture content 0.001 kg/kg
Mean moisture content 0.006 kg/kg
Mean relative humidity 67.0 %

Wind[5]:

Annual mean speed 3.9 m/s
Annual mean direction E of N 235.3°

Precipitation[6]:

Annual rainfall 611.0 mm
Driest month Feb with 36.0 mm rainfall
Wettest month Dec with 57.0 mm rainfall
Wettest summer month Oct
Wettest winter month Nov
Driest summer month Jul
Driest winter month Feb
Wettest six months Dec Nov Oct Aug Sep Jan

Solar energy[7]:

Annual hourly mean global radiation(a) 126.0 W/m^2
Mean daily global radiation(b) 3017.4 Wh/m^2
Annual solar resource(c) 1104.0 kWh/m^2.yr
Annual mean cloud cover(d) 5.1 oktas

Degree days[8]:
HDD(18.3) = 2263.1
CDD(10.0) = 1412.2

The climate report provides the headlines you need to know about the weather file you have selected

1. The Ashrae 90.1 climate classes are based around the Koeppen-Geiger classification system, but provide better definition in temperate and maritime zones. See also Koeppen Geiger and Kottek, Greiser,Beck, Rudolf and Rubel. Both the climate zone defined by ASHRAE and the climate zone calculated from the assigned weather data are displayed. The analysis in this report is based on the calculated climate zone.

2. Note the coincidence of wet or dry seasons and warm or cold seasons e.g. Wet summers, dry summers, wet winters etc

3. A good diurnal swing (monthly mean of the daily swing) during the warmest months indicates the potential for passive night time cooling and the use of thermal mass

4. Moisture content the nominal comfort range is 0.004-0.012 kg/kg If moisture content is 0.020 kg/kg or above either all year or in summertime it is an issue. High humidity high temp. cause comfort stress.

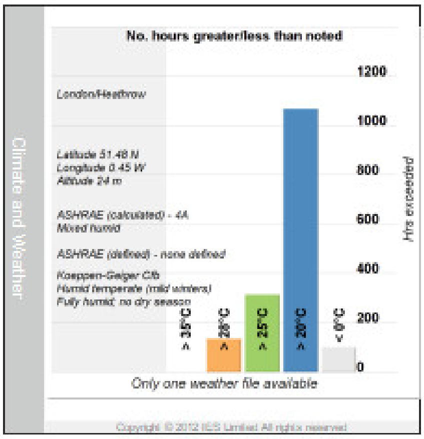
5. Wind speeds:
less than 1.5 ms light and calm
1.5-8 ms breeze
8-14 ms strong breeze
greater than 14 ms gale and above

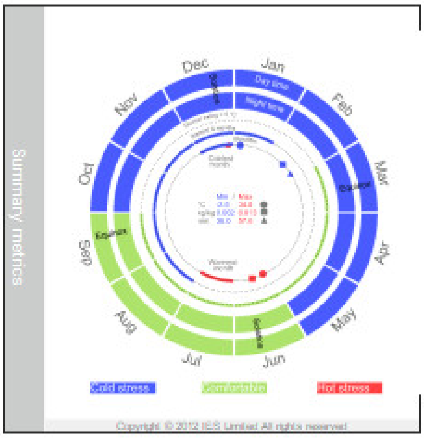
6. Typically what does annual rainfall mean:
Wet 1700mm
Temperate 500 to 1500mm
Dry 300mm
Desert 100mm

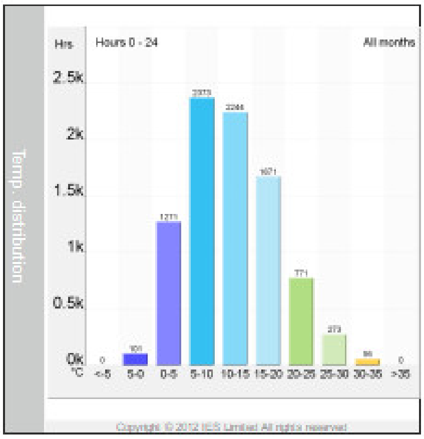
7. Globally what is the range?
a. 150 to 450
b. 2000 to 6500
c. 800 to 2200
d. 1.5 to 8

8. Globally what is the range?
HDD 0 to 8000
CDD 0 to 6500

Climate metrics







London/Heathrow

ASHRAE 90.1[1] (calculated) 4A Mixed humid

ASHRAE 90.1[1] (defined) none defined

Koeppen-Geiger[1] Cfb Humid temperate (mild winters), Fully humid; no dry season, Warm summer (marine), Mild winters with heavy precipitation, warm/short/dry summers, on western continental coasts

Chosen weather file is London_LWC_DSY3.epw
Rainfall location: London -Heathrow, United Kingdom
Winter is potentially most dominant - the design must minimise heating energy.
Latitude is mid - solar radiation on south/east/west walls is significant. Solar radiation on roofs is significant.
Summer is warm. Summer also has a moderate diurnal range. Summer also has cool summer nights.
Winter is mild.
Winter prevailing winds typically from the north. Summer prevailing winds typically from the south. Wind patterns: Typically westerly winds.

Temperature[2]:

Warmest month Jul
Max annual temperature (Jun) 34.8 °C
Warmest six months Jul Aug Jun Sep May Oct
Coldest month Dec
Min annual temperature (Jan) -2.5 °C
Coldest six months Dec Feb Mar Jan Nov Apr
Number of months warmer than 10.0°C mean = 6

Diurnal temperature swing[3]:

0 months swing > 20 °C, of which 0 are in the warmest 6M
0 months swing 15 to 20 °C, of which 0 are in the warmest 6M
0 months swing 10 to 15 °C, of which 0 are in the warmest 6M
7 months swing 5 to 10 °C, of which 5 are in the warmest 6M
5 months swing < 5 °C

Moisture and humidity[4]:

Max. moisture content 0.013 kg/kg
Min. moisture content 0.002 kg/kg
Mean moisture content 0.006 kg/kg
Mean relative humidity 71.4 %

Wind[5]:

Annual mean speed 5.2 m/s
Annual mean direction E of N 256.4°

Precipitation[6]:

Annual rainfall 611.0 mm
Driest month Feb with 36.0 mm rainfall
Wettest month Dec with 57.0 mm rainfall
Wettest summer month Oct
Wettest winter month Nov
Driest summer month Jul
Driest winter month Feb
Wettest six months Dec Nov Oct Aug Sep Jan

Solar energy[7]:

Annual hourly mean global radiation(a) 124.1 W/m^2
Mean daily global radiation(b) 2967.4 Wh/m^2
Annual solar resource(c) 1087.4 $kWh/m^2.yr$
Annual mean cloud cover(d) 5.2 oktas

Degree days[8]:

HDD(18.3) = 2557.5
CDD(10.0) = 1304.4

The climate report provides the headlines you need to know about the weather file you have selected

1. The Ashrae 90.1 climate classes are based around the Koeppen-Geiger classification system, but provide better definition in temperate and maritime zones. See also Koeppen Geiger and Kottek, Greiser,Beck, Rudolf and Rubel. Both the climate zone defined by ASHRAE and the climate zone calculated from the assigned weather data are displayed. The analysis in this report is based on the calculated climate zone.

2. Note the coincidence of wet or dry seasons and warm or cold seasons e.g. Wet summers, dry summers, wet winters etc

3. A good diurnal swing (monthly mean of the daily swing) during the warmest months indicates the potential for passive night time cooling and the use of thermal mass

4. Moisture content the nominal comfort range is 0.004-0.012 kg/kg If moisture content is 0.020 kg/kg or above either all year or in summertime it is an issue. High humidity high temp. cause comfort stress.

5. Wind speeds:
less than 1.5 ms light and calm
1.5-8 ms breeze
8-14 ms strong breeze
greater than 14 ms gale and above

6. Typically what does annual rainfall mean:
Wet 1700mm
Temperate 500 to 1500mm
Dry 300mm
Desert 100mm

7. Globally what is the range?
a. 150 to 450
b. 2000 to 6500
c. 800 to 2200
d. 1.5 to 8

8. Globally what is the range?
HDD 0 to 8000
CDD 0 to 6500

Appendix E: Full results tables

DSY 1 Results

Room Name	Criterion 1	Criterion 2	Criterion 3	Criteria failing	TM52 Pass Fail
F1-10 B	0	0	0	-	Pass
F1-10 B	0	0	0	-	Pass
F1-11 B	0	0	0	-	Pass
F1-11 L	1.1	9	2	2	Pass
F1-12 B	0	0	0	-	Pass
F1-12 B	0	0	0	-	Pass
F1-12 B	0	0	0	-	Pass
F1-10 L	0	0	0	-	Pass
F1-12 L	0.7	6	2	-	Pass
F1-13 B	0	0	0	-	Pass
F1-13 B	0	0	0	-	Pass
F1-13 L	1	8	2	2	Pass
F1-14 L	1	7	2	2	Pass
F1-14 B	0	0	0	-	Pass
F1-14 B	0	0	0	-	Pass
F1-15 L	0.2	2	1	-	Pass
F1-15 B	0	0	0	-	Pass
F1-16 B	0	0	0	-	Pass
F1-16 B	0	0	0	-	Pass
F1-16 B	0	0	0	-	Pass
F1-16 L	0	0	0	-	Pass
F2-07 L	0	0	0	-	Pass
F2-07 B	0	0	0	-	Pass
F2-07 B	0	0	0	-	Pass
F2-08 L	0	0	0	-	Pass
F2-08 B	0	0	0	-	Pass
F2-08 B	0	0	0	-	Pass
F2-09 B	0	0	0	-	Pass
F2-09 B	0	0	0	-	Pass
F2-09 L	0	0	0	-	Pass
F2-10 L	0	0	0	-	Pass
F2-10 B	0	0	0	-	Pass
F2-10 B	0	0	0	-	Pass
F2-11 B	0	0	0	-	Pass
F2-11 B	0	0	0	-	Pass
F2-11 L	0	0	0	-	Pass
F2-12 L	0	0	0	-	Pass
F2-13 L	0	0	0	-	Pass
F2-13 B	0	0	0	-	Pass
F2-13 B	0	0	0	-	Pass
F2-13 B	0	0	0	-	Pass
F2-14 B	0	0	0	-	Pass
F2-14 L	0	0	0	-	Pass
F3-12 B	0	0	0	-	Pass

