



RIGHT OF LIGHT
CONSULTING
Chartered Surveyors

Daylight and Sunlight Report

(Within Development Assessment
based on 2022 BRE Guidance)

27 September 2022

Crown Trading Centre
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Hayes
UB3 1DU

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1 EXECUTIVE SUMMARY

1.1 Overview

- 1.1.1 Right of Light Consulting has been commissioned by Greystar to undertake a daylight and sunlight assessment in connection with the development at Crown Trading Centre, Clayton Road, Hayes UB3 1DU. The aim of the assessment is to check whether the proposed accommodation will provide its future occupiers with adequate levels of natural light.
- 1.1.2 The assessment is based on the numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a good practice guide, 3rd Edition' by P J Littlefair 2022.
- 1.1.3 Appendix 1 identifies the windows analysed in this assessment. Daylight provision data and contours for the habitable rooms are presented in Appendix 2. Exposure to sunlight data is provided in Appendix 3.
- 1.1.4 The numerical results demonstrate that a reasonable number of the rooms meet the BRE recommendations. Whilst a number of the rooms do not meet the recommendations, the results are not unusual in the context of an urban location. It is important to note that many of the rooms which do not meet the daylight recommendations have balconies above them. This is in order to provide private amenity space to the occupants. Whilst this does limit some of the daylight available to the units, on balance, it is considered preferable to retain these, as they provide additional benefits to the residents of the development. If the balconies were to be removed, then the levels of daylight would be greatly improved. Therefore, in overall terms the scheme represents a relatively high level of compliance with the BRE recommendations and, in our opinion, there are material considerations which outweigh the slightly lower daylight levels. We would therefore expect the local authority to balance daylight and sunlight considerations against all other material planning considerations, including the wider benefits such as the provision of the private amenity areas, when deciding whether to grant planning permission.

2 INFORMATION SOURCES

2.1 Documents Considered

2.1.1 This report is based on the following drawings:

Mksurveys

27418	Topographical Survey	Rev -
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Frank Reynolds Architects

010101	Stage 3B - Ground Floor - GA Plan	Rev P01
010102	Stage 3B - Mezzanine Floor	Rev P01
010103	Stage 3B - First Floor	Rev P01
010104	Stage 3B - Second Floor	Rev P01
010105	Stage 3B - Third Floor	Rev P01
010106	Stage 3B - Fourth Floor	Rev P01
010107	Stage 3B - Fifth Floor	Rev P01
010108	Stage 3B - Sixth Floor	Rev P01
010109	Stage 3B - Seventh Floor	Rev P01
010110	Stage 3B - Eighth Floor	Rev P01
010111	Stage 3B - Ninth Floor	Rev P01
010112	Stage 3B - Roof Plan	Rev P01
PL100	Elevations - South	Rev P03
PL101	Elevations - East	Rev P03
PL102	Elevations - North	Rev P03
PL103	Elevations - West	Rev P03
PL104	Elevations - Residential Park	Rev P03

3 METHODOLOGY OF THE ASSESSMENT

3.1 Local Planning Policy

- 3.1.1 We understand that the Local Authority takes the conventional approach of considering daylight and sunlight amenity with reference to the various numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice, 3rd Edition' by P J Littlefair 2022. The BRE guide is based on European standard BS EN 17037 'Daylight in Buildings', 2019 (BS EN 17037).
- 3.1.2 The standards set out in the BRE guide are intended to be used flexibly. The BRE guide states:
- 3.1.3 "The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly, since natural lighting is only one of many factors in site layout design."
- 3.1.4 In reference to applying different numerical target values in different locations, the BRE guide states:
- 3.1.5 "These values are purely advisory and different targets may be used based on the special requirements of the proposed development or its location."

3.2 National Planning Policy Framework

- 3.2.1 The BRE numerical guidelines should be considered in the context of the National Planning Policy Framework (NPPF), which stipulates that local planning authorities should take a flexible approach to daylight and sunlight to ensure the efficient use of land. The NPPF states:

"Local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)."

3.3 National Planning Practice Guidance

- 3.3.1 The BRE numerical guidelines should also be considered in the context of the National Planning Practice Guidance (NPPG). The NPPG states that developments should maintain acceptable living standards. It goes on to explain that what this means in practice is that appropriate levels of sunlight and daylight, will depend to some extent on the context for the development. This is consistent with the BRE guide which as noted in paragraphs 3.1.4 to 3.1.5 above, states that site location is a relevant factor when setting sunlight and daylight targets.

3.4 Interior Daylighting

- 3.4.1 The BRE guide recommends that interior daylighting is checked using the daylight provision test set out in BS EN 17037. The test measures both the amount of daylight, as well as the distribution of daylight within a room. The test is applied to habitable rooms within domestic properties. A kitchen is generally deemed to be a habitable room if it is large enough to accommodate a dining area. If the kitchen is small, or if the property has a separate dining area, then the accepted practice is to treat the kitchen as a non-habitable room.
- 3.4.2 The assessment is carried out using a grid of points on a horizontal reference plane in each room. In accordance with the BRE recommendations, we have set the reference plane at 850mm above the floor and have excluded assessment points from a 0.3m wide band around the perimeter of each room.
- 3.4.3 The UK National Annex to BS EN 17037 gives UK specific minimum illuminance recommendations which we have set as the targets for this project. The targets comprise of 100 lux in bedrooms, 150 lux in living rooms and 200 lux in kitchens to be exceeded over at least 50% of the reference plane.
- 3.4.4 Where a room has a shared use, the highest target should apply. However, the guide states that local authorities could use discretion here. For example, the target for a living room could be used for a combined living/dining/kitchen area if the kitchens are not treated as habitable spaces, as it may avoid small separate kitchens in a design.
- 3.4.5 The data in Appendix 2 sets out the percentage of the reference plane that meets the relevant lux target for the given room use. The median illuminance (lux) achieved for

each room is also presented. Where the median illuminance exceeds the lux target, this means the lux target has been achieved over at least 50% of the assessment grid.

3.4.6 The daylight provision test may be carried out using either the daylight factor method, or the interior illuminance method. For the purpose of this assessment, we have adopted the daylight factor method. Using the conversion table set out in the BRE guide, we have expressed the results in terms of lux.

