Ramada

Proposed Art and Advertisement Environmental Assessment

West Properties UK Ltd

06.02.2008



QM

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1 Introduction

1.1 BACKGROUND

1.1.1 WSP have been commissioned by West Properties UK Ltd to prepare an environmental lighting assessment as part of a planning application for a proposed illuminated art and advertisement fascia on the Ramada Hotel.

1.1.2 The assessment has been prepare using the following design information :

- 19 page 'Ramada Proposed Art and Advertisement' report, reference number 7077.1. Document detailed proposals of advertising boards and the luminaires associated with each (Technical Author, Ian Simpson Architects);
- Lighting manufacturers lighting calculations entitled Banners 1, 2 & 3 (Technical Author, Thorlux Lighting).

1.2 SCHEME DESCRIPTION

1.2.1 The proposal is for the installation of an art and advertisement facia along the frontage of the Ramada building bounded by Deansgate, Victoria Bridge Street and Blackfriars Street in Manchester city centre. Incorporated within the proposal is the partial illumination of the facia along three defined sections. The location of the site and extent of illumination proposed is clearly identified on drawing reference 0250C002-A attached to this report within Appendix (A).

1.2.2 The lighting proposed for illumination of the art and advertisement facia includes 62 no. Thorlux Azmet 70 lighting units incorporating 57watt PL lamps (see Figure 1 below). The lighting units are arranged thus, 31 lighting units directed in an upward direction along the bottom edge of the facia and 31 no. lighting units installed along the top edge of the facia. The top and lower edge lighting units are mounted at a height of approximately 19.5m and 9.2m respectively above ground level (road level).

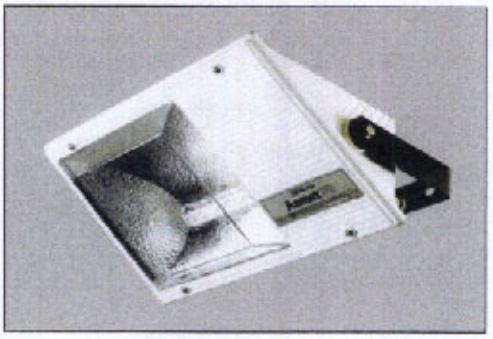


Figure 1 - Proposed Thorlux Azmet 70 Lighting Unit

1.3 ASSESSMENT DETAILS

1.3.1 This report has used ILE, Technical Report Number 5 (Brightness of Illuminated Advertisements), Third Edition (TR5) and ILE Guidance Notes for the Reduction of Obtrusive Light GN01 (ILE Copyright 2005) as benchmark reference documents in assessment of the environmental impact of the proposed lighting.

2 Environmental Impact Assessment

2.1 ENVIRONMENTAL ZONE CLASSIFICATION

2.1.1 The Institute of Lighting Engineers (ILE) publication Technical Report Number 5 (Brightness of Illuminated Advertisements), TR5 recommends that designers should assess environmental zone classification in accordance with the requirements of ILE Guidance Notes for the Reduction of Obtrusive Light, GN01.

2.1.2 The ILE guidance note provides Local Planning Authorities guidance on how to specify environmental zones for exterior lighting control within development plans. The guidance note defines 4 environmental zones listed as:

E1: Intrinsically dark areas	National Parks, Areas of Outstanding Natural Beauty, etc
E2: Low district brightness areas	Rural or small village locations
E3: Medium district brightness areas	Small town centres or urban locations
E4: High district brightness areas	Town/city centres with high levels of night-time activity

2.1.3 The area under consideration within this report - ie, the Ramada building bounded by Deansgate, Victoria Bridge Street and Blackfriars Street is located in Manchester city centre and can therefore be categorised as being within a high brightness area environmental zone E4.

2.2 RECOMMENDED OBTRUSIVE LIGHT LIMITATIONS

2.2.1 The design guidance within the ILE guidance note (GN01) recommends the following limitations for exterior lighting installations within an E4 environmental zone.

Environmental Zone	Sky Glow ULR [Max %]	Light Tresspass (into Windows) Ev [Lux]		Source Intensity I (kcd)		Building Luminance Pre-curfew
		Pre-Curfew	Post-Curfew	Pre-Curfew	Post-Curfew	Average, L
E4	15.0	25	5	25	2.5	25

Where:

ULR	= Upward Light Ratio
Ev	= Vertical Illuminance in Lux
I	= Light Intensity in Cd
L	= Luminance in Cd/m2
Curfew	= the time after which stricter requirements (for the control of obtrusive light) will apply

2.2.2 Each of the obtrusive lighting limitations identified within the table above have been assessed specific to the lighting proposed for installation within sections 2.3 through to 2.8 below.