F3-12 B	0	0	0	-	Pass
F3-12 B	0	0	0	-	Pass
F3-12 L	0	0	0	-	Pass
F3-13 L	0	0	0	-	Pass
F3-13 B	0	0	0	-	Pass
F3-13 B	0	0	0	-	Pass
F3-14 B	0	0	0	-	Pass
F3-14 B	0	0	0	-	Pass
F3-14 B	0	0	0	-	Pass
F3-14 L	1.7	10	3	2	Pass
F3-15 L	0.9	8	2	2	Pass
F3-15 B	0.1	1	1	-	Pass
F3-15 B	0.1	1	1	-	Pass
F3-16 B	0.1	1	1	-	Pass
F3-16 B	0.1	1	1	-	Pass
F3-16 L	1.1	8	2	2	Pass
F3-17 L	0	0	0	-	Pass
F3-17 B	0	0	0	-	Pass
F3-17 B	0	0	0	-	Pass
F3-17 B	0	0	0	-	Pass
F3-18 L	0	0	0	-	Pass
F3-18 B	0	0	0	-	Pass
F1-17 B	0	0	0	-	Pass
F1-17 B	0	0	0	-	Pass
F1-18 B	0	0	0	-	Pass
F1-18 L	1.1	9	2	2	Pass
F1-19 B	0	0	0	-	Pass
F1-19 B	0	0	0	-	Pass
F1-19 B	0	0	0	-	Pass
F1-17 L	0	0	0	-	Pass
F1-19 L	0.7	6	2	-	Pass
F1-20 B	0	0	0	-	Pass
F1-20 B	0	0	0	-	Pass
F1-20 L	1	8	2	2	Pass
F1-21 L	1	8	2	2	Pass
F1-21 B	0	0	0	-	Pass
F1-21 B	0	0	0	-	Pass
F1-23 L	0.2	2	1	-	Pass
F1-23 B	0	0	0	-	Pass
F1-22 B	0	0	0	-	Pass
F1-22 B	0	0	0	-	Pass
F1-22 B	0	0	0	-	Pass
F1-22 L	0	0	0	-	Pass
F2-15 L	0	0	0	-	Pass
F2-15 B	0	0	0	-	Pass
F2-15 B	0	0	0	-	Pass
F2-16 L	0	0	0	-	Pass
F2-16 B	0	0	0	-	Pass
F2-16 B	0	0	0	-	Pass
F2-17 B	0	0	0	-	Pass
F2-17 B	0	0	0	-	Pass
F2-17 L	0	0	0	-	Pass
F2-18 L	0	0	0	-	Pass
F2-18 B	0	0	0	-	Pass

F2-18 B	0	0	0	-	Pass
F2-19 B	0	0	0	-	Pass
F2-19 B	0	0	0	-	Pass
F2-19 L	0	0	0	-	Pass
F2-20 L	0	0	0	-	Pass
F2-21 L	0	0	0	-	Pass
F2-21 B	0	0	0	-	Pass
F2-21 B	0	0	0	-	Pass
F2-21 B	0	0	0	-	Pass
F2-22 B	0	0	0	-	Pass
F2-22 L	0.6	4	1	-	Pass
F3-19 B	0	0	0	-	Pass
F3-19 B	0	0	0	-	Pass
F3-19 B	0	0	0	-	Pass
F3-19 L	0	0	0	-	Pass
F3-20 L	0	0	0	-	Pass
F3-20 B	0	0	0	-	Pass
F3-20 B	0	0	0	-	Pass
F3-21 B	0	0	0	-	Pass
F3-21 B	0	0	0	-	Pass
F3-21 B	0	0	0	-	Pass
F3-21 L	1.7	10	3	2	Pass
F3-22 L	0.9	8	2	2	Pass
F3-22 B	0.1	1	1	-	Pass
F3-22 B	0.1	1	1	-	Pass
F3-23 B	0.1	1	1	-	Pass
F3-23 B	0.1	1	1	-	Pass
F3-23 L	1.1	8	2	2	Pass
F3-24 L	0	0	0	-	Pass
F3-24 B	0	0	0	-	Pass
F3-24 B	0	0	0	-	Pass
F3-24 B	0	0	0	-	Pass
F3-25 L	0	0	0	-	Pass
F3-25 B	0	0	0	-	Pass
F1-24 B	0	0	0	-	Pass
F1-24 B	0	0	0	-	Pass
F1-25 B	0	0	0	-	Pass
F1-25 L	1.1	9	2	2	Pass
F1-26 B	0	0	0	-	Pass
F1-26 B	0	0	0	-	Pass
F1-26 B	0	0	0	-	Pass
F1-24 L	0	0	0	-	Pass
F1-26 L	0.7	6	2	-	Pass
F1-27 B	0	0	0	-	Pass
F1-27 B	0	0	0	-	Pass
F1-27 L	1	8	2	2	Pass
F1-28 L	1	8	2	2	Pass
F1-28 B	0	0	0	-	Pass
F1-28 B	0	0	0	-	Pass
F1-30 L	0.2	2	1	-	Pass
F1-30 B	0	0	0	-	Pass
F1-29 B	0	0	0	-	Pass
F1-29 B	0	0	0	-	Pass
F1-29 B	0	0	0	-	Pass

F1-29 L	0	0	0	-	Pass
F2-23 L	0	0	0	-	Pass
F2-23 B	0	0	0	-	Pass
F2-23 B	0	0	0	-	Pass
F2-24 L	0	0	0	-	Pass
F2-24 B	0	0	0	-	Pass
F2-24 B	0	0	0	-	Pass
F2-25 B	0	0	0	-	Pass
F2-25 B	0	0	0	-	Pass
F2-25 L	0	0	0	-	Pass
F2-26 L	0	0	0	-	Pass
F2-26 B	0	0	0	-	Pass
F2-26 B	0	0	0	-	Pass
F2-27 B	0	0	0	-	Pass
F2-27 B	0	0	0	-	Pass
F2-27 L	0	0	0	-	Pass
F2-28 L	0	0	0	-	Pass
F2-29 L	0	0	0	-	Pass
F2-29 B	0	0	0	-	Pass
F2-29 B	0	0	0	-	Pass
F2-29 B	0	0	0	-	Pass
F2-30 B	0	0	0	-	Pass
F2-30 L	0.8	4	1	-	Pass
F3-26 B	0	0	0	-	Pass
F3-26 B	0	0	0	-	Pass
F3-26 B	0	0	0	-	Pass
F3-26 L	0	0	0	-	Pass
F3-27 L	0	0	0	-	Pass
F3-27 B	0	0	0	-	Pass
F3-27 B	0	0	0	-	Pass
F3-28 B	0	0	0	-	Pass
F3-28 B	0	0	0	-	Pass
F3-28 B	0	0	0	-	Pass
F3-28 L	1.5	10	2	2	Pass
F3-29 L	0.9	8	2	2	Pass
F3-29 B	0.1	1	1	-	Pass
F3-29 B	0.1	1	1	-	Pass
F3-30 B	0.1	1	1	-	Pass
F3-30 B	0.1	1	1	-	Pass
F3-30 L	1.1	8	2	2	Pass
F3-31 L	0	0	0	-	Pass
F3-31 B	0	0	0	-	Pass
F3-31 B	0	0	0	-	Pass
F3-31 B	0	0	0	-	Pass
F3-32 L	0	0	0	-	Pass
F3-32 B	0	0	0	-	Pass
F1-31 B	0	0	0	-	Pass
F1-31 B	0	0	0	-	Pass
F1-32 B	0	0	0	-	Pass
F1-32 L	1.1	9	2	2	Pass
F1-33 B	0	0	0	-	Pass
F1-31 L	0	0	0	-	Pass
F1-34 B	0	0	0	-	Pass
F1-34 B	0	0	0	-	Pass