3.4.7 Since the assessment is based on a computer simulation, it is necessary to set various surface reflectance values. By example, a 0.6 reflectance means that 60% of the light hitting the surface will be reflected. For the purpose of this assessment, we have assumed the following reflectances:

<u>Surface</u>	<u>Reflectance</u>
Interior walls	0.7
Window reveals	0.7
Ceilings	0.8
Floors	0.4
Exterior walls and obstructions	0.2
Exterior ground	0.2
Exterior glazing	0.064

3.4.8 We have assumed that each window is double-glazed and has a glazed area that equates to 80% of the structural opening size. A diffuse glazing transmittance value, inclusive of a maintenance factor to allow for the effect of dirt on the glazing, of 0.66 has been used.

3.5 Exposure to Sunlight

3.5.1 The BRE guide states that the main requirement for sunlight is in living rooms, where it is valued at any time of day but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens, where people prefer it in the morning rather than the afternoon.

3.5.2 The BRE guide states that, in general, a dwelling will appear reasonably sunlit provided:

- at least one main window wall faces within 90 degrees of due south, and
- a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March.

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- 3.3.1 The guide states that, where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations.

4 RESULTS OF THE ASSESSMENT

4.1 Windows Analysed

- 4.1.1 Appendix 1 identifies the windows serving habitable rooms analysed in this assessment. We have tested the windows at the ground to second floor levels on the basis that, if these satisfy the BRE requirements, the windows at the upper levels are likely to surpass the BRE minimum requirements by an even greater margin.

4.2 Interior Daylighting

- 4.2.1 Daylight provision data and contours for the habitable rooms are presented in Appendix 2.
- 4.2.2 The results confirm that a number of rooms do not meet their daylight provision targets (54 of the 136 rooms tested meet or surpass the winter recommendations). Whilst a number of rooms fall short of the daylight provision targets, we note that the results are not unusual in the context of an urban location.
- 4.2.3 In addition to the above, and as explained in section 1.1.4, many of rooms which do not meet the BRE interior daylighting recommendations, have balconies above them. This is in order to provide private amenity space to the occupants. Whilst this does limit some of the daylight available to the units, on balance, it is considered preferable to retain these, as they provide additional benefits to the residents of the development. If the balconies were to be removed, then the interior daylighting levels would greatly improve. Therefore, in our opinion, there are material considerations which outweigh the slightly lower daylight levels values for the aforementioned rooms.

4.3 Exposure to Sunlight

- 4.3.1 Exposure to sunlight data is provided in Appendix 3.
- 4.3.2 In the case of the proposed development, 27 of the 62 units tested have a habitable room window which faces within 90 degrees of due south. 24 units have a habitable room which receives a total of at least 1.5 hours of sunlight on 21 March.
- 4.3.3 The BRE guide acknowledges that in some cases, it may not be possible for every dwelling to achieve ideal levels of sunlight. The guide explains that where groups of

dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that:

- faces within 90 degrees of due south, and
- can receive a total of at least 1.5 hours of sunlight on 21 March.

4.3.4 In our opinion, the proposed development represents good site layout design. Since the design maximises sunlight availability, as far as practically possible given the constraints of the site, the BRE exposure to sunlight recommendations for groups of dwellings have been met.

4.4 Conclusion

4.4.1 The numerical results demonstrate that a reasonable number of the rooms meet the BRE recommendations. Whilst a number of the rooms do not meet the recommendations, the results are not unusual in the context of an urban location. It is important to note that many of the rooms which do not meet the daylight recommendations have balconies above them. This is in order to provide private amenity space to the occupants. Whilst this does limit some of the daylight available to the units, on balance, it is considered preferable to retain these, as they provide additional benefits to the residents of the development. If the balconies were to be removed, then the levels of daylight would be greatly improved. Therefore, in overall terms the scheme represents a relatively high level of compliance with the BRE recommendations and, in our opinion, there are material considerations which outweigh the slightly lower daylight levels. We would therefore expect the local authority to balance daylight and sunlight considerations against all other material planning considerations, including the wider benefits such as the provision of the private amenity areas, when deciding whether to grant planning permission.

5 CLARIFICATIONS

5.1 General

- 5.1.1 The report provided is solely for the use of the client and no liability to anyone else is accepted.
- 5.1.2 The assessment is limited to assessing daylight & sunlight of the proposed development as set out in section 2.1 and 3.1 of the BRE guide.
- 5.1.3 The assessment is based on the information listed in section 2 of this report and a site visit undertaken on 10 June 2019.
- 5.1.4 This assessment does not calculate the effects of trees and hedges on daylight, sunlight and overshadowing to gardens. The BRE guide states that trees should sometimes be taken into account. e.g. where there is concern that future occupants of the dwelling may want the trees to be cut down if they block too much skylight or sunlight. We are not aware of any such circumstances, in this instance.
- 5.1.5 We have undertaken the survey following the guidelines of the RICS publication "Surveying Safely". Where limited access is available, assumptions will have been made.
- 5.1.6 This report is based upon and subject to the scope of work set out in Right of Light Consulting's quotation and standard terms and conditions.

