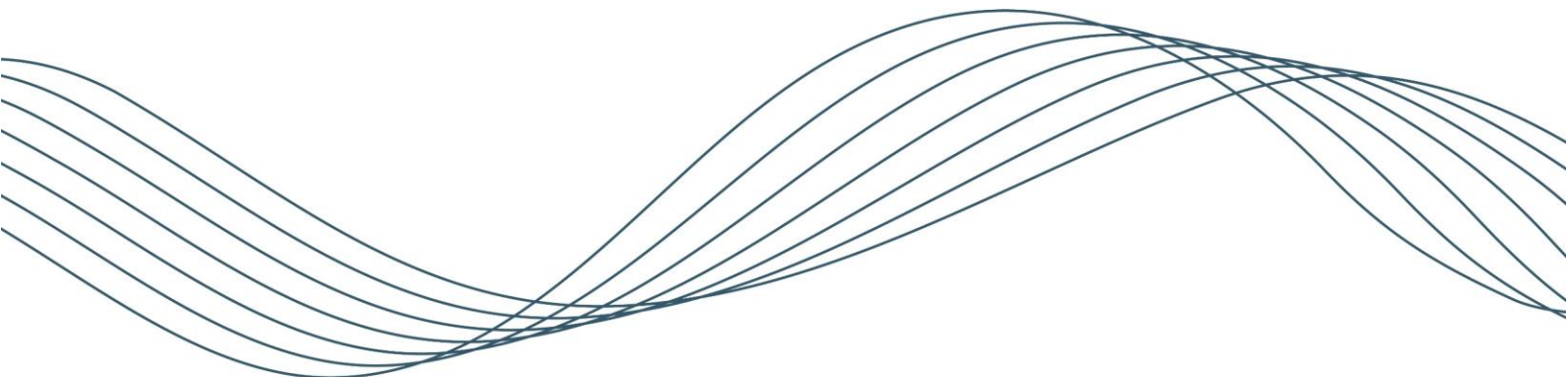


**Pentavia Mill Hill: Case 3756a
GLA Stage 3 Consultation
Domestic Overheating Assessment Update**

**Revision 01
May 2019
Ref: 54397**



54397 – Pentavia Mill Hill**GLA Stage 3 Consultation – Domestic Overheating Assessment Update**

Revision	Issued For	Date	Author	Checked By
00	Information	03/05/2019	JC	CC
01	Information	10/05/2019	JC	CC

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Revision Table

Rev	Date	Section	Amendment(s)
01	10/05/2019	all	New TM59 run for improved scheme

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1 Introduction

This document has been prepared in response to the comment regarding domestic overheating received 11/04/2019 from the GLA on the Energy Statement prepared in support of the Pentavia Retail Park planning submission.

Comment 13 referred to the significant levels of failure in meeting the CIBSE criteria and required further investigation and the inclusion of additional passive measures, in line with Cooling Hierarchy, to avoid the risk of overheating in the current and future climate scenarios. The Design Team have reviewed the facade and layout in order to reduce glazing areas without compromising the appearance of the development or the quality of internal spaces proposed. Balconies and winter-gardens have been optimised to provide passive self-shading benefits and solve privacy issues.

The following chapters present the latest TM59 domestic overheating results and a comparison with the previous results submitted as part of the Energy Statement, quantifying the reduction achieved in both overheating zones and hours of occurrence.

2 Updated Domestic Overheating Results for DSY1

As previously done for the Energy Statement, living rooms and bedrooms, as the main occupied zones in the apartments, have been assessed using the London Heathrow DSY1, 2020s, high emissions, 50% percentile weather data and the results are presented in the table below. Detailed results for each zone simulated can be found in the Appendix.