F1-34 L	1	8	2	2	Pass
F1-35 L	1	8	2	2	Pass
F1-35 B	0	0	0	-	Pass
F1-35 B	0	0	0	-	Pass
F1-37 L	0.2	2	1	-	Pass
F1-37 B	0	0	0	-	Pass
F1-36 B	0	0	0	-	Pass
F1-36 B	0	0	0	-	Pass
F1-36 B	0	0	0	-	Pass
F1-36 L	0	0	0	-	Pass
F2-31 L	0	0	0	-	Pass
F2-31 B	0	0	0	-	Pass
F2-31 B	0	0	0	-	Pass
F2-32 L	0.2	2	1	-	Pass
F2-32 B	0	0	0	-	Pass
F2-32 B	0	0	0	-	Pass
F2-33 B	0	0	0	-	Pass
F2-33 B	0	0	0	-	Pass
F2-33 L	0	0	0	-	Pass
F2-34 L	0	0	0	-	Pass
F2-34 B	0	0	0	-	Pass
F2-34 B	0	0	0	-	Pass
F2-35 B	0	0	0	-	Pass
F2-35 B	0	0	0	-	Pass
F2-35 L	0	0	0	-	Pass
F2-36 L	0	0	0	-	Pass
F2-37 L	0	0	0	-	Pass
F2-37 B	0	0	0	-	Pass
F2-37 B	0	0	0	-	Pass
F2-37 B	0	0	0	-	Pass
F2-38 B	0	0	0	-	Pass
F2-38 L	0.9	4	1	-	Pass
F3-33 B	0.1	1	1	-	Pass
F3-33 B	0.1	1	1	-	Pass
F3-34 B	0.1	1	1	-	Pass
F3-34 B	0	0	0	-	Pass
F3-34 L	1.1	8	2	2	Pass
F3-35 L	0	0	0	-	Pass
F3-35 B	0	0	0	-	Pass
F3-35 B	0	0	0	-	Pass
F3-35 B	0	0	0	-	Pass
F3-36 L	0	0	0	-	Pass
F3-36 B	0	0	0	-	Pass
F3-33 L	0.7	6	2	-	Pass
F1-33 B	0	0	0	-	Pass
F1-38 B	0	0	0	-	Pass
F1-38 B	0	0	0	-	Pass
F1-39 B	0	0	0	-	Pass
F1-39 L	1.4	10	2	2	Pass
F1-40 B	0	0	0	-	Pass
F1-38 L	0	0	0	-	Pass
F1-41 B	0	0	0	-	Pass
F1-41 B	0	0	0	-	Pass
F1-41 L	1.1	8	2	2	Pass

F1-42 L	1.1	8	2	2	Pass
F1-42 B	0	0	0	-	Pass
F1-42 B	0	0	0	-	Pass
F2-39 L	0.2	2	1	-	Pass
F2-39 B	0	0	0	-	Pass
F2-39 B	0.1	1	1	-	Pass
F2-40 L	0.9	8	2	2	Pass
F2-40 B	0	0	0	-	Pass
F2-40 B	0	0	0	-	Pass
F2-41 B	0	0	0	-	Pass
F2-41 B	0	0	0	-	Pass
F2-41 L	0	0	0	-	Pass
F2-42 L	0	0	0	-	Pass
F2-42 B	0	0	0	-	Pass
F2-42 B	0	0	0	-	Pass
F2-43 B	0	0	0	-	Pass
F2-43 B	0	0	0	-	Pass
F2-43 L	0	0	0	-	Pass
F2-44 L	0	0	0	-	Pass
F2-45 L	0	0	0	-	Pass
F2-45 B	0	0	0	-	Pass
F2-45 B	0	0	0	-	Pass
F2-45 B	0	0	0	-	Pass
F2-46 B	0	0	0	-	Pass
F2-46 L	1.5	9	2	2	Pass
F3-36 B (6th Sth)	0	0	0	-	Pass
F3-36 B (6th Sth)	0	0	0	-	Pass
F3-37 B	0	0	0	-	Pass
F3-37 B	0	0	0	-	Pass
F3-37 L	1.6	14	3	2	Pass
F3-38 L	0	0	0	-	Pass
F3-38 B	0	0	0	-	Pass
F3-38 B	0	0	0	-	Pass
F3-38 B	0	0	0	-	Pass
F3-39 L	0	0	0	-	Pass
F3-39 B	0	0	0	-	Pass
F3-36 L (6th Sth)	1.4	10	2	2	Pass
F1-40 L	1.1	8	2	2	Pass
F1-40 B	0	0	0	-	Pass
F1-45 Dplx K/D	0.7	6	2	-	Pass
F1-43 Dplx B	0	0	0	-	Pass
F1-33 L	0.9	7	2	2	Pass
F1-44 Dplx B	0	0	0	-	Pass
F1-45 Dplx L	0	0	0	-	Pass
F1-45 Dplx B	0	0	0	-	Pass
F1-45 Dplx B	0	0	0	-	Pass
F1-45 Dplx B	0	0	0	-	Pass
F1-44 Dplx B	0	0	0	-	Pass
F1-44 Dplx L	1.2	9	3	2	Pass
F1-43 Dplx L	1.5	12	3	2	Pass
F1-43 Dplx B	0	0	0	-	Pass
F1-46 Dplx B	0	0	0	-	Pass
F1-46 Dplx D	0.6	6	2	-	Pass
F1-47 Dplx L	0.8	6	2	-	Pass

F1-48 Dplx L	1.6	12	3	2	Pass
F1-48 Dplx B	0	0	0	-	Pass
F1-49 Dplx L	0.4	3	1	-	Pass
F2-47 L	0	0	0	-	Pass
F2-48 L	0	0	0	-	Pass
F2-48 B	0	0	0	-	Pass
F2-48 B	0	0	0	-	Pass
F2-48 B	0	0	0	-	Pass
F2-49 B	0	0	0	-	Pass
F2-49 L	1.5	9	2	2	Pass
F2-50 L	0	0	0	-	Pass
F2-51 L	0	0	0	-	Pass
F2-51 B	0	0	0	-	Pass
F2-51 B	0	0	0	-	Pass
F2-51 B	0	0	0	-	Pass
F2-52 B	0	0	0	-	Pass
F2-52 L	1.4	9	2	2	Pass
F1-49 Dplx B	0	0	0	-	Pass
F1-49 Dplx B	0	0	0	-	Pass
F1-49 Dplx B	0	0	0	-	Pass
F1-48 Dplx B	0	0	0	-	Pass
F1-47 Dplx B	0	0	0	-	Pass
F1-47 Dplx B	0	0	0	-	Pass
F1-46 Dplx B	0	0	0	-	Pass
F1-46 Dplx B	0	0	0	-	Pass
F1-46 Dplx L	0	0	0	-	Pass
F1-46 Dplx L	0	0	0	-	Pass
F1-05 B	0	0	0	-	Pass
F1-05 B	0	0	0	-	Pass
F1-06 B	0	0	0	-	Pass
F1-06 L	1.2	9	2	2	Pass
F1-07 B	0	0	0	-	Pass
F1-07 B	0	0	0	-	Pass
F1-07 B	0	0	0	-	Pass
F1-07 L	0.7	6	2	-	Pass
F1-09 L	0.2	2	1	-	Pass
F1-09 B	0	0	0	-	Pass
F1-08 B	0	0	0	-	Pass
F1-08 B	0	0	0	-	Pass
F1-08 B	0	0	0	-	Pass
F1-08 L	0	0	0	-	Pass
F3-11 L	0	0	0	-	Pass
F3-11 B	0	0	0	-	Pass
F2-04 L	0	0	0	-	Pass
n/a	0	0	0	-	Pass
F1-01 L	0	0	0	-	Pass
F1-02 L	0	0	0	-	Pass
F1-03 L	0	0	0	-	Pass
F1-04 L	0	0	0	-	Pass
F2-01 L	0	0	0	-	Pass
F2-01 B	0	0	0	-	Pass
F2-02 B	0	0	0	-	Pass
F2-02 L	0	0	0	-	Pass
F2-03 L	0	0	0	-	Pass

F2-03 B	0	0	0	-	Pass
F2-03 B	0	0	0	-	Pass
F2-05 B	0	0	0	-	Pass
F2-05 B	0	0	0	-	Pass
F2-05 L	0.3	3	1	-	Pass
F2-06 L	0	0	0	-	Pass
F2-06 B	0	0	0	-	Pass
F3-01 B	0	0	0	-	Pass
F3-01 B	0	0	0	-	Pass
F3-01 B	0	0	0	-	Pass
F3-01 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-04 B	0	0	0	-	Pass
F3-04 B	0	0	0	-	Pass
F3-04 B	0	0	0	-	Pass
F3-05 B	0	0	0	-	Pass
F3-05 B	0	0	0	-	Pass
F3-05 B	0	0	0	-	Pass
F3-09 B	0	0	0	-	Pass
F3-09 L	0.3	2	1	-	Pass
F3-06 B	0	0	0	-	Pass
F3-06 B	0	0	0	-	Pass
F3-07 B	0	0	0	-	Pass
F3-07 B	0	0	0	-	Pass
F3-08 B	0	0	0	-	Pass
F3-08 B	0	0	0	-	Pass
F3-10 B	0	0	0	-	Pass
F3-10 B	0	0	0	-	Pass
F3-10 L	0	0	0	-	Pass
F3-08 L	1	7	2	2	Pass
F3-07 L	0.9	6	2	-	Pass
F3-06 L	0.8	6	2	-	Pass
F3-05 L	0.6	4	1	-	Pass
F3-05 KD	0	0	0	-	Pass
F3-01 L	0.9	5	1	-	Pass
F3-01 KD	0	0	0	-	Pass
F3-02 KD	0	0	0	-	Pass
F3-02 L	0.9	5	1	-	Pass
F3-03 L	0.9	5	1	-	Pass
F3-03 KD	0	0	0	-	Pass
F3-04 KD	0	0	0	-	Pass
F3-04 L	0.4	4	1	-	Pass
				Number of Rooms failing	0