APPENDICES

APPENDIX 1

WINDOW KEY



Proposed
Development

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Proposed
Development

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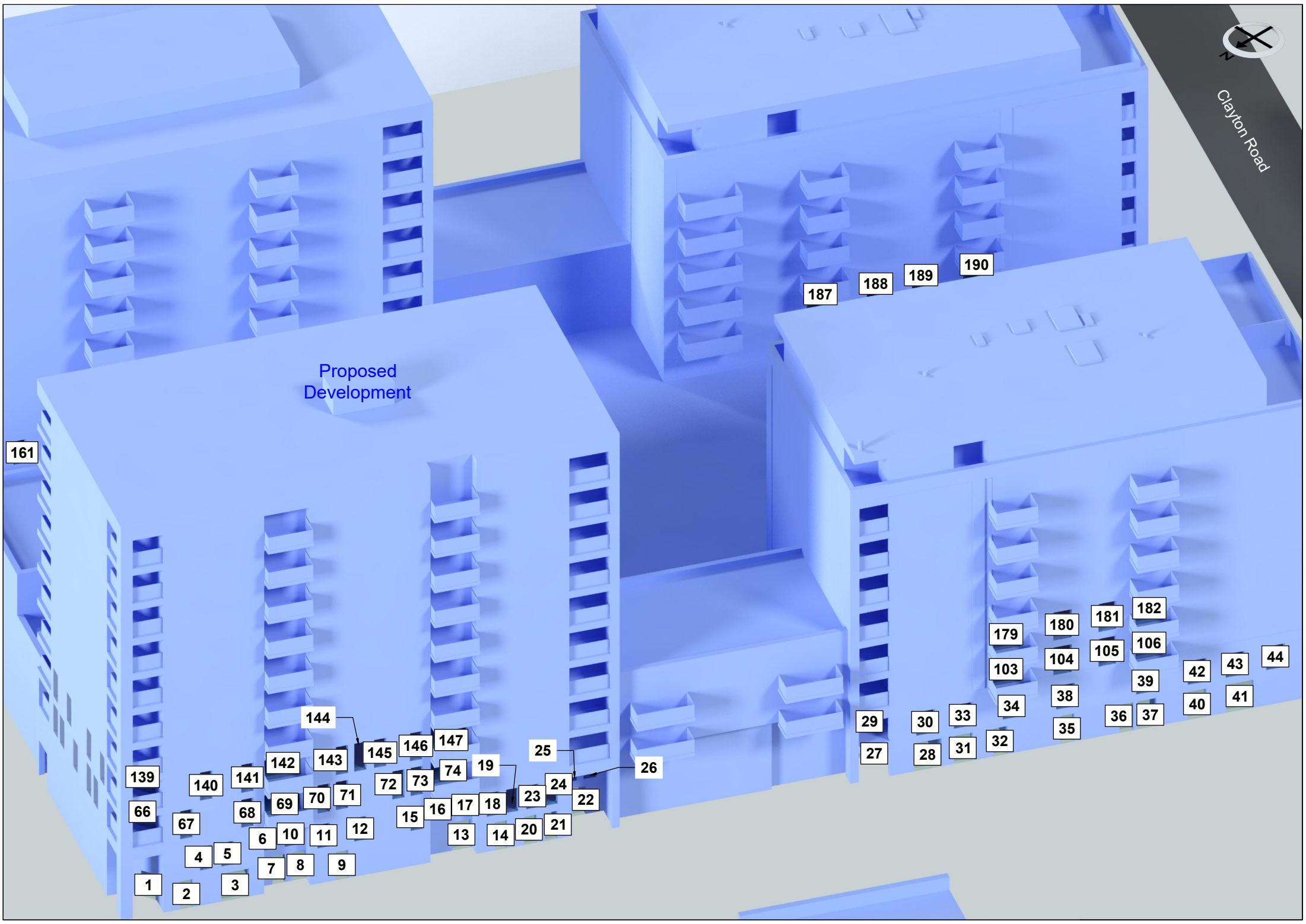
Proposed
Development

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Clayton Road

Proposed
Development



161

187 188 189 190

179 180 181 182
103 104 105 106
34 38 39 42 43 44
35 36 37 40 41

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139 140 141 70 71 72 73 74 19
66 67 68 69 15 16 17 18 23 24 22 26
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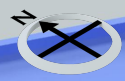
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Proposed
Development

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Proposed
Development

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Clayton Road



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Proposed
Development

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Proposed
Development

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| 119 | 120 | 121 | 122 | 123 |
| 46 | 47 | 48 | 49 | 50 |

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| 129 | 130 | 131 |
| 56 | 57 | 58 |

APPENDIX 2

DAYLIGHT PROVISION DATA & CONTOURS

Appendix 2 - Daylight Provision
Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
Unit 1						
Ground Floor						
Windows 1 to 3	Living/Dining	150	50%	91%	Yes	210
Mezzanine Floor						
Window 4	Bedroom	100	50%	10%	No	64
Window 5	Bedroom	100	50%	38%	No	90
Window 6	Bedroom	100	50%	0%	No	21
Unit 2						
Ground Floor						
Windows 7 to 9	Living/Dining	150	50%	14%	No	88
Mezzanine Floor						
Windows 10 & 11	Bedroom	100	50%	10%	No	54
Window 12	Bedroom	100	50%	5%	No	42
Unit 3						
Ground Floor						
Windows 13 & 14	Living/Dining	150	50%	10%	No	69
Mezzanine Floor						
Window 15	Bedroom	100	50%	4%	No	33
Windows 16 & 17	Living Room	150	50%	0%	No	36
Windows 18 & 19	Bedroom	100	50%	45%	No	96
Unit 4						
Ground Floor						
Windows 20 to 22	Living/Dining	150	50%	24%	No	94
Mezzanine Floor						
Windows 23 & 24	Bedroom	100	50%	45%	No	95
Windows 25 & 26	Bedroom	100	50%	4%	No	39

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 5</u>						
<u>Ground Floor</u>						
Windows 27 & 28	Living/Dining	150	50%	30%	No	67
<u>Mezzanine Floor</u>						
Window 29	Bedroom	100	50%	0%	No	18
Window 30	Bedroom	100	50%	40%	No	89
<u>Unit 6</u>						
<u>Ground Floor</u>						
Windows 31 & 32	Living/Dining	150	50%	26%	No	105
<u>Mezzanine Floor</u>						
Window 33	Bedroom	100	50%	44%	No	94
Window 34	Bedroom	100	50%	12%	No	66
<u>Unit 7</u>						
<u>Ground Floor</u>						
Window 35	Living Room	150	50%	8%	No	52
Windows 36 & 37	Dining/Kitchen	200	50%	29%	No	129
<u>Mezzanine Floor</u>						
Window 38	Bedroom	100	50%	30%	No	84
Window 39	Bedroom	100	50%	12%	No	64
<u>Unit 8</u>						
<u>Ground Floor</u>						
Windows 40 & 41	Living/Dining	150	50%	69%	Yes	179
<u>Mezzanine Floor</u>						
Window 42	Bedroom	100	50%	64%	Yes	109
Window 43	Bedroom	100	50%	100%	Yes	159
Windows 44 & 45	Bedroom	100	50%	99%	Yes	143

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 9</u>						
<u>First Floor</u>						
Window 46	Living/Dining	150	50%	87%	Yes	220
Windows 47 & 48	Bedroom	100	50%	100%	Yes	340
<u>Unit 10</u>						
<u>First Floor</u>						
Windows 49 & 50	Living Room	150	50%	88%	Yes	229
<u>Unit 11</u>						
<u>First Floor</u>						
Window 51	Living/Dining	150	50%	6%	No	57
Windows 52 & 53	Bedroom	100	50%	12%	No	53
<u>Unit 12</u>						
<u>First Floor</u>						
Window 54	Bedroom	100	50%	17%	No	60
Window 55	Living/Dining	150	50%	10%	No	67
<u>Unit 13</u>						
<u>First Floor</u>						
Windows 56 & 57	Living/Dining	150	50%	100%	Yes	460
Window 58	Bedroom	100	50%	100%	Yes	279
<u>Unit 14</u>						
<u>First Floor</u>						
Window 59	Bedroom	100	50%	99%	Yes	190
Windows 60 & 61	Living/Dining	150	50%	9%	No	70
<u>Unit 15</u>						
<u>First Floor</u>						
Window 62	Living/Dining	150	50%	7%	No	52
Window 63	Bedroom	100	50%	86%	Yes	128