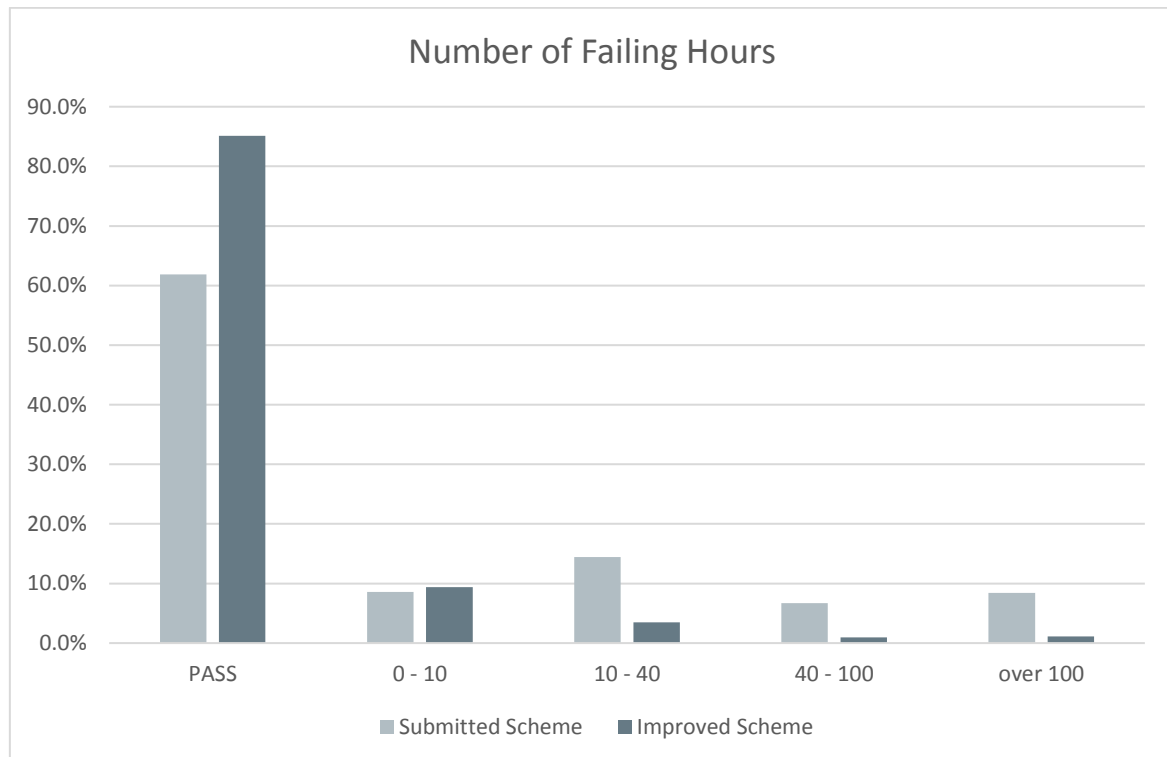
	Fail	Pass
Bedroom		
Inner	11%	89%
Outer	26%	74%
Living Room / Kitchen		
Inner	10%	90%
Outer	0%	100%
Grand Total	15%	85%

The revised facade design proposes opaque insulated panels on the bottom half of windows to reduce solar gains and minimise the risk of overheating. This was proposed in critical areas where the previous simulation showed high overheating risk levels. Private amenity areas were created for all inward facing units, allowing these dwellings to benefit from self-shading from either balconies or by having a recessed glazing. The balconies have opaque walls to at least one of its sides, providing both sun protection and privacy.

3 Comparison between simulations

The proposed inclusion of passive measures has increased the overall 'pass' rate from 61% submitted in the Energy Statement to 85%. In addition to a reduction in the number of failing rooms, the amount of hours by which a certain room fails is also significantly reduced. The table below illustrates the percentage of rooms and ranges of hours above the exceedable limit.

A significant part of the failing rooms for the improved scheme falls under the margin of 0-10 hours failure (9.4% of all rooms and 63% of failing rooms), which could be considered as a marginal failure and acceptable at this point. Bearing in mind that layouts and build-ups are likely to be further improved in detailed design and that overheating in these rooms could be mitigated, then only 5.5% of rooms would be overheating.