DSY 2 RESULTS

Room Name	Criterion 1	Criterion 2	Criterion 3	Criteria failing	TM52 Pass Fail
F1-10 B	0	0	0	-	Pass
F1-10 B	0	0	0	-	Pass
F1-11 B	0.1	1	1	-	Pass
F1-12 B	0	0	0	-	Pass
F1-12 B	0.1	1	1	-	Pass
F1-12 B	0	0	0	-	Pass
F1-10 L	0.2	2	1	-	Pass
F1-12 L	2.2	11	3	2	Pass
F1-13 B	0	0	0	-	Pass
F1-13 B	0	0	0	-	Pass
F1-13 L	2.6	11	3	2	Pass
F1-14 L	2.6	11	3	2	Pass
F1-14 B	0	0	0	-	Pass
F1-14 B	0	0	0	-	Pass
F1-15 L	0.6	5	2	-	Pass
F1-15 B	0	0	0	-	Pass
F1-16 B	0	0	0	-	Pass
F1-16 B	0.1	1	1	-	Pass
F1-16 B	0	0	0	-	Pass
F1-16 L	0.1	1	1	-	Pass
F2-07 L	0	0	0	-	Pass
F2-07 B	0	0	0	-	Pass
F2-07 B	0.1	1	1	-	Pass
F2-08 L	0.5	5	1	-	Pass
F2-08 B	0.1	1	1	-	Pass
F2-08 B	0	0	0	-	Pass
F2-09 B	0	0	0	-	Pass
F2-09 B	0	0	0	-	Pass
F2-09 L	0.2	2	1	-	Pass
F2-10 L	0.2	2	1	-	Pass
F2-10 B	0	0	0	-	Pass
F2-10 B	0	0	0	-	Pass
F2-11 B	0	0	0	-	Pass
F2-11 B	0	0	0	-	Pass
F2-11 L	0.2	2	1	-	Pass
F2-12 L	0.5	7	2	2	Pass
F2-13 L	0.4	6	2	-	Pass
F2-13 B	0	0	0	-	Pass
F2-13 B	0	0	0	-	Pass
F2-13 B	0.1	1	1	-	Pass
F2-14 B	0	0	0	-	Pass
F2-14 L	0.7	8	2	2	Pass
F3-12 B	0.1	1	1	-	Pass
F3-12 B	0.1	1	1	-	Pass
F3-12 B	0	0	0	-	Pass
F3-12 L	0.4	6	2	-	Pass
F3-13 L	0.4	4	1	-	Pass
F3-13 B	0.1	1	1	-	Pass

F3-13 B	0	0	0	-	Pass
F3-14 B	0.1	1	1	-	Pass
F3-14 B	0.2	2	1	-	Pass
F3-14 B	0	0	0	-	Pass
F3-15 B	0.2	3	2	-	Pass
F3-15 B	0.2	3	2	-	Pass
F3-16 B	0.2	3	2	-	Pass
F3-16 B	0.2	3	2	-	Pass
F3-17 L	0.3	3	1	-	Pass
F3-17 B	0	0	0	-	Pass
F3-17 B	0	0	0	-	Pass
F3-17 B	0	0	0	-	Pass
F3-18 L	0.3	3	1	-	Pass
F3-18 B	0	0	0	-	Pass
F1-17 B	0	0	0	-	Pass
F1-17 B	0	0	0	-	Pass
F1-18 B	0.1	1	1	-	Pass
F1-19 B	0	0	0	-	Pass
F1-19 B	0.1	1	1	-	Pass
F1-19 B	0	0	0	-	Pass
F1-17 L	0.2	2	1	-	Pass
F1-19 L	2.2	11	3	2	Pass
F1-20 B	0	0	0	-	Pass
F1-20 B	0	0	0	-	Pass
F1-20 L	2.7	13	3	2	Pass
F1-21 L	2.6	11	3	2	Pass
F1-21 B	0	0	0	-	Pass
F1-21 B	0	0	0	-	Pass
F1-23 L	0.6	5	2	-	Pass
F1-23 B	0	0	0	-	Pass
F1-22 B	0	0	0	-	Pass
F1-22 B	0.1	1	1	-	Pass
F1-22 B	0	0	0	-	Pass
F1-22 L	0.1	1	1	-	Pass
F2-15 L	0.2	2	1	-	Pass
F2-15 B	0.1	1	1	-	Pass
F2-15 B	0.2	2	1	-	Pass
F2-16 L	0.5	5	1	-	Pass
F2-16 B	0.1	1	1	-	Pass
F2-16 B	0	0	0	-	Pass
F2-17 B	0	0	0	-	Pass
F2-17 B	0	0	0	-	Pass
F2-17 L	0.2	2	1	-	Pass
F2-18 L	0.2	2	1	-	Pass
F2-18 B	0	0	0	-	Pass
F2-18 B	0	0	0	-	Pass
F2-19 B	0	0	0	-	Pass
F2-19 B	0	0	0	-	Pass
F2-19 L	0.2	2	1	-	Pass
F2-20 L	0.5	7	2	2	Pass
F2-21 L	0.4	6	2	-	Pass
F2-21 B	0.1	1	1	-	Pass
F2-21 B	0	0	0	-	Pass
F2-21 B	0.1	1	1	-	Pass

F2-22 B	0.1	1	1	-	Pass
F2-22 L	1.8	13	3	2	Pass
F3-19 B	0.1	1	1	-	Pass
F3-19 B	0.1	1	1	-	Pass
F3-19 B	0	0	0	-	Pass
F3-19 L	0.4	6	2	-	Pass
F3-20 L	0.5	5	1	-	Pass
F3-20 B	0.1	1	1	-	Pass
F3-20 B	0	0	0	-	Pass
F3-21 B	0.1	1	1	-	Pass
F3-21 B	0.2	2	1	-	Pass
F3-21 B	0	0	0	-	Pass
F3-22 B	0.2	3	2	-	Pass
F3-22 B	0.2	3	2	-	Pass
F3-23 B	0.2	3	2	-	Pass
F3-23 B	0.2	3	2	-	Pass
F3-24 L	0.3	3	1	-	Pass
F3-24 B	0	0	0	-	Pass
F3-24 B	0	0	0	-	Pass
F3-24 B	0	0	0	-	Pass
F3-25 L	0.3	3	1	-	Pass
F3-25 B	0	0	0	-	Pass
F1-24 B	0	0	0	-	Pass
F1-24 B	0	0	0	-	Pass
F1-25 B	0.1	1	1	-	Pass
F1-26 B	0	0	0	-	Pass
F1-26 B	0	0	0	-	Pass
F1-26 B	0	0	0	-	Pass
F1-24 L	0.2	2	1	-	Pass
F1-26 L	2.2	11	3	2	Pass
F1-27 B	0	0	0	-	Pass
F1-27 B	0	0	0	-	Pass
F1-27 L	2.7	13	3	2	Pass
F1-28 L	2.6	11	3	2	Pass
F1-28 B	0	0	0	-	Pass
F1-28 B	0	0	0	-	Pass
F1-30 L	0.7	5	2	-	Pass
F1-30 B	0	0	0	-	Pass
F1-29 B	0	0	0	-	Pass
F1-29 B	0.1	1	1	-	Pass
F1-29 B	0	0	0	-	Pass
F1-29 L	0.1	1	1	-	Pass
F2-23 L	0.2	2	1	-	Pass
F2-23 B	0.1	1	1	-	Pass
F2-23 B	0.2	2	1	-	Pass
F2-24 L	0.7	6	2	-	Pass
F2-24 B	0.2	2	1	-	Pass
F2-24 B	0	0	0	-	Pass
F2-25 B	0.1	1	1	-	Pass
F2-25 B	0	0	0	-	Pass
F2-25 L	0.2	2	1	-	Pass
F2-26 L	0.2	2	1	-	Pass
F2-26 B	0	0	0	-	Pass
F2-26 B	0	0	0	-	Pass

F2-27 B	0	0	0	-	Pass
F2-27 B	0	0	0	-	Pass
F2-27 L	0.2	2	1	-	Pass
F2-28 L	0.5	7	2	2	Pass
F2-29 L	0.4	6	2	-	Pass
F2-29 B	0	0	0	-	Pass
F2-29 B	0	0	0	-	Pass
F2-29 B	0.1	1	1	-	Pass
F2-30 B	0.2	3	2	-	Pass
F2-30 L	2.3	13	3	2	Pass
F3-26 B	0.1	1	1	-	Pass
F3-26 B	0.1	1	1	-	Pass
F3-26 B	0.1	1	1	-	Pass
F3-26 L	0.3	3	1	-	Pass
F3-27 L	0.8	7	2	2	Pass
F3-27 B	0.1	1	1	-	Pass
F3-27 B	0	0	0	-	Pass
F3-28 B	0.1	1	1	-	Pass
F3-28 B	0.1	1	1	-	Pass
F3-28 B	0.1	1	1	-	Pass
F3-29 B	0.2	3	2	-	Pass
F3-29 B	0.2	3	2	-	Pass
F3-30 B	0.2	3	2	-	Pass
F3-30 B	0.2	3	2	-	Pass
F3-31 L	0.3	3	1	-	Pass
F3-31 B	0	0	0	-	Pass
F3-31 B	0	0	0	-	Pass
F3-31 B	0	0	0	-	Pass
F3-32 L	0.3	3	1	-	Pass
F3-32 B	0	0	0	-	Pass
F1-31 B	0	0	0	-	Pass
F1-31 B	0	0	0	-	Pass
F1-32 B	0.1	1	1	-	Pass
F1-33 B	0	0	0	-	Pass
F1-31 L	0.2	2	1	-	Pass
F1-34 B	0	0	0	-	Pass
F1-34 B	0	0	0	-	Pass
F1-34 L	2.7	13	3	2	Pass
F1-35 L	2.6	11	3	2	Pass
F1-35 B	0	0	0	-	Pass
F1-35 B	0	0	0	-	Pass
F1-37 L	0.7	5	2	-	Pass
F1-37 B	0	0	0	-	Pass
F1-36 B	0	0	0	-	Pass
F1-36 B	0.1	1	1	-	Pass
F1-36 B	0	0	0	-	Pass
F1-36 L	0.1	1	1	-	Pass
F2-31 L	0.3	3	1	-	Pass
F2-31 B	0.2	2	1	-	Pass
F2-31 B	0.2	3	2	-	Pass
F2-32 L	1.2	7	2	2	Pass
F2-32 B	0.2	3	2	-	Pass
F2-32 B	0.1	1	1	-	Pass
F2-33 B	0.1	1	1	-	Pass