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 16</u>						
<u>First Floor</u>						
Window 64	Bedroom	100	50%	100%	Yes	238
Windows 65 to 67	Living/Dining	150	50%	59%	Yes	168
Window 68	Bedroom	100	50%	21%	No	71
<u>Unit 17</u>						
<u>First Floor</u>						
Window 69	Living/Dining	150	50%	2%	No	54
Windows 70 & 71	Bedroom	100	50%	64%	Yes	109
<u>Unit 18</u>						
<u>First Floor</u>						
Windows 72 & 73	Bedroom	100	50%	58%	Yes	105
Window 74	Living/Dining	150	50%	0%	No	47
<u>Unit 19</u>						
<u>First Floor</u>						
Window 75	Living/Dining	150	50%	4%	No	68
Window 76	Bedroom	100	50%	8%	No	38
<u>Unit 20</u>						
<u>First Floor</u>						
Windows 77 & 78	Living/Dining	150	50%	3%	No	47
<u>Unit 21</u>						
<u>First Floor</u>						
Windows 79 to 81	Living/Dining	150	50%	60%	Yes	195
Window 82	Bedroom	100	50%	100%	Yes	185

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 22</u>						
<u>First Floor</u>						
Window 83	Bedroom	100	50%	100%	Yes	230
Windows 84 to 86	Living/Dining/Kitchen	200	50%	39%	No	132
Window 87	Bedroom	100	50%	9%	No	31
<u>Unit 23</u>						
<u>First Floor</u>						
Windows 88 & 89	Living/Dining	150	50%	5%	No	53
<u>Unit 24</u>						
<u>First Floor</u>						
Window 90	Bedroom	100	50%	7%	No	33
Window 91	Living/Dining	150	50%	5%	No	70
<u>Unit 25</u>						
<u>First Floor</u>						
Window 92	Living/Dining	150	50%	4%	No	55
Windows 93 & 94	Bedroom	100	50%	93%	Yes	139
<u>Unit 26</u>						
<u>First Floor</u>						
Windows 95 & 96	Bedroom	100	50%	92%	Yes	146
Window 97	Living/Dining	150	50%	9%	No	76
<u>Unit 27</u>						
<u>First Floor</u>						
Window 98	Bedroom	100	50%	52%	Yes	103
Windows 99 to 101	Living/Dining/Kitchen	200	50%	46%	No	191
Window 102	Bedroom	100	50%	100%	Yes	236

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Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 28</u>						
<u>First Floor</u>						
Window 103	Living/Dining	150	50%	4%	No	47
Window 104	Bedroom	100	50%	47%	No	97
<u>Unit 29</u>						
<u>First Floor</u>						
Windows 105 & 106	Living/Dining	150	50%	16%	No	76
<u>Unit 30</u>						
<u>First Floor</u>						
Window 107	Living/Dining	150	50%	0%	No	42
Window 108	Bedroom	100	50%	52%	Yes	101
<u>Unit 31</u>						
<u>First Floor</u>						
Window 109	Bedroom	100	50%	49%	No	98
Window 110	Living/Dining	150	50%	4%	No	71
<u>Unit 32</u>						
<u>First Floor</u>						
Window 111	Living/Dining	150	50%	3%	No	68
Window 112	Bedroom	100	50%	50%	Yes	100
<u>Unit 33</u>						
<u>First Floor</u>						
Window 113	Bedroom	100	50%	54%	Yes	103
Window 114	Living/Dining	150	50%	0%	No	42
<u>Unit 34</u>						
<u>First Floor</u>						
Windows 115 & 116	Living/Dining	150	50%	44%	No	132

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 35</u>						
<u>First Floor</u>						
Window 117	Bedroom	100	50%	90%	Yes	155
Window 118	Living/Dining	150	50%	16%	No	73
<u>Unit 36</u>						
<u>Second Floor</u>						
Window 119	Living/Dining	150	50%	87%	Yes	217
Window 120	Bedroom	100	50%	60%	Yes	113
<u>Unit 37</u>						
<u>Second Floor</u>						
Windows 121 to 123	Living Room	150	50%	100%	Yes	322
<u>Unit 38</u>						
<u>Second Floor</u>						
Window 124	Living/Dining	150	50%	8%	No	61
Windows 125 & 126	Bedroom	100	50%	18%	No	57
<u>Unit 39</u>						
<u>Second Floor</u>						
Window 127	Bedroom	100	50%	17%	No	61
Window 128	Living/Dining	150	50%	11%	No	70
<u>Unit 40</u>						
<u>Second Floor</u>						
Window 129	Living/Dining	150	50%	86%	Yes	221
Window 130	Bedroom	100	50%	100%	Yes	286
Window 131	Bedroom	100	50%	100%	Yes	439

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 41</u>						
<u>Second Floor</u>						
Window 132	Bedroom	100	50%	100%	Yes	215
Windows 133 & 134	Living/Dining	150	50%	13%	No	80
<u>Unit 42</u>						
<u>Second Floor</u>						
Window 135	Living/Dining	150	50%	9%	No	56
Window 136	Bedroom	100	50%	95%	Yes	154
<u>Unit 43</u>						
<u>Second Floor</u>						
Window 137	Bedroom	100	50%	100%	Yes	237
Windows 138 to 140	Living/Dining/Kitchen	200	50%	33%	No	158
Window 141	Bedroom	100	50%	25%	No	77
<u>Unit 44</u>						
<u>Second Floor</u>						
Window 142	Living/Dining	150	50%	2%	No	57
Windows 143 & 144	Bedroom	100	50%	77%	Yes	118
<u>Unit 45</u>						
<u>Second Floor</u>						
Windows 145 & 146	Bedroom	100	50%	64%	Yes	109
Window 147	Living/Dining	150	50%	1%	No	51
<u>Unit 46</u>						
<u>Second Floor</u>						
Window 148	Living/Dining	150	50%	8%	No	63
Windows 149 & 150	Bedroom	100	50%	70%	Yes	114