4 Appendix

4.1 Detailed Domestic Overheating Updated Results for DSY1

Zone Name	Room Use	Orientation	Max. Exceedable Hours	Criterion 1: #Hours Exceeding Comfort Range	Max Exceedable Night Hours	Criterion 2: Number of Night Hours Exceeding 26 °C for Bedrooms.	Result
Levels 01 to top							
A BD 02 1	Bedroom	Inner	110	23	32	11	Pass
A BD 02 2	Bedroom	Inner	110	24	32	14	Pass
A BD 02 3	Bedroom	Inner	110	24	32	11	Pass
A BD 02 4	Bedroom	Outer	110	36	32	41	Fail
A BD 02 5	Bedroom	Outer	110	112	32	60	Fail
A BD 02 6	Bedroom	Outer	110	29	32	44	Fail
A BD 02 7	Bedroom	Outer	110	24	32	35	Fail
A BD 02 8	Bedroom	Outer	110	25	32	31	Pass
A BD 02 9	Bedroom	Outer	110	23	32	28	Pass
A BS 02 1	Bedroom	Inner	110	23	32	14	Pass
A LK1 02 1	Living Room / Kitchen	Inner	59	14	N/A	N/A	Pass
A LK1 02 2	Living Room / Kitchen	Inner	59	14	N/A	N/A	Pass
A LK2 02 1	Living Room / Kitchen	Inner	59	16	N/A	N/A	Pass
A LK3 02 1	Living Room / Kitchen	Inner	59	25	N/A	N/A	Pass
A LK3 02 2	Living Room / Kitchen	Outer	59	37	N/A	N/A	Pass
B BD 02 1	Bedroom	Outer	110	27	32	38	Fail
B BD 02 2	Bedroom	Outer	110	21	32	31	Pass
B BD 02 3	Bedroom	Outer	110	12	32	24	Pass
B BD 02 4	Bedroom	Outer	110	31	32	34	Fail
B BD 02 5	Bedroom	Inner	110	103	32	10	Pass
B BD 02 6	Bedroom	Inner	110	68	32	16	Pass
B BD 02 7	Bedroom	Inner	110	79	32	9	Pass
B BS 02 1	Bedroom	Inner	110	97	32	11	Pass
B LK1 02 1	Living Room / Kitchen	Inner	59	29	N/A	N/A	Pass
B LK1 02 2	Living Room / Kitchen	Inner	59	29	N/A	N/A	Pass
B LK2 02 1	Living Room / Kitchen	Inner	59	53	N/A	N/A	Pass
B LK2 02 2	Living Room / Kitchen	Inner	59	32	N/A	N/A	Pass
B LK2 02 3	Living Room / Kitchen	Inner	59	56	N/A	N/A	Pass
C BD 02 1	Bedroom	Inner	110	46	32	8	Pass
C BD 02 2	Bedroom	Inner	110	31	32	12	Pass
C BD 02 3	Bedroom	Inner	110	48	32	8	Pass
C BD 02 4	Bedroom	Outer	110	23	32	32	Pass
C BD 02 5	Bedroom	Outer	110	12	32	26	Pass
C BD 02 6	Bedroom	Outer	110	11	32	24	Pass
C BD 02 7	Bedroom	Outer	110	15	32	32	Pass
C BS 02 1	Bedroom	Inner	110	35	32	10	Pass
C LK1 02 1	Living Room / Kitchen	Inner	59	19	N/A	N/A	Pass
C LK1 02 2	Living Room / Kitchen	Inner	59	19	N/A	N/A	Pass
C LK2 02 1	Living Room / Kitchen	Inner	59	29	N/A	N/A	Pass
C LK2 02 2	Living Room / Kitchen	Inner	59	13	N/A	N/A	Pass
C LK2 02 3	Living Room / Kitchen	Inner	59	25	N/A	N/A	Pass
D BD 02 1	Bedroom	Outer	110	4	32	25	Pass
D BD 02 10	Bedroom	Inner	110	4	32	26	Pass
D BD 02 11	Bedroom	Inner	110	0	32	17	Pass
D BD 02 12	Bedroom	Inner	110	5	32	21	Pass
D BD 02 13	Bedroom	Inner	110	17	32	36	Fail
D BD 02 14	Bedroom	Inner	110	8	32	27	Pass
D BD 02 2	Bedroom	Outer	110	25	32	11	Pass
D BD 02 3	Bedroom	Outer	110	42	32	14	Pass
D BD 02 4	Bedroom	Outer	110	30	32	9	Pass
D BD 02 5	Bedroom	Outer	110	37	32	8	Pass
D BD 02 6	Bedroom	Outer	110	19	32	12	Pass
D BD 02 7	Bedroom	Inner	110	31	32	16	Pass
D BD 02 8	Bedroom	Inner	110	23	32	12	Pass
D BD 02 9	Bedroom	Inner	110	16	32	11	Pass
D BS 02 1	Bedroom	Inner	110	44	32	10	Pass
D LK1 02 1	Living Room / Kitchen	Outer	59	0	N/A	N/A	Pass
D LK1 02 2	Living Room / Kitchen	Inner	59	38	N/A	N/A	Pass
D LK1 02 3	Living Room / Kitchen	Inner	59	21	N/A	N/A	Pass
D LK2 02 1	Living Room / Kitchen	Outer	59	4	N/A	N/A	Pass
D LK2 02 2	Living Room / Kitchen	Inner	59	76	N/A	N/A	Fail
D LK2 02 3	Living Room / Kitchen	Inner	59	65	N/A	N/A	Fail
D LK3 02 1	Living Room / Kitchen	Outer	59	0	N/A	N/A	Pass
D LK3 02 2	Living Room / Kitchen	Inner	59	22	N/A	N/A	Pass
E BD 02 1	Bedroom	Inner	110	49	32	8	Pass
E BD 02 2	Bedroom	Outer	110	19	32	31	Pass
E BD 02 3	Bedroom	Outer	110	5	32	17	Pass
E LK1 02 1	Living Room / Kitchen	Inner	59	19	N/A	N/A	Pass
E LK2 02 1	Living Room / Kitchen	Inner	59	28	N/A	N/A	Pass
G BD 02 1	Bedroom	Inner	110	37	32	12	Pass