F2-33 B	0	0	0	-	Pass
F2-33 L	0.2	2	1	-	Pass
F2-34 L	0.2	2	1	-	Pass
F2-34 B	0	0	0	-	Pass
F2-34 B	0	0	0	-	Pass
F2-35 B	0	0	0	-	Pass
F2-35 B	0	0	0	-	Pass
F2-35 L	0.2	2	1	-	Pass
F2-36 L	0.5	7	2	2	Pass
F2-37 L	0.4	6	2	-	Pass
F2-37 B	0	0	0	-	Pass
F2-37 B	0	0	0	-	Pass
F2-37 B	0.1	1	1	-	Pass
F2-38 B	0.2	3	2	-	Pass
F2-38 L	2.7	14	4	2	Pass
F3-33 B	0.2	3	2	-	Pass
F3-33 B	0.2	3	2	-	Pass
F3-34 B	0.2	3	2	-	Pass
F3-34 B	0.2	3	2	-	Pass
F3-35 L	0.3	3	1	-	Pass
F3-35 B	0	0	0	-	Pass
F3-35 B	0	0	0	-	Pass
F3-35 B	0	0	0	-	Pass
F3-36 L	0.3	3	1	-	Pass
F3-36 B	0	0	0	-	Pass
F3-33 L	2.7	14	3	2	Pass
F1-33 B	0	0	0	-	Pass
F1-38 B	0	0	0	-	Pass
F1-38 B	0	0	0	-	Pass
F1-39 B	0.1	1	1	-	Pass
F1-40 B	0	0	0	-	Pass
F1-38 L	0.8	5	1	-	Pass
F1-41 B	0	0	0	-	Pass
F1-41 B	0	0	0	-	Pass
F1-41 L	2.9	14	4	2	Pass
F1-42 L	2.9	14	4	2	Pass
F1-42 B	0	0	0	-	Pass
F1-42 B	0	0	0	-	Pass
F2-39 L	1	6	2	-	Pass
F2-39 B	0.2	3	2	-	Pass
F2-39 B	0.2	3	2	-	Pass
F2-40 L	3	13	3	2	Pass
F2-40 B	0.2	3	2	-	Pass
F2-40 B	0.2	3	2	-	Pass
F2-41 B	0.2	3	2	-	Pass
F2-41 B	0.1	1	1	-	Pass
F2-41 L	0.2	2	1	-	Pass
F2-42 L	0.3	3	1	-	Pass
F2-42 B	0	0	0	-	Pass
F2-42 B	0	0	0	-	Pass
F2-43 B	0	0	0	-	Pass
F2-43 B	0	0	0	-	Pass
F2-43 L	0.2	2	1	-	Pass
F2-44 L	0.5	7	2	2	Pass

F2-45 L	0.4	6	2	-	Pass
F2-45 B	0	0	0	-	Pass
F2-45 B	0	0	0	-	Pass
F2-45 B	0.1	1	1	-	Pass
F2-46 B	0.2	3	2	-	Pass
F3-36 B (6th Sth)	0.2	3	2	-	Pass
F3-36 B (6th Sth)	0.2	3	2	-	Pass
F3-37 B	0.2	3	2	-	Pass
F3-37 B	0.2	3	2	-	Pass
F3-38 L	0.3	3	1	-	Pass
F3-38 B	0	0	0	-	Pass
F3-38 B	0	0	0	-	Pass
F3-38 B	0	0	0	-	Pass
F3-39 L	0.4	4	1	-	Pass
F3-39 B	0	0	0	-	Pass
F1-40 B	0	0	0	-	Pass
F1-45 Dplx K/D	1.7	12	4	2	Pass
F1-43 Dplx B	0	0	0	-	Pass
F1-33 L	2.8	14	3	2	Pass
F1-44 Dplx B	0	0	0	-	Pass
F1-45 Dplx L	1.3	8	2	2	Pass
F1-45 Dplx B	0.1	1	1	-	Pass
F1-45 Dplx B	0	0	0	-	Pass
F1-45 Dplx B	0.1	1	1	-	Pass
F1-44 Dplx B	0.1	1	1	-	Pass
F1-44 Dplx L	3	14	4	2	Pass
F1-43 Dplx B	0.1	1	1	-	Pass
F1-46 Dplx B	0	0	0	-	Pass
F1-46 Dplx D	1.1	6	3	-	Pass
F1-47 Dplx L	2.7	12	3	2	Pass
F1-48 Dplx B	0.1	1	1	-	Pass
F1-49 Dplx L	1.7	12	3	2	Pass
F2-47 L	0.5	5	1	-	Pass
F2-48 L	0.4	6	2	-	Pass
F2-48 B	0	0	0	-	Pass
F2-48 B	0	0	0	-	Pass
F2-48 B	0.1	1	1	-	Pass
F2-49 B	0.1	1	1	-	Pass
F2-50 L	0.5	5	1	-	Pass
F2-51 L	0.4	6	2	-	Pass
F2-51 B	0	0	0	-	Pass
F2-51 B	0	0	0	-	Pass
F2-51 B	0.1	1	1	-	Pass
F2-52 B	0.1	1	1	-	Pass
F1-49 Dplx B	0	0	0	-	Pass
F1-49 Dplx B	0.1	1	1	-	Pass
F1-49 Dplx B	0.1	1	1	-	Pass
F1-48 Dplx B	0.1	2	2	-	Pass
F1-47 Dplx B	0	0	0	-	Pass
F1-47 Dplx B	0.1	1	1	-	Pass
F1-46 Dplx B	0.1	1	1	-	Pass
F1-46 Dplx B	0.1	2	2	-	Pass
F1-46 Dplx L	0.5	7	2	2	Pass
F1-46 Dplx L	0.5	6	2	-	Pass

F1-05 B	0	0	0	-	Pass
F1-05 B	0	0	0	-	Pass
F1-06 B	0.1	1	1	-	Pass
F1-07 B	0	0	0	-	Pass
F1-07 B	0.1	1	1	-	Pass
F1-07 B	0	0	0	-	Pass
F1-07 L	2.2	11	3	2	Pass
F1-09 L	0.5	5	2	-	Pass
F1-09 B	0	0	0	-	Pass
F1-08 B	0	0	0	-	Pass
F1-08 B	0.1	1	1	-	Pass
F1-08 B	0	0	0	-	Pass
F1-08 L	0.1	1	1	-	Pass
F3-11 L	0.3	3	1	-	Pass
F3-11 B	0	0	0	-	Pass
F2-04 L	0.5	7	2	2	Pass
n/a	0.2	2	1	-	Pass
F1-01 L	0.2	2	1	-	Pass
F1-02 L	0.2	2	1	-	Pass
F1-03 L	0.2	2	1	-	Pass
F1-04 L	0.2	2	1	-	Pass
F2-01 L	0.1	1	1	-	Pass
F2-01 B	0	0	0	-	Pass
F2-02 B	0	0	0	-	Pass
F2-02 L	1.4	9	2	2	Pass
F2-03 L	0.3	3	1	-	Pass
F2-03 B	0	0	0	-	Pass
F2-03 B	0.1	1	1	-	Pass
F2-05 B	0	0	0	-	Pass
F2-05 B	0	0	0	-	Pass
F2-05 L	1.6	11	3	2	Pass
F2-06 L	0.7	7	2	2	Pass
F2-06 B	0	0	0	-	Pass
F3-01 B	0.1	1	1	-	Pass
F3-01 B	0.1	1	1	-	Pass
F3-01 B	0	0	0	-	Pass
F3-01 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0.1	1	1	-	Pass
F3-02 B	0	0	0	-	Pass
F3-03 B	0.1	1	1	-	Pass
F3-03 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-04 B	0	0	0	-	Pass
F3-04 B	0.1	1	1	-	Pass
F3-04 B	0	0	0	-	Pass
F3-05 B	0.1	1	1	-	Pass
F3-05 B	0.1	1	1	-	Pass
F3-05 B	0.1	1	1	-	Pass
F3-09 B	0.1	1	1	-	Pass
F3-09 L	1.4	7	2	2	Pass
F3-06 B	0.2	3	2	-	Pass