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 47</u>						
<u>Second Floor</u>						
Window 151	Bedroom	100	50%	20%	No	62
Window 152	Living/Dining	150	50%	3%	No	43
<u>Unit 48</u>						
<u>Second Floor</u>						
Window 153	Bedroom	100	50%	19%	No	59
Windows 154 to 156	Living/Dining/Kitchen	200	50%	37%	No	166
Window 157	Bedroom	100	50%	100%	Yes	238
<u>Unit 49</u>						
<u>Second Floor</u>						
Window 158	Bedroom	100	50%	100%	Yes	237
Windows 159 to 161	Living/Dining/Kitchen	200	50%	37%	No	163
Window 162	Bedroom	100	50%	19%	No	56
<u>Unit 50</u>						
<u>Second Floor</u>						
Window 163	Living/Dining	150	50%	5%	No	49
Window 164	Bedroom	100	50%	20%	No	61
<u>Unit 51</u>						
<u>Second Floor</u>						
Windows 165 & 166	Bedroom	100	50%	70%	Yes	113
Window 167	Living/Dining	150	50%	7%	No	56
<u>Unit 52</u>						
<u>Second Floor</u>						
Window 168	Living/Dining	150	50%	9%	No	64
Windows 169 & 170	Bedroom	100	50%	99%	Yes	180

Appendix 2 - Daylight Provision

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
<u>Unit 53</u>						
<u>Second Floor</u>						
Windows 171 & 172	Bedroom	100	50%	99%	Yes	200
Window 173	Living/Dining	150	50%	17%	No	88
<u>Unit 54</u>						
<u>Second Floor</u>						
Window 174	Bedroom	100	50%	66%	Yes	115
Windows 175 to 177	Living/Dining/Kitchen	200	50%	59%	Yes	214
Window 178	Bedroom	100	50%	100%	Yes	234
<u>Unit 55</u>						
<u>Second Floor</u>						
Window 179	Living/Dining	150	50%	5%	No	53
Window 180	Bedroom	100	50%	56%	Yes	106
<u>Unit 56</u>						
<u>Second Floor</u>						
Windows 181 & 182	Living/Dining	150	50%	21%	No	84
<u>Unit 57</u>						
<u>Second Floor</u>						
Window 183	Living/Dining	150	50%	8%	No	64
Window 184	Bedroom	100	50%	81%	Yes	137
<u>Unit 58</u>						
<u>Second Floor</u>						
Window 185	Bedroom	100	50%	76%	Yes	123
Window 186	Living/Dining	150	50%	5%	No	58
<u>Unit 59</u>						
<u>Second Floor</u>						
Window 187	Living/Dining	150	50%	4%	No	53
Window 188	Bedroom	100	50%	69%	Yes	117

Appendix 2 - Daylight Provision
Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Reference	Room Use	Min.Target Illuminance (Lux)	Target % of Reference Plane	% of Reference Plane Achieved	Target % Achieved	Median Illuminance (Lux)
Unit 60						
Second Floor						
Window 189	Bedroom	100	50%	78%	Yes	129
Window 190	Living/Dining	150	50%	7%	No	61
Unit 61						
Second Floor						
Windows 191 & 192	Living/Dining	150	50%	50%	Yes	152
Unit 62						
Second Floor						
Window 193	Bedroom	100	50%	93%	Yes	184
Window 194	Living/Dining	150	50%	21%	No	88

Key:



Area above target lux threshold



Area below target lux threshold



Window reference



Drawing Title: Daylight Provision Contours

Scale: Do not scale

Drawing No: 1 of 4

Rev. .

Rev	Date	Details of revision



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Key:



Area above target lux threshold



Area below target lux threshold



Window reference

Drawing Title: Daylight Provision Contours

Scale: Do not scale

Drawing No: 2 of 4

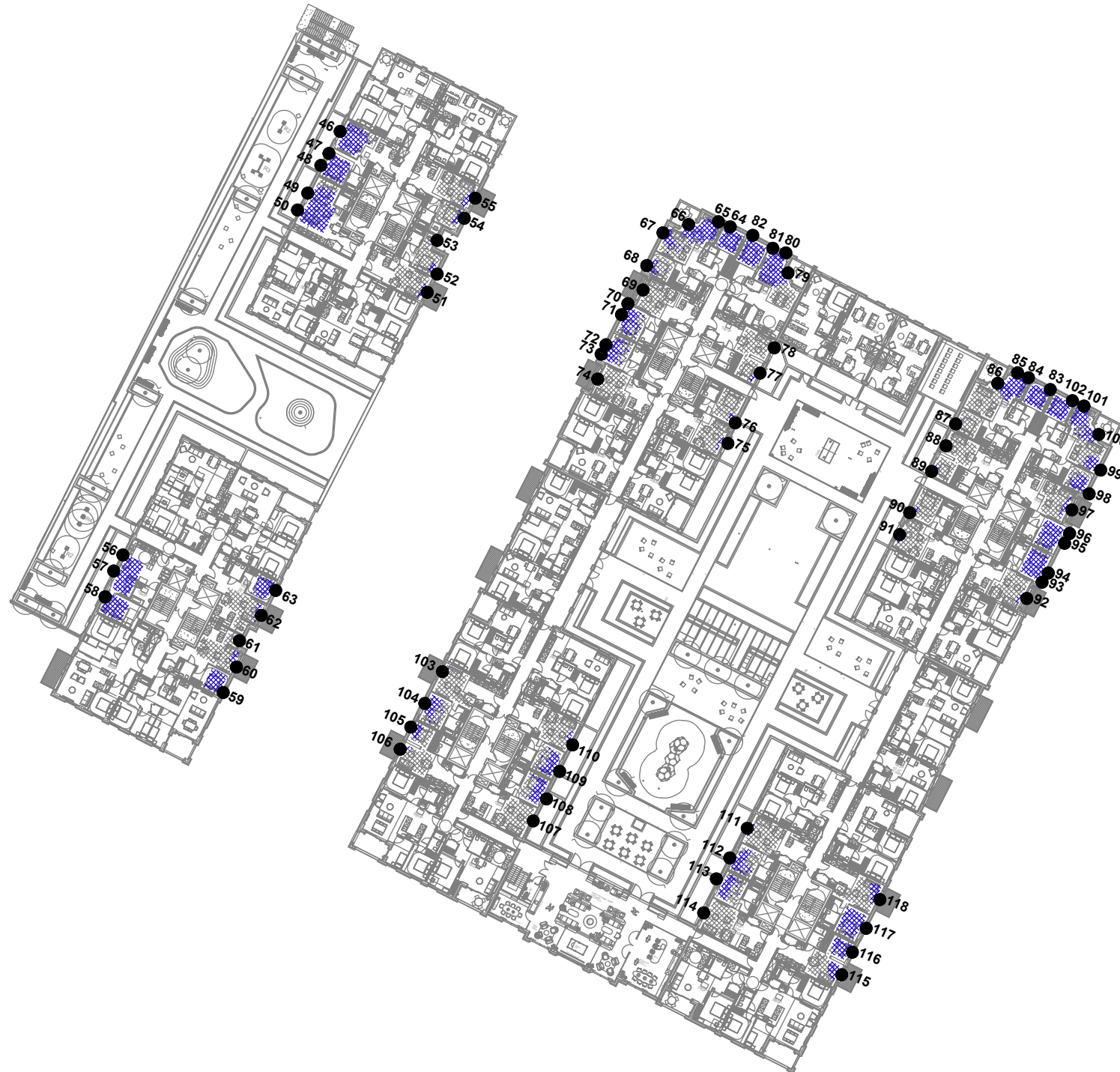
Rev. .