G BS 021	Bedroom	Inner	110	33	32	11	Pass
G LK2 021	Living Room / Kitchen	Inner	59	11	N/A	N/A	Pass
I BD 021	Bedroom	Inner	110	18	32	7	Pass
I BD 022	Bedroom	Inner	110	30	32	15	Pass
I BD 024	Bedroom	Inner	110	13	32	24	Pass
I BD 025	Bedroom	Outer	110	7	32	15	Pass
I BD 026	Bedroom	Outer	110	9	32	17	Pass
I BD 027	Bedroom	Outer	110	10	32	17	Pass
I BS 021	Bedroom	Outer	110	41	32	19	Pass
I LK1 021	Living Room / Kitchen	Inner	59	28	N/A	N/A	Pass
I LK2 021	Living Room / Kitchen	Inner	59	48	N/A	N/A	Pass
I LK2 022	Living Room / Kitchen	Inner	59	33	N/A	N/A	Pass
I LK2 023	Living Room / Kitchen	Inner	59	19	N/A	N/A	Pass
J BD 021	Bedroom	Inner	110	22	32	12	Pass
J BD 022	Bedroom	Outer	110	30	32	16	Pass
J BD 023	Bedroom	Outer	110	11	32	10	Pass
J BD 025	Bedroom	Inner	110	30	32	11	Pass
J BD 026	Bedroom	Inner	110	23	32	32	Pass
J BD 027	Bedroom	Inner	110	29	32	38	Fail
J BD 028	Bedroom	Inner	110	15	32	33	Fail
J BD 029	Bedroom	Outer	110	16	32	41	Fail
J BS 021	Bedroom	Outer	110	22	32	18	Pass
J BS 022	Bedroom	Outer	110	60	32	180	Fail
J BS 023	Bedroom	Outer	110	47	32	126	Fail
J LK1 021	Living Room / Kitchen	Inner	59	21	N/A	N/A	Pass
J LK2 021	Living Room / Kitchen	Inner	59	43	N/A	N/A	Pass
J LK2 022	Living Room / Kitchen	Inner	59	48	N/A	N/A	Pass
J LK3 021	Living Room / Kitchen	Inner	59	33	N/A	N/A	Pass
J LK3 022	Living Room / Kitchen	Inner	59	16	N/A	N/A	Pass
K BD 021	Bedroom	Outer	110	34	32	40	Fail
K BD 022	Bedroom	Outer	110	25	32	31	Pass
K BD 023	Bedroom	Outer	110	27	32	36	Fail
K BD 024	Bedroom	Outer	110	46	32	47	Fail
K BD 025	Bedroom	Inner	110	43	32	16	Pass
K BD 026	Bedroom	Inner	110	28	32	18	Pass
K BD 027	Bedroom	Inner	110	62	32	16	Pass
K BS 021	Bedroom	Inner	110	50	32	15	Pass
K LK1 021	Living Room / Kitchen	Inner	59	22	N/A	N/A	Pass
K LK1 022	Living Room / Kitchen	Inner	59	24	N/A	N/A	Pass
K LK2 021	Living Room / Kitchen	Inner	59	30	N/A	N/A	Pass
K LK2 022	Living Room / Kitchen	Inner	59	35	N/A	N/A	Pass