F3-06 B	0.1	1	1	-	Pass
F3-07 B	0.1	2	2	-	Pass
F3-07 B	0.2	3	2	-	Pass
F3-08 B	0.1	2	2	-	Pass
F3-08 B	0.2	3	2	-	Pass
F3-10 B	0	0	0	-	Pass
F3-10 B	0	0	0	-	Pass
F3-10 L	0.3	3	1	-	Pass
F3-07 L	2.7	15	3	2	Pass
F3-06 L	2.8	14	3	2	Pass
F3-05 L	2.1	15	4	2	Pass
F3-05 KD	0.5	4	2	-	Pass
F3-01 L	2.7	17	4	2	Pass
F3-01 KD	0.4	4	2	-	Pass
F3-02 KD	0.4	4	2	-	Pass
F3-02 L	2.7	17	4	2	Pass
F3-03 L	2.7	17	4	2	Pass
F3-03 KD	0.4	4	2	-	Pass
F3-04 KD	0.5	4	2	-	Pass
F3-04 L	2.1	14	3	2	Pass
F1-11 L	3.5	18	4	1 & 2	Fail
F3-14 L	3.6	19	4	1 & 2	Fail
F3-15 L	3.1	16	3	1 & 2	Fail
F3-16 L	3.4	18	3	1 & 2	Fail
F1-18 L	3.5	18	4	1 & 2	Fail
F3-21 L	3.5	20	4	1 & 2	Fail
F3-22 L	3.1	16	3	1 & 2	Fail
F3-23 L	3.5	18	4	1 & 2	Fail
F1-25 L	3.5	18	4	1 & 2	Fail
F3-28 L	3.5	17	3	1 & 2	Fail
F3-29 L	3.1	16	3	1 & 2	Fail
F3-30 L	3.5	18	4	1 & 2	Fail
F1-32 L	3.7	20	4	1 & 2	Fail
F3-34 L	3.5	18	4	1 & 2	Fail
F1-39 L	4.1	21	4	1 & 2	Fail
F2-46 L	3.6	17	4	1 & 2	Fail
F3-37 L	4.5	24	4	1 & 2	Fail
F3-36 L (6th Sth)	3.9	20	4	1 & 2	Fail
F1-40 L	3.4	16	4	1 & 2	Fail
F1-43 Dplx L	4.8	27	6	1 & 2 & 3	Fail
F1-48 Dplx L	4.7	27	5	1 & 2 & 3	Fail
F2-49 L	3.5	17	4	1 & 2	Fail
F2-52 L	3.5	16	4	1 & 2	Fail
F1-06 L	3.5	18	4	1 & 2	Fail
F3-08 L	3.4	16	3	1 & 2	Fail
				Number of Rooms failing	25

DSY 3 Results

Room Name	Criterion 1	Criterion 2	Criterion 3	Criteria failing	TM52 Pass Fail
F1-10 B	0	0	0	-	Pass
F1-10 B	0	0	0	-	Pass
F1-11 B	0.2	3	2	-	Pass
F1-12 B	0.1	3	2	-	Pass
F1-12 B	0.2	3	2	-	Pass
F1-12 B	0.1	1	1	-	Pass
F1-10 L	0.9	6	1	-	Pass
F1-13 B	0	0	0	-	Pass
F1-13 B	0.2	3	2	-	Pass
F1-14 B	0.2	3	2	-	Pass
F1-14 B	0	0	0	-	Pass
F1-15 L	2.1	14	3	2	Pass
F1-15 B	0.2	2	1	-	Pass
F1-16 B	0.1	2	1	-	Pass
F1-16 B	0.3	4	2	-	Pass
F1-16 B	0.2	3	2	-	Pass
F1-16 L	0.7	5	1	-	Pass
F2-07 L	0.6	6	1	-	Pass
F2-07 B	0.2	3	2	-	Pass
F2-07 B	0.3	4	2	-	Pass
F2-08 L	1.7	11	2	2	Pass
F2-08 B	0.3	4	2	-	Pass
F2-08 B	0.1	3	2	-	Pass
F2-09 B	0.1	2	1	-	Pass
F2-09 B	0.1	2	1	-	Pass
F2-09 L	0.9	6	1	-	Pass
F2-10 L	1.1	6	1	-	Pass
F2-10 B	0.1	2	1	-	Pass
F2-10 B	0.1	2	1	-	Pass
F2-11 B	0.1	2	1	-	Pass
F2-11 B	0.2	2	1	-	Pass
F2-11 L	1	6	1	-	Pass
F2-12 L	2.1	13	2	2	Pass
F2-13 L	1.7	12	2	2	Pass
F2-13 B	0.1	2	1	-	Pass
F2-13 B	0.1	1	1	-	Pass
F2-13 B	0.2	3	2	-	Pass
F2-14 B	0.2	3	2	-	Pass
F2-14 L	1.9	12	2	2	Pass
F3-12 B	0.1	3	2	-	Pass
F3-12 B	0.3	4	2	-	Pass
F3-12 B	0.1	2	1	-	Pass
F3-12 L	1.8	11	2	2	Pass
F3-13 L	0.9	6	1	-	Pass
F3-13 B	0.3	4	2	-	Pass
F3-13 B	0.1	2	1	-	Pass
F3-14 B	0.2	4	2	-	Pass
F3-14 B	0.4	4	2	-	Pass

F3-14 B	0.1	2	1	-	Pass
F3-15 L	2.9	22	4	2	Pass
F3-15 B	0.5	5	3	-	Pass
F3-15 B	0.5	5	3	-	Pass
F3-16 B	0.5	5	3	-	Pass
F3-16 B	0.5	5	3	-	Pass
F3-17 L	0.8	6	1	-	Pass
F3-17 B	0.1	2	1	-	Pass
F3-17 B	0	0	0	-	Pass
F3-17 B	0	0	0	-	Pass
F3-18 L	1.6	11	2	2	Pass
F3-18 B	0	0	0	-	Pass
F1-17 B	0	0	0	-	Pass
F1-17 B	0	0	0	-	Pass
F1-18 B	0.2	3	2	-	Pass
F1-19 B	0.1	3	2	-	Pass
F1-19 B	0.2	3	2	-	Pass
F1-19 B	0.1	1	1	-	Pass
F1-17 L	0.9	6	1	-	Pass
F1-20 B	0	0	0	-	Pass
F1-20 B	0.2	3	2	-	Pass
F1-21 B	0.2	3	2	-	Pass
F1-21 B	0	0	0	-	Pass
F1-23 L	2	14	3	2	Pass
F1-23 B	0.2	2	1	-	Pass
F1-22 B	0.1	2	1	-	Pass
F1-22 B	0.3	4	2	-	Pass
F1-22 B	0.2	3	2	-	Pass
F1-22 L	0.7	5	1	-	Pass
F2-15 L	0.6	6	1	-	Pass
F2-15 B	0.3	4	2	-	Pass
F2-15 B	0.4	5	3	-	Pass
F2-16 L	2	13	2	2	Pass
F2-16 B	0.3	4	2	-	Pass
F2-16 B	0.2	3	2	-	Pass
F2-17 B	0.1	2	1	-	Pass
F2-17 B	0.1	2	1	-	Pass
F2-17 L	0.9	6	1	-	Pass
F2-18 L	1	6	1	-	Pass
F2-18 B	0.1	2	1	-	Pass
F2-18 B	0.1	2	1	-	Pass
F2-19 B	0.1	2	1	-	Pass
F2-19 B	0.2	2	1	-	Pass
F2-19 L	1	6	1	-	Pass
F2-20 L	2.1	13	2	2	Pass
F2-21 L	1.7	12	2	2	Pass
F2-21 B	0.1	2	1	-	Pass
F2-21 B	0.1	1	1	-	Pass
F2-21 B	0.2	3	2	-	Pass
F2-22 B	0.4	4	2	-	Pass
F2-22 L	2.6	23	4	2	Pass
F3-19 B	0.4	4	2	-	Pass
F3-19 B	0.3	4	2	-	Pass
F3-19 B	0.1	2	1	-	Pass

F3-19 L	1.8	11	2	2	Pass
F3-20 L	1.2	6	1	-	Pass
F3-20 B	0.3	4	2	-	Pass
F3-20 B	0.1	2	1	-	Pass
F3-21 B	0.2	4	2	-	Pass
F3-21 B	0.4	4	2	-	Pass
F3-21 B	0.1	2	1	-	Pass
F3-22 L	3	22	4	2	Pass
F3-22 B	0.5	5	3	-	Pass
F3-22 B	0.5	5	3	-	Pass
F3-23 B	0.5	5	3	-	Pass
F3-23 B	0.5	5	3	-	Pass
F3-24 L	0.9	7	1	2	Pass
F3-24 B	0.2	3	2	-	Pass
F3-24 B	0.1	1	1	-	Pass
F3-24 B	0	0	0	-	Pass
F3-25 L	1.6	11	2	2	Pass
F3-25 B	0	0	0	-	Pass
F1-24 B	0	0	0	-	Pass
F1-24 B	0	0	0	-	Pass
F1-25 B	0.2	3	2	-	Pass
F1-26 B	0.1	3	2	-	Pass
F1-26 B	0.2	3	2	-	Pass
F1-26 B	0.1	1	1	-	Pass
F1-24 L	0.9	6	1	-	Pass
F1-27 B	0	0	0	-	Pass
F1-27 B	0.2	3	2	-	Pass
F1-28 B	0.2	3	2	-	Pass
F1-28 B	0	0	0	-	Pass
F1-30 L	2	14	3	2	Pass
F1-30 B	0.2	2	1	-	Pass
F1-29 B	0.1	2	1	-	Pass
F1-29 B	0.3	4	2	-	Pass
F1-29 B	0.2	3	2	-	Pass
F1-29 L	0.7	5	1	-	Pass
F2-23 L	1	7	1	2	Pass
F2-23 B	0.4	4	2	-	Pass
F2-23 B	0.4	5	3	-	Pass
F2-24 L	2.1	16	3	2	Pass
F2-24 B	0.4	5	3	-	Pass
F2-24 B	0.2	3	2	-	Pass
F2-25 B	0.2	3	2	-	Pass
F2-25 B	0.1	2	1	-	Pass
F2-25 L	0.9	6	1	-	Pass
F2-26 L	1	6	1	-	Pass
F2-26 B	0.1	2	1	-	Pass
F2-26 B	0.1	2	1	-	Pass
F2-27 B	0.1	2	1	-	Pass
F2-27 B	0.2	2	1	-	Pass
F2-27 L	1	6	1	-	Pass
F2-28 L	2.1	13	2	2	Pass
F2-29 L	1.7	12	2	2	Pass
F2-29 B	0.1	2	1	-	Pass
F2-29 B	0.1	1	1	-	Pass