Rev	Date	Details of revision



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Key:



Area above target lux threshold



Area below target lux threshold



Window reference

Drawing Title: Daylight Provision Contours

Scale: Do not scale

Drawing No: 3 of 4

Rev. .



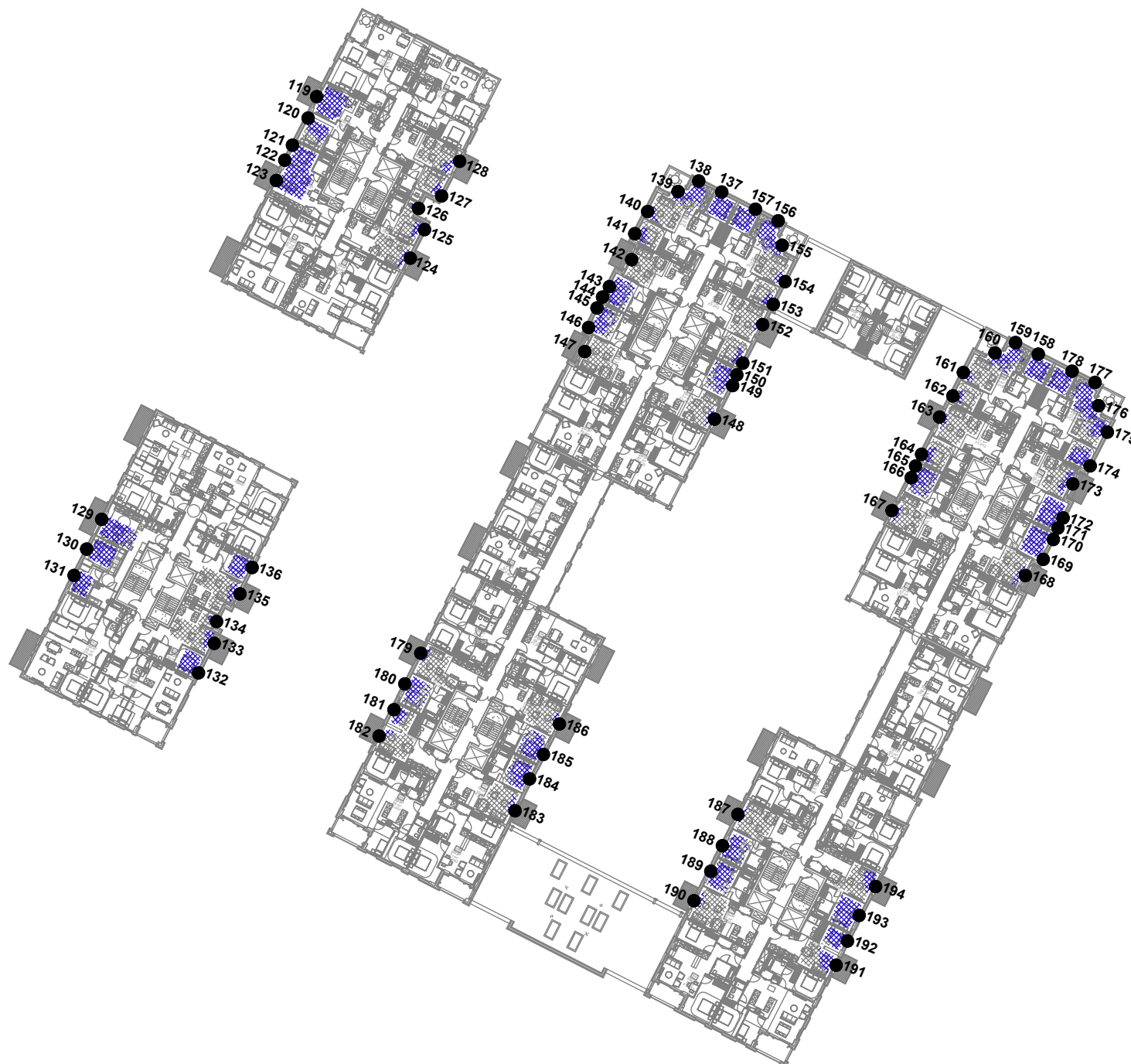
Rev	Date	Details of revision



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Key:

 Area above target lux threshold Area below target lux threshold Window reference

Drawing Title: Daylight Provision Contours

Scale: Do not scale

Drawing No: 4 of 4

Rev. .

Rev	Date	Details of revision

APPENDIX 3

EXPOSURE TO SUNLIGHT DATA

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure	
Unit 1					
Ground Floor					
Windows 1 to 3	Living/Dining	1.5 hours	0.5 hours	No	
Mezzanine Floor					
Window 4	Bedroom	1.5 hours	0 hours		
Window 5	Bedroom	1.5 hours	0 hours		
Window 6	Bedroom	1.5 hours	0 hours		
Unit 2					
Ground Floor					
Windows 7 to 9	Living/Dining	1.5 hours	0 hours	No	
Mezzanine Floor					
Windows 10 & 11	Bedroom	1.5 hours	0 hours		
Window 12	Bedroom	1.5 hours	0 hours		
Unit 3					
Ground Floor					
Windows 13 & 14	Living/Dining	1.5 hours	0 hours	No	
Mezzanine Floor					
Window 15	Bedroom	1.5 hours	0 hours		
Windows 16 & 17	Living Room	1.5 hours	0 hours		
Windows 18 & 19	Bedroom	1.5 hours	0 hours		
Unit 4					
Ground Floor					
Windows 20 to 22	Living/Dining	1.5 hours	0 hours	No	
Mezzanine Floor					
Windows 23 & 24	Bedroom	1.5 hours	0 hours		
Windows 25 & 26	Bedroom	1.5 hours	0 hours		