2.3 UPWARD LIGHT RATIO (ULR)

2.3.1 The guidance note qualifies the recommended limitation on Sky Glow Lighting (ULR) % by stating that:

'Some lighting schemes will require the deliberate and careful use of upward light – e.g. ground recessed luminaires, ground mounted floodlights, festive lighting – to which these limits cannot apply. However, care should always be taken to minimise upward waste light by the proper application of suitably directional luminaires and light controlling attachments.'

2.3.2 The level of uniformity for the facia of illuminated advertisements recommended by the ILE in Technical Report Number 5 (Brightness of Illuminated Advertisements) is a max/min level of uniformity that does not exceed 10:1. The lighting installation proposed for illumination of the art and advertisement facia mounted on the Ramada building has a need for upward light to achieve this recommendation which according to the guidance within TR5 would provide an illuminated area within reasonable limits so as to ensure a pleasing and effective result. We have therefore concluded that the use of upward light for this application is compliant with the guidance in GN01 and therefore considered appropriate.

2.3.3 It should be noted that the calculations have revealed that the lighting installation has a ULR value of approximately 50%. This figure could be decreased by introduction of a louvre along the top edge of the advertisement facia. This approach is supported by the recommendations given in GN01 which states that:

'if there is no alternative to up-lighting as with much decorative lighting of buildings, then the use of shields, baffles and louvers will help reduce spill light around and over the structure to a minimum'.

2.4 LIGHT TRESPASS (INTO WINDOWS)

2.4.1 Our lighting calculations have revealed that the lighting installation proposed for illumination of the art and advertisement facia mounted on the Ramada building will not produce a measureable level of Light Trespass (ie, >1 lux) into windows in the Deansgate One building opposite the site. It can therefore be concluded that the installation would not represent an environmental issue with respect to light trespass onto adjacent properties.

2.4.2 The lighting calculations have been provided for information / evaluation in Appendix C (Deansgate One, Calculation Grid) the calculations show that the predicted level based on the photometry provided by the lighting unit manufacturer (Thorlux) will result in a maximum level of only 0.04 lux on the window.

2.5 LIGHT TRESPASS (ONTO ADJACENT ROAD)

2.5.1 Our lighting calculations have revealed that the lighting installation proposed for illumination of the art and advertisement facia mounted on the Ramada building will produce a small amount of measurable light onto the road (Deansgate). The amount of light measured in illuminance equates to 6 lux maximum at the kerb edge down to a minimum measurable level of 1 lux at a distance of 4 metres from the kerb edge.

2.5.2 These figures are shown pictorially for information in Appendix D and the evaluation in Appendix B Deansgate, Road Calculation.

2.5.3 When evaluating the impact of the lighting on the advertising facia it should be noted that the estimated light level on Deansgate is 0.74 lux average which, when combined with light spill from adjacent shops & restaurants, means that the light trespass will have a negligible limited impact on the road and its users.

2.6 SOURCE INTENSITY

2.6.1 Light source intensity has been limited by selection of a lighting unit mounted at an angle of 40 degrees relative to the advertising facia. This will ensure that the maximum source intensity is restricted to an absolute minimum when viewed from the adjacent residential property (Deansgate One) or viewed by road users, be they motorists or pedestrians. The schematic representation below shows (figure 2) the proposed aiming angle for information / evaluation purposes.

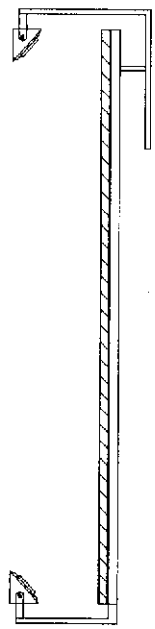


Figure 2 – Lighting Unit Aiming Angle

2.7 BUILDING LUMINANCE PRE-CURFEW

2.7.1 The obtrusive light limitation for building luminance specified within GN01 is applicable to buildings directly illuminated as a night-time feature rather than illumination on a building due to light spill from adjacent lighting. It can therefore be concluded that the installation would not represent an environmental issue with respect to luminance within adjacent properties.

2.8 CURFEW

2.8.1 Although the calculated amount of light trespass and the projected source intensity fall below that recommended after curfew we would recommend that a curfew is set for switch off at 2359 hrs each day. This approach will save extend lamp life and significantly reduce energy usage.

3 Conclusions and Recommendations

3.1 CONCLUSIONS

3.1.1 Our assessment has concluded that the area under consideration within this report - i.e., the Ramada building bounded by Deansgate, Victoria Bridge Street and Blackfriars Street is located in Manchester city centre and can therefore be categorised in accordance with ILE guidance note GN01 as being within a high brightness area environmental zone E4.

3.1.2 Assessment of the obtrusive light limitations recommended for an environmental zone E4 revealed that the proposed installation can demonstrate compliance with all but one of the GN01 recommended limitations, being that it exceeds the sky glow ULR [max %]. In order to negate the sky glow ULR it is concluded that a louver be incorporated to remove the sky glow ULR (this measure is detailed below in the 'recommendations' paragraph, and might be conditioned to any advertisement consent). With this louver in place, there will be no detrimental affect on Number 1 Deansgate or other adjacent properties as demonstrated in Appendix C.