F2-29 B	0.2	3	2	-	Pass
F2-30 B	0.4	4	2	-	Pass
F2-30 L	2.9	23	4	2	Pass
F3-26 B	0.3	4	2	-	Pass
F3-26 B	0.3	4	2	-	Pass
F3-26 B	0.2	3	2	-	Pass
F3-26 L	1.7	10	2	2	Pass
F3-27 L	2.1	13	2	2	Pass
F3-27 B	0.3	4	2	-	Pass
F3-27 B	0.1	3	2	-	Pass
F3-28 B	0.2	4	2	-	Pass
F3-28 B	0.4	4	2	-	Pass
F3-28 B	0.1	3	2	-	Pass
F3-29 L	2.9	22	4	2	Pass
F3-29 B	0.5	5	3	-	Pass
F3-29 B	0.5	5	3	-	Pass
F3-30 B	0.5	5	3	-	Pass
F3-30 B	0.5	5	3	-	Pass
F3-31 L	1	7	1	2	Pass
F3-31 B	0.2	3	2	-	Pass
F3-31 B	0.1	1	1	-	Pass
F3-31 B	0	0	0	-	Pass
F3-32 L	1.6	11	2	2	Pass
F3-32 B	0	0	0	-	Pass
F1-31 B	0.1	1	1	-	Pass
F1-31 B	0	0	0	-	Pass
F1-32 B	0.2	3	2	-	Pass
F1-33 B	0.1	1	1	-	Pass
F1-31 L	0.9	6	1	-	Pass
F1-34 B	0	0	0	-	Pass
F1-34 B	0.2	3	2	-	Pass
F1-35 B	0.2	3	2	-	Pass
F1-35 B	0	0	0	-	Pass
F1-37 L	2.1	15	3	2	Pass
F1-37 B	0.2	3	2	-	Pass
F1-36 B	0.1	2	1	-	Pass
F1-36 B	0.3	4	2	-	Pass
F1-36 B	0.2	3	2	-	Pass
F1-36 L	0.7	6	1	-	Pass
F2-31 L	1.4	10	2	2	Pass
F2-31 B	0.4	5	3	-	Pass
F2-31 B	0.4	5	3	-	Pass
F2-32 L	2.2	18	3	2	Pass
F2-32 B	0.4	5	3	-	Pass
F2-32 B	0.3	4	2	-	Pass
F2-33 B	0.2	3	2	-	Pass
F2-33 B	0.1	2	1	-	Pass
F2-33 L	0.9	6	1	-	Pass
F2-34 L	1.1	6	1	-	Pass
F2-34 B	0.1	2	1	-	Pass
F2-34 B	0.1	2	1	-	Pass
F2-35 B	0.1	2	1	-	Pass
F2-35 B	0.1	2	1	-	Pass
F2-35 L	1	6	1	-	Pass

F2-36 L	2.1	13	2	2	Pass
F2-37 L	1.7	12	2	2	Pass
F2-37 B	0.1	2	1	-	Pass
F2-37 B	0.1	1	1	-	Pass
F2-37 B	0.2	3	2	-	Pass
F2-38 B	0.4	4	2	-	Pass
F3-33 B	0.5	5	3	-	Pass
F3-33 B	0.5	5	3	-	Pass
F3-34 B	0.5	5	3	-	Pass
F3-34 B	0.5	5	3	-	Pass
F3-35 L	1.1	7	1	2	Pass
F3-35 B	0.2	3	2	-	Pass
F3-35 B	0.1	2	1	-	Pass
F3-35 B	0	0	0	-	Pass
F3-36 L	1.9	12	2	2	Pass
F3-36 B	0	0	0	-	Pass
F3-33 L	2.8	20	4	2	Pass
F1-33 B	0.1	2	1	-	Pass
F1-38 B	0.1	2	1	-	Pass
F1-38 B	0	0	0	-	Pass
F1-39 B	0.2	3	2	-	Pass
F1-40 B	0.1	1	1	-	Pass
F1-38 L	1.7	12	2	2	Pass
F1-41 B	0	0	0	-	Pass
F1-41 B	0.2	3	2	-	Pass
F1-42 B	0.2	3	2	-	Pass
F1-42 B	0	0	0	-	Pass
F2-39 L	2.2	18	3	2	Pass
F2-39 B	0.4	5	3	-	Pass
F2-39 B	0.4	5	3	-	Pass
F2-40 B	0.4	5	3	-	Pass
F2-40 B	0.3	4	2	-	Pass
F2-41 B	0.4	5	3	-	Pass
F2-41 B	0.1	3	2	-	Pass
F2-41 L	1.3	7	1	2	Pass
F2-42 L	1.5	9	2	2	Pass
F2-42 B	0.2	2	1	-	Pass
F2-42 B	0.1	2	1	-	Pass
F2-43 B	0.1	2	1	-	Pass
F2-43 B	0.1	2	1	-	Pass
F2-43 L	1.5	7	1	2	Pass
F2-44 L	2.1	13	2	2	Pass
F2-45 L	1.7	12	2	2	Pass
F2-45 B	0.1	2	1	-	Pass
F2-45 B	0.1	1	1	-	Pass
F2-45 B	0.2	3	2	-	Pass
F2-46 B	0.4	5	3	-	Pass
F3-36 B (6th Sth)	0.4	5	3	-	Pass
F3-36 B (6th Sth)	0.4	5	3	-	Pass
F3-37 B	0.4	5	3	-	Pass
F3-37 B	0.4	5	3	-	Pass
F3-38 L	1.1	7	1	2	Pass
F3-38 B	0.2	3	2	-	Pass
F3-38 B	0.1	2	1	-	Pass

F3-38 B	0	0	0	-	Pass
F3-39 L	1.9	12	2	2	Pass
F3-39 B	0	0	0	-	Pass
F1-40 B	0.1	2	1	-	Pass
F1-43 Dplx B	0.1	2	1	-	Pass
F1-44 Dplx B	0.3	3	2	-	Pass
F1-45 Dplx L	2.3	18	3	2	Pass
F1-45 Dplx B	0.1	3	2	-	Pass
F1-45 Dplx B	0.1	2	1	-	Pass
F1-45 Dplx B	0.1	3	2	-	Pass
F1-44 Dplx B	0.2	4	2	-	Pass
F1-43 Dplx B	0.2	3	2	-	Pass
F1-46 Dplx B	0.1	2	1	-	Pass
F1-46 Dplx D	1.8	12	4	2	Pass
F1-47 Dplx L	2.9	23	4	2	Pass
F1-48 Dplx B	0.2	3	2	-	Pass
F1-49 Dplx L	2.9	23	4	2	Pass
F2-47 L	2	13	2	2	Pass
F2-48 L	1.7	12	2	2	Pass
F2-48 B	0.1	2	1	-	Pass
F2-48 B	0.1	1	1	-	Pass
F2-48 B	0.2	3	2	-	Pass
F2-49 B	0.2	3	2	-	Pass
F2-50 L	2.1	13	2	2	Pass
F2-51 L	1.7	12	2	2	Pass
F2-51 B	0.1	2	1	-	Pass
F2-51 B	0.1	1	1	-	Pass
F2-51 B	0.2	3	2	-	Pass
F2-52 B	0.2	3	2	-	Pass
F1-49 Dplx B	0	0	0	-	Pass
F1-49 Dplx B	0.1	3	2	-	Pass
F1-49 Dplx B	0.1	3	2	-	Pass
F1-48 Dplx B	0.2	4	2	-	Pass
F1-47 Dplx B	0	0	0	-	Pass
F1-47 Dplx B	0.2	3	2	-	Pass
F1-46 Dplx B	0.2	3	2	-	Pass
F1-46 Dplx B	0.2	4	2	-	Pass
F1-46 Dplx L	2.1	13	2	2	Pass
F1-46 Dplx L	2.1	13	2	2	Pass
F1-05 B	0	0	0	-	Pass
F1-05 B	0	0	0	-	Pass
F1-06 B	0.2	3	2	-	Pass
F1-07 B	0.1	2	1	-	Pass
F1-07 B	0.2	3	2	-	Pass
F1-07 B	0.1	1	1	-	Pass
F1-09 L	1.9	14	3	2	Pass
F1-09 B	0.2	2	1	-	Pass
F1-08 B	0.1	2	1	-	Pass
F1-08 B	0.3	4	2	-	Pass
F1-08 B	0.2	3	2	-	Pass
F1-08 L	0.7	6	1	-	Pass
F3-11 L	1.3	7	2	2	Pass
F3-11 B	0	0	0	-	Pass
F2-04 L	2.1	13	2	2	Pass