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure	
<u>Unit 5</u>					
<u>Ground Floor</u>					
Windows 27 & 28	Living/Dining	1.5 hours	1.1 hours	No	
<u>Mezzanine Floor</u>					
Window 29	Bedroom	1.5 hours	0 hours		
Window 30	Bedroom	1.5 hours	0.4 hours		
<u>Unit 6</u>					
<u>Ground Floor</u>					
Windows 31 & 32	Living/Dining	1.5 hours	1.4 hours	No	
<u>Mezzanine Floor</u>					
Window 33	Bedroom	1.5 hours	0.8 hours		
Window 34	Bedroom	1.5 hours	1.1 hours		
<u>Unit 7</u>					
<u>Ground Floor</u>					
Window 35	Living Room	1.5 hours	0.8 hours	Yes	
Windows 36 & 37	Dining/Kitchen	1.5 hours	1.8 hours		
<u>Mezzanine Floor</u>					
Window 38	Bedroom	1.5 hours	1.3 hours		
Window 39	Bedroom	1.5 hours	1.3 hours		
<u>Unit 8</u>					
<u>Ground Floor</u>					
Windows 40 & 41	Living/Dining	1.5 hours	1.9 hours	Yes	
<u>Mezzanine Floor</u>					
Window 42	Bedroom	1.5 hours	1.3 hours		
Window 43	Bedroom	1.5 hours	1.3 hours		
Windows 44 & 45	Bedroom	1.5 hours	2.8 hours		