3.1.3 Our lighting calculations have revealed that the lighting installation proposed for illumination of the art and advertisement facia mounted on the Ramada building will not produce a measureable level of Light Trespass (ie, >1 lux) on adjacent properties including Number 1 Deansgate opposite the site. It can therefore be concluded that the installation would not represent an environmental issue with respect to light trespass onto adjacent properties.

3.1.4 Due to the impact of the proposed lighting installation being negligible (para 3.1.3) on Number 1 Deansgate and other adjacent properties, it was not felt necessary to model the existing lighting impact on Number 1 Deansgate and other adjacent properties.

3.1.5 It is considered that our assessment by calculation and analysis of the design data provided shows compliance with good industry practice for a city centre area with respect to limitations on light pollution in the form of light trespass, upward light (sky glow) and glare.

3.2 RECOMMENDATIONS

3.2.1 It would be recommended that the installation should incorporate a louvre along the top edge of the facia to reduce ULR beyond the top edge of the art and advertisement facia.

REFERENCE DOCUMENTS

Technical Publications

ILE, Technical Report Number 5 (Brightness of Illuminated Advertisements), Third Edition (TR5)

ILE Guidance Notes for the Reduction of Obtrusive Light GN01 (ILE Copyright 2005)

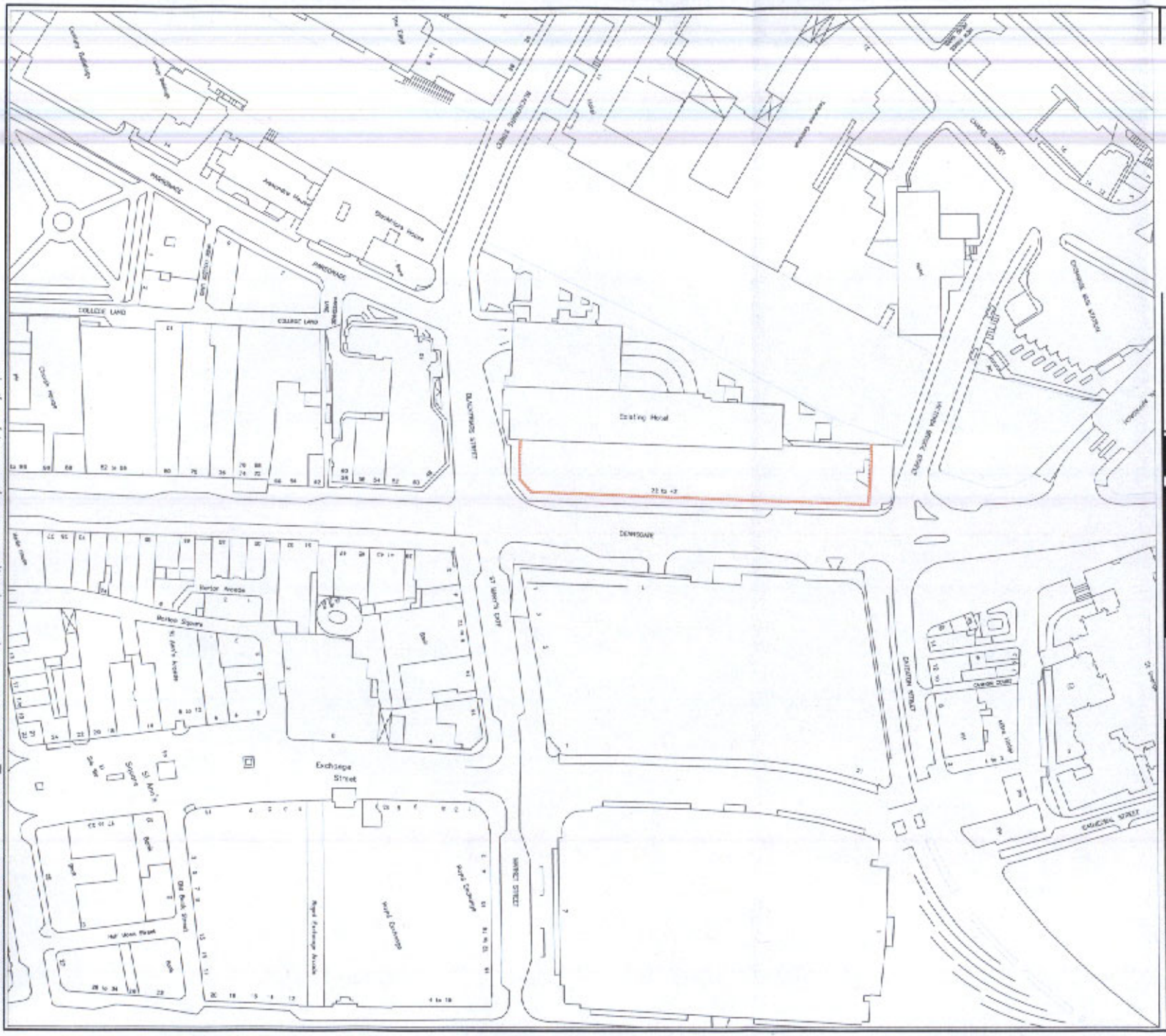
Design Information