n/a	0.9	6	1	-	Pass
F1-01 L	1.2	9	2	2	Pass
F1-02 L	1.2	9	2	2	Pass
F1-03 L	1.2	9	2	2	Pass
F1-04 L	1.3	10	2	2	Pass
F2-01 L	0.6	6	1	-	Pass
F2-01 B	0.1	2	1	-	Pass
F2-02 B	0	0	0	-	Pass
F2-02 L	2.2	18	3	2	Pass
F2-03 L	1.3	8	2	2	Pass
F2-03 B	0.1	3	2	-	Pass
F2-03 B	0.1	3	2	-	Pass
F2-05 B	0.1	2	1	-	Pass
F2-05 B	0.1	2	1	-	Pass
F2-05 L	2.4	22	4	2	Pass
F2-06 L	1.9	12	2	2	Pass
F2-06 B	0.1	2	1	-	Pass
F3-01 B	0.1	3	2	-	Pass
F3-01 B	0.3	4	2	-	Pass
F3-01 B	0	0	0	-	Pass
F3-01 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0	0	0	-	Pass
F3-02 B	0.2	3	2	-	Pass
F3-02 B	0.3	3	2	-	Pass
F3-03 B	0.1	2	1	-	Pass
F3-03 B	0.1	2	1	-	Pass
F3-03 B	0	0	0	-	Pass
F3-03 B	0	0	0	-	Pass
F3-04 B	0.1	2	1	-	Pass
F3-04 B	0.1	2	1	-	Pass
F3-04 B	0.1	2	1	-	Pass
F3-05 B	0.2	3	2	-	Pass
F3-05 B	0.1	3	2	-	Pass
F3-05 B	0.2	3	2	-	Pass
F3-09 B	0.1	3	2	-	Pass
F3-09 L	2.4	17	3	2	Pass
F3-06 B	0.2	3	2	-	Pass
F3-06 B	0.2	3	2	-	Pass
F3-07 B	0.2	3	2	-	Pass
F3-07 B	0.2	4	2	-	Pass
F3-08 B	0.2	3	2	-	Pass
F3-08 B	0.2	4	2	-	Pass
F3-10 B	0	0	0	-	Pass
F3-10 B	0	0	0	-	Pass
F3-10 L	1	6	1	-	Pass
F3-07 L	3	22	4	2	Pass
F3-06 L	2.6	21	4	2	Pass
F3-05 L	2.5	20	3	2	Pass
F3-05 KD	0.9	4	1	-	Pass
F3-01 L	3	23	4	2	Pass
F3-01 KD	0.6	3	1	-	Pass
F3-02 KD	0.6	3	1	-	Pass
F3-02 L	3	23	4	2	Pass

F3-03 L	3	23	4	2	Pass
F3-03 KD	0.6	3	1	-	Pass
F3-04 KD	0.7	4	1	-	Pass
F3-04 L	2.4	20	3	2	Pass
F1-11 L	3.4	24	5	1 & 2 & 3	Fail
F1-12 L	3.1	22	4	1 & 2	Fail
F1-13 L	3.6	25	5	1 & 2 & 3	Fail
F1-14 L	3.5	21	4	1 & 2	Fail
F3-14 L	4.4	30	6	1 & 2 & 3	Fail
F3-16 L	3.5	23	4	1 & 2	Fail
F1-18 L	3.4	24	5	1 & 2 & 3	Fail
F1-19 L	3.1	22	4	1 & 2	Fail
F1-20 L	3.7	25	5	1 & 2 & 3	Fail
F1-21 L	3.5	22	4	1 & 2	Fail
F3-21 L	4.4	30	6	1 & 2 & 3	Fail
F3-23 L	3.5	23	4	1 & 2	Fail
F1-25 L	3.3	24	5	1 & 2 & 3	Fail
F1-26 L	3.1	22	4	1 & 2	Fail
F1-27 L	3.7	25	5	1 & 2 & 3	Fail
F1-28 L	3.5	21	4	1 & 2	Fail
F3-28 L	4.1	29	5	1 & 2 & 3	Fail
F3-30 L	3.4	23	4	1 & 2	Fail
F1-32 L	3.3	24	5	1 & 2 & 3	Fail
F1-34 L	3.7	25	5	1 & 2 & 3	Fail
F1-35 L	3.6	24	5	1 & 2 & 3	Fail
F2-38 L	3	24	5	2 & 3	Fail
F3-34 L	3.4	24	5	1 & 2 & 3	Fail
F1-39 L	4.3	28	5	1 & 2 & 3	Fail
F1-41 L	3.9	26	5	1 & 2 & 3	Fail
F1-42 L	3.9	26	5	1 & 2 & 3	Fail
F2-40 L	3.2	26	5	1 & 2 & 3	Fail
F2-46 L	3.8	27	6	1 & 2 & 3	Fail
F3-37 L	4.8	31	6	1 & 2 & 3	Fail
F3-36 L (6th Sth)	4	28	5	1 & 2 & 3	Fail
F1-40 L	3.7	28	5	1 & 2 & 3	Fail
F1-45 Dplx K/D	2	14	5	2 & 3	Fail
F1-33 L	3.5	26	5	1 & 2 & 3	Fail
F1-44 Dplx L	3.9	26	5	1 & 2 & 3	Fail
F1-43 Dplx L	4.9	29	6	1 & 2 & 3	Fail
F1-48 Dplx L	4.9	29	6	1 & 2 & 3	Fail
F2-49 L	3.7	26	5	1 & 2 & 3	Fail
F2-52 L	3.6	26	5	1 & 2 & 3	Fail
F1-06 L	3.7	28	5	1 & 2 & 3	Fail
F1-07 L	3.1	22	4	1 & 2	Fail
F3-08 L	3.1	23	4	1 & 2	Fail
				Number of Rooms failing	41

DSY 2 Additional results

The results below detail the re-assessed, previously failing rooms, with the inclusion of solar control glass with a g-value of 0.4.

Room Name	Criterion 1	Criterion 2	Criterion 3	Criteria failing	TM52 Pass Fail
F1-11 L	1.6	10	2	2	Pass
F3-14 L	2.0	12	3	2	Pass
F3-15 L	3.0	16	3	2	Pass
F3-16 L	1.8	10	2	2	Pass
F1-18 L	1.7	10	2	2	Pass
F3-21 L	2.0	12	3	2	Pass
F3-22 L	3.0	16	3	2	Pass
F3-23 L	1.6	10	2	2	Pass
F1-25 L	1.6	10	2	2	Pass
F3-28 L	1.7	10	2	2	Pass
F3-29 L	3.0	16	3	2	Pass
F3-30 L	1.6	10	2	2	Pass
F1-32 L	1.7	10	2	2	Pass
F3-34 L	1.6	10	2	2	Pass
F1-39 L	2.3	12	3	2	Pass
F2-46 L	1.7	12	3	2	Pass
F3-37 L	2.8	14	3	2	Pass
F3-36 L (6th Sth)	1.8	12	3	2	Pass
F1-40 L	1.7	9	2	2	Pass
F1-43 Dplx L	3.2	18	4	1 & 2	Fail
F1-48 Dplx L	3.2	17	4	1 & 2	Fail
F2-49 L	1.6	12	3	2	Pass
F2-52 L	1.6	10	3	2	Pass
F1-06 L	1.6	9	2	2	Pass
F3-08 L	2.1	10	2	2	Pass

DSY 3 Additional results

The results below detail the re-assessed, previously failing rooms, with the inclusion of solar control glass with a g-value of 0.4.

Room Name	Criterion 1	Criterion 2	Criterion 3	Criteria failing	TM52 Pass Fail
F1-11 L	2.3	18	3	2	Pass
F1-12 L	2.2	15	3	2	Pass
F1-13 L	2.3	16	3	2	Pass
F1-14 L	2.2	16	3	2	Pass
F3-14 L	2.6	23	4	2	Pass
F3-16 L	2.4	16	3	2	Pass
F1-18 L	2.3	18	3	2	Pass
F1-19 L	2.2	15	3	2	Pass
F1-20 L	2.3	16	3	2	Pass
F1-21 L	2.2	16	3	2	Pass
F3-21 L	2.6	23	4	2	Pass
F3-23 L	2.4	16	3	2	Pass
F1-25 L	2.3	18	3	2	Pass
F1-26 L	2.1	15	3	2	Pass
F1-27 L	2.3	16	3	2	Pass
F1-28 L	2.2	16	3	2	Pass
F3-28 L	2.5	20	4	2	Pass
F3-30 L	2.4	16	3	2	Pass
F1-32 L	2.3	18	3	2	Pass
F1-34 L	2.3	16	3	2	Pass
F1-35 L	2.3	16	3	2	Pass
F2-38 L	2.1	17	3	2	Pass
F3-34 L	2.4	16	3	2	Pass
F1-39 L	2.5	20	4	2	Pass
F1-41 L	2.4	18	4	2	Pass
F1-42 L	2.4	18	4	2	Pass
F2-40 L	2.3	18	3	2	Pass
F2-46 L	2.3	21	4	2	Pass
F3-37 L	2.9	22	4	2	Pass
F3-36 L (6th Sth)	2.7	21	4	2	Pass
F1-40 L	2.5	20	4	2	Pass
F1-45 Dplx K/D	1.6	13	4	2	Pass
F1-33 L	2.4	18	3	2	Pass
F1-44 Dplx L	2.8	20	4	2	Pass
F1-43 Dplx L	3.5	25	5	1 & 2 & 3	Fail
F1-48 Dplx L	3.3	25	5	1 & 2 & 3	Fail
F2-49 L	2.2	21	4	2	Pass
F2-52 L	2.1	19	4	2	Pass
F1-06 L	2.4	18	3	2	Pass
F1-07 L	2.1	15	3	2	Pass
F3-08 L	2.3	16	3	2	Pass

Prepared by:
BBS Environmental

On behalf of:
Safeway Stores Limited and BDW Trading Limited