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 9</u>				
<u>First Floor</u>				
Window 46	Living/Dining	1.5 hours	1.8 hours	Yes
Windows 47 & 48	Bedroom	1.5 hours	0.5 hours	
<u>Unit 10</u>				
<u>First Floor</u>				
Windows 49 & 50	Living Room	1.5 hours	1.8 hours	Yes
<u>Unit 11</u>				
<u>First Floor</u>				
Window 51	Living/Dining	1.5 hours	2 hours	Yes
Windows 52 & 53	Bedroom	1.5 hours	0.6 hours	
<u>Unit 12</u>				
<u>First Floor</u>				
Window 54	Bedroom	1.5 hours	0 hours	No
Window 55	Living/Dining	1.5 hours	0.9 hours	
<u>Unit 13</u>				
<u>First Floor</u>				
Windows 56 & 57	Living/Dining	1.5 hours	1.8 hours	Yes
Window 58	Bedroom	1.5 hours	1.1 hours	
<u>Unit 14</u>				
<u>First Floor</u>				
Window 59	Bedroom	1.5 hours	1.9 hours	Yes
Windows 60 & 61	Living/Dining	1.5 hours	1.9 hours	
<u>Unit 15</u>				
<u>First Floor</u>				
Window 62	Living/Dining	1.5 hours	1.8 hours	Yes
Window 63	Bedroom	1.5 hours	0.4 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 16</u>				
<u>First Floor</u>				
Window 64	Bedroom	1.5 hours	0 hours	No
Windows 65 to 67	Living/Dining	1.5 hours	0 hours	
Window 68	Bedroom	1.5 hours	0 hours	
<u>Unit 17</u>				
<u>First Floor</u>				
Window 69	Living/Dining	1.5 hours	0 hours	No
Windows 70 & 71	Bedroom	1.5 hours	0 hours	
<u>Unit 18</u>				
<u>First Floor</u>				
Windows 72 & 73	Bedroom	1.5 hours	0 hours	No
Window 74	Living/Dining	1.5 hours	0 hours	
<u>Unit 19</u>				
<u>First Floor</u>				
Window 75	Living/Dining	1.5 hours	2.1 hours	Yes
Window 76	Bedroom	1.5 hours	0.6 hours	
<u>Unit 20</u>				
<u>First Floor</u>				
Windows 77 & 78	Living/Dining	1.5 hours	1.1 hours	No
<u>Unit 21</u>				
<u>First Floor</u>				
Windows 79 to 81	Living/Dining	1.5 hours	0 hours	No
Window 82	Bedroom	1.5 hours	0 hours	
<u>Unit 22</u>				
<u>First Floor</u>				
Window 83	Bedroom	1.5 hours	0 hours	No
Windows 84 to 86	Living/Dining/Kitchen	1.5 hours	0 hours	
Window 87	Bedroom	1.5 hours	0 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 23</u>				
<u>First Floor</u>				
Windows 88 & 89	Living/Dining	1.5 hours	0.5 hours	No
<u>Unit 24</u>				
<u>First Floor</u>				
Window 90	Bedroom	1.5 hours	0 hours	No
Window 91	Living/Dining	1.5 hours	0.5 hours	
<u>Unit 25</u>				
<u>First Floor</u>				
Window 92	Living/Dining	1.5 hours	0.8 hours	No
Windows 93 & 94	Bedroom	1.5 hours	0.3 hours	
<u>Unit 26</u>				
<u>First Floor</u>				
Windows 95 & 96	Bedroom	1.5 hours	0.3 hours	No
Window 97	Living/Dining	1.5 hours	0.8 hours	
<u>Unit 27</u>				
<u>First Floor</u>				
Window 98	Bedroom	1.5 hours	0.5 hours	No
Windows 99 to 101	Living/Dining/Kitchen	1.5 hours	0.9 hours	
Window 102	Bedroom	1.5 hours	0 hours	
<u>Unit 28</u>				
<u>First Floor</u>				
Window 103	Living/Dining	1.5 hours	0 hours	No
Window 104	Bedroom	1.5 hours	1.1 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 29</u>				
<u>First Floor</u>				
Windows 105 & 106	Living/Dining	1.5 hours	0 hours	No
<u>Unit 30</u>				
<u>First Floor</u>				
Window 107	Living/Dining	1.5 hours	0 hours	No
Window 108	Bedroom	1.5 hours	0.9 hours	
<u>Unit 31</u>				
<u>First Floor</u>				
Window 109	Bedroom	1.5 hours	1.3 hours	Yes
Window 110	Living/Dining	1.5 hours	1.6 hours	
<u>Unit 32</u>				
<u>First Floor</u>				
Window 111	Living/Dining	1.5 hours	1.5 hours	Yes
Window 112	Bedroom	1.5 hours	0.4 hours	
<u>Unit 33</u>				
<u>First Floor</u>				
Window 113	Bedroom	1.5 hours	0 hours	No
Window 114	Living/Dining	1.5 hours	0 hours	
<u>Unit 34</u>				
<u>First Floor</u>				
Windows 115 & 116	Living/Dining	1.5 hours	4 hours	Yes
<u>Unit 35</u>				
<u>First Floor</u>				
Window 117	Bedroom	1.5 hours	3.5 hours	Yes
Window 118	Living/Dining	1.5 hours	3.7 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 36</u>				
<u>Second Floor</u>				
Window 119	Living/Dining	1.5 hours	1.5 hours	Yes
Window 120	Bedroom	1.5 hours	0.5 hours	
<u>Unit 37</u>				
<u>Second Floor</u>				
Windows 121 to 123	Living Room	1.5 hours	1.3 hours	No
<u>Unit 38</u>				
<u>Second Floor</u>				
Window 124	Living/Dining	1.5 hours	2 hours	Yes
Windows 125 & 126	Bedroom	1.5 hours	0.4 hours	
<u>Unit 39</u>				
<u>Second Floor</u>				
Window 127	Bedroom	1.5 hours	0.1 hours	No
Window 128	Living/Dining	1.5 hours	1.1 hours	
<u>Unit 40</u>				
<u>Second Floor</u>				
Window 129	Living/Dining	1.5 hours	1.2 hours	No
Window 130	Bedroom	1.5 hours	1.1 hours	
Window 131	Bedroom	1.5 hours	1.1 hours	
<u>Unit 41</u>				
<u>Second Floor</u>				
Window 132	Bedroom	1.5 hours	1.9 hours	Yes
Windows 133 & 134	Living/Dining	1.5 hours	2.4 hours	
<u>Unit 42</u>				
<u>Second Floor</u>				
Window 135	Living/Dining	1.5 hours	2 hours	Yes
Window 136	Bedroom	1.5 hours	0.8 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 43</u>				
<u>Second Floor</u>				
Window 137	Bedroom	1.5 hours	0 hours	No
Windows 138 to 140	Living/Dining/Kitchen	1.5 hours	0 hours	
Window 141	Bedroom	1.5 hours	0 hours	
<u>Unit 44</u>				
<u>Second Floor</u>				
Window 142	Living/Dining	1.5 hours	0 hours	No
Windows 143 & 144	Bedroom	1.5 hours	0 hours	
<u>Unit 45</u>				
<u>Second Floor</u>				
Windows 145 & 146	Bedroom	1.5 hours	0 hours	No
Window 147	Living/Dining	1.5 hours	0 hours	
<u>Unit 46</u>				
<u>Second Floor</u>				
Window 148	Living/Dining	1.5 hours	2.3 hours	Yes
Windows 149 & 150	Bedroom	1.5 hours	0.5 hours	
<u>Unit 47</u>				
<u>Second Floor</u>				
Window 151	Bedroom	1.5 hours	0.3 hours	No
Window 152	Living/Dining	1.5 hours	1.3 hours	
<u>Unit 48</u>				
<u>Second Floor</u>				
Window 153	Bedroom	1.5 hours	0.1 hours	No
Windows 154 to 156	Living/Dining/Kitchen	1.5 hours	0.1 hours	
Window 157	Bedroom	1.5 hours	0 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
Unit 49				
Second Floor				
Window 158	Bedroom	1.5 hours	0 hours	No
Windows 159 to 161	Living/Dining/Kitchen	1.5 hours	0 hours	
Window 162	Bedroom	1.5 hours	0 hours	
Unit 50				
Second Floor				
Window 163	Living/Dining	1.5 hours	0.3 hours	No
Window 164	Bedroom	1.5 hours	0 hours	
Unit 51				
Second Floor				
Windows 165 & 166	Bedroom	1.5 hours	0 hours	No
Window 167	Living/Dining	1.5 hours	0 hours	
Unit 52				
Second Floor				
Window 168	Living/Dining	1.5 hours	1.1 hours	No
Windows 169 & 170	Bedroom	1.5 hours	0.7 hours	
Unit 53				
Second Floor				
Windows 171 & 172	Bedroom	1.5 hours	0.7 hours	Yes
Window 173	Living/Dining	1.5 hours	1.6 hours	
Unit 54				
Second Floor				
Window 174	Bedroom	1.5 hours	1.5 hours	Yes
Windows 175 to 177	Living/Dining/Kitchen	1.5 hours	2.2 hours	
Window 178	Bedroom	1.5 hours	0 hours	

Appendix 3 - Exposure To Sunlight

Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 55</u>				
<u>Second Floor</u>				
Window 179	Living/Dining	1.5 hours	0 hours	No
Window 180	Bedroom	1.5 hours	1.1 hours	
<u>Unit 56</u>				
<u>Second Floor</u>				
Windows 181 & 182	Living/Dining	1.5 hours	0 hours	No
<u>Unit 57</u>				
<u>Second Floor</u>				
Window 183	Living/Dining	1.5 hours	2.5 hours	Yes
Window 184	Bedroom	1.5 hours	1.2 hours	
<u>Unit 58</u>				
<u>Second Floor</u>				
Window 185	Bedroom	1.5 hours	1.7 hours	Yes
Window 186	Living/Dining	1.5 hours	2.2 hours	
<u>Unit 59</u>				
<u>Second Floor</u>				
Window 187	Living/Dining	1.5 hours	0 hours	No
Window 188	Bedroom	1.5 hours	1.2 hours	
<u>Unit 60</u>				
<u>Second Floor</u>				
Window 189	Bedroom	1.5 hours	1.2 hours	No
Window 190	Living/Dining	1.5 hours	0 hours	

Appendix 3 - Exposure To Sunlight
Crown Trading Centre, Clayton Road, Hayes UB3 1DU

Room	Room Use	Target Sunlight Exposure	Actual Sunlight Exposure	At least one habitable room in dwelling meets Target Sunlight Exposure
<u>Unit 61</u>				
<u>Second Floor</u>				
Windows 191 & 192	Living/Dining	1.5 hours	4.7 hours	Yes
<u>Unit 62</u>				
<u>Second Floor</u>				
Window 193	Bedroom	1.5 hours	4.1 hours	Yes
Window 194	Living/Dining	1.5 hours	3.7 hours	