K LK2 023	Living Room / Kitchen	Inner	59	43	N/A	N/A	Pass
L BD 021	Bedroom	Outer	110	32	32	33	Fail
L BD 022	Bedroom	Outer	110	15	32	30	Pass
L BD 023	Bedroom	Outer	110	16	32	30	Pass
L BD 024	Bedroom	Outer	110	39	32	40	Fail
L LK2 021	Living Room / Kitchen	Inner	59	23	N/A	N/A	Pass
L LK2 022	Living Room / Kitchen	Inner	59	20	N/A	N/A	Pass
M BD 021	Bedroom	Outer	110	9	32	27	Pass
M BD 0210	Bedroom	Inner	110	14	32	35	Fail
M BD 0211	Bedroom	Inner	110	15	32	35	Fail
M BD 022	Bedroom	Outer	110	5	32	21	Pass
M BD 023	Bedroom	Outer	110	0	32	17	Pass
M BD 024	Bedroom	Outer	110	7	32	27	Pass
M BD 025	Bedroom	Outer	110	7	32	27	Pass
M BD 026	Bedroom	Outer	110	41	32	10	Pass
M BD 027	Bedroom	Outer	110	41	32	9	Pass
M BD 028	Bedroom	Outer	110	88	32	16	Pass
M BD 029	Bedroom	Inner	110	58	32	15	Pass
M BS 021	Bedroom	Inner	110	36	32	99	Fail
M LK1 021	Living Room / Kitchen	Outer	59	0	N/A	N/A	Pass
M LK1 022	Living Room / Kitchen	Inner	59	9	N/A	N/A	Pass
M LK1 023	Living Room / Kitchen	Inner	59	47	N/A	N/A	Pass
M LK1 024	Living Room / Kitchen	Inner	59	37	N/A	N/A	Pass
M LK2 021	Living Room / Kitchen	Inner	59	42	N/A	N/A	Pass
M LK3 021	Living Room / Kitchen	Outer	59	6	N/A	N/A	Pass
M LK3 022	Living Room / Kitchen	Inner	59	2	N/A	N/A	Pass
N BD 021	Bedroom	Inner	110	7	32	9	Pass
N BD 022	Bedroom	Inner	110	20	32	12	Pass
N BD 023	Bedroom	Inner	110	34	32	17	Pass
N BD 024	Bedroom	Inner	110	14	32	41	Fail
N BS 021	Bedroom	Outer	110	36	32	23	Pass
N BS 022	Bedroom	Outer	110	33	32	118	Fail
N BS 023	Bedroom	Outer	110	43	32	160	Fail
N LK2 021	Living Room / Kitchen	Inner	59	32	N/A	N/A	Pass
N LK2 022	Living Room / Kitchen	Inner	59	53	N/A	N/A	Pass
N LK3 021	Living Room / Kitchen	Inner	59	6	N/A	N/A	Pass
O BD 022	Bedroom	Inner	110	22	32	12	Pass
O BD 023	Bedroom	Inner	110	16	32	7	Pass
O BD 024	Bedroom	Inner	110	6	32	15	Pass
O BD 025	Bedroom	Outer	110	8	32	20	Pass
O BS 021	Bedroom	Outer	110	24	32	14	Pass

O_LK1_021	Living Room / Kitchen	Inner	59	38	N/A	N/A	Pass
O_LK2_021	Living Room / Kitchen	Inner	59	42	N/A	N/A	Pass
O_LK2_022	Living Room / Kitchen	Inner	59	19	N/A	N/A	Pass
P_BD_021	Bedroom	Outer	110	5	32	15	Pass
P_BD_022	Bedroom	Outer	110	17	32	27	Pass
P_BD_023	Bedroom	Outer	110	20	32	25	Pass
P_BD_024	Bedroom	Inner	110	77	32	10	Pass
P_BD_025	Bedroom	Inner	110	33	32	8	Pass
P_BD_026	Bedroom	Inner	110	48	32	9	Pass
P_BD_027	Bedroom	Inner	110	55	32	8	Pass
P_BD_028	Bedroom	Outer	110	16	32	22	Pass
P_BD_029	Bedroom	Outer	110	3	32	10	Pass
P_LK1_021	Living Room / Kitchen	Outer	59	8	N/A	N/A	Pass
P_LK1_022	Living Room / Kitchen	Inner	59	68	N/A	N/A	Fail
P_LK2_021	Living Room / Kitchen	Inner	59	35	N/A	N/A	Pass
P_LK2_022	Living Room / Kitchen	Inner	59	38	N/A	N/A	Pass
P_LK3_021	Living Room / Kitchen	Inner	59	58	N/A	N/A	Pass
R_BD_021	Bedroom	Inner	110	7	32	9	Pass
R_BD_0210	Bedroom	Outer	110	20	32	12	Pass
R_BD_0211	Bedroom	Inner	110	32	32	15	Pass
R_BD_022	Bedroom	Inner	110	15	32	48	Fail
R_BD_023	Bedroom	Inner	110	11	32	24	Pass
R_BD_024	Bedroom	Inner	110	19	32	28	Pass
R_BD_028	Bedroom	Outer	110	32	32	29	Pass
R_BD_029	Bedroom	Outer	110	43	32	9	Pass
R_BS_021	Bedroom	Outer	110	33	32	22	Pass
R_BS_022	Bedroom	Outer	110	42	32	144	Fail
R_BS_023	Bedroom	Outer	110	46	32	209	Fail
R_LK1_021	Living Room / Kitchen	Inner	59	21	N/A	N/A	Pass
R_LK2_021	Living Room / Kitchen	Inner	59	45	N/A	N/A	Pass
R_LK2_022	Living Room / Kitchen	Inner	59	53	N/A	N/A	Pass
R_LK3_021	Living Room / Kitchen	Inner	59	22	N/A	N/A	Pass
R_LK3_022	Living Room / Kitchen	Inner	59	55	N/A	N/A	Pass