Drawings provided by Ian Simpson Architects in the form of a 19 page document entitled 'Ramada Proposed Art and Advertisement' report, reference number 7077.1.

Lighting Manufactures lighting calculations for Banner 1, Banner 2 and Banner 3 (Manufacturer Thorlux Lighting).

Appendices, Figures & Tables

Appendix A Location Plan


Existing Hotel
DENMARK STREET
Exchange Street
Morton Square
Morton Arcade
St Ann's Church
Victoria Square Shopping Centre
Victoria Square
Victoria Square Arcade
Multi Storey Car Park
Car Park
Car Park Ramp
Hot Water Plant
Sub Station
Sub Station
Sub Station

Appendix B Deansgate Calculation

Date: 05-02-2009

Designer: Stephen Halliday

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

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CalcuLUX Area 6.6

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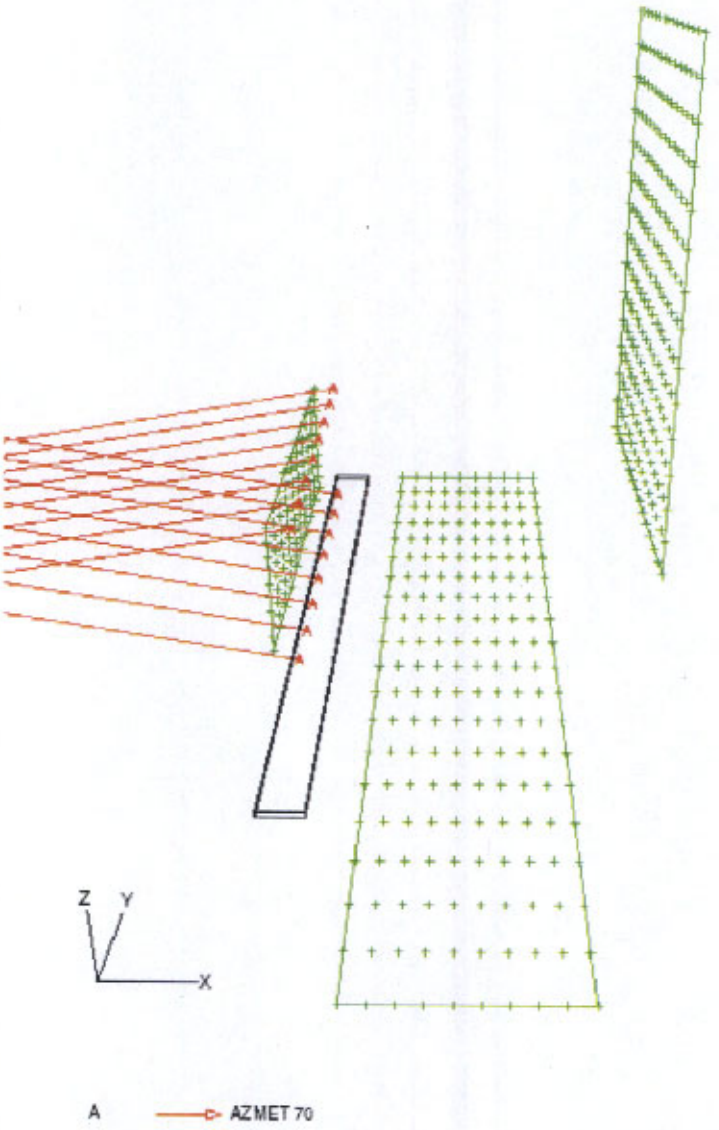
1. Project Description

1.1 3-D Project Overview



2. Summary

2.1 General Information

The overall maintenance factor used for this project is 0.80.

2.2 Obstacle Information

Obstacle	Transparency (%)	Position		
		X (m)	Y (m)	Z (m)
canopy	0	-6.00	-10.00	4.30

2.3 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
A	16	AZMET 71	1 *	62.0	1 * 4300

The total installed power: 0.99 (kWatt)

2.4 Calculation Results

Illuminance Calculations:

Calculation	Type	Unit	Ave	Min/Ave	Min/Max
deansgate	Surface Illuminance	lux	0.74	0.00	0.00

3. Calculation Results

3.1 deansgate: Textual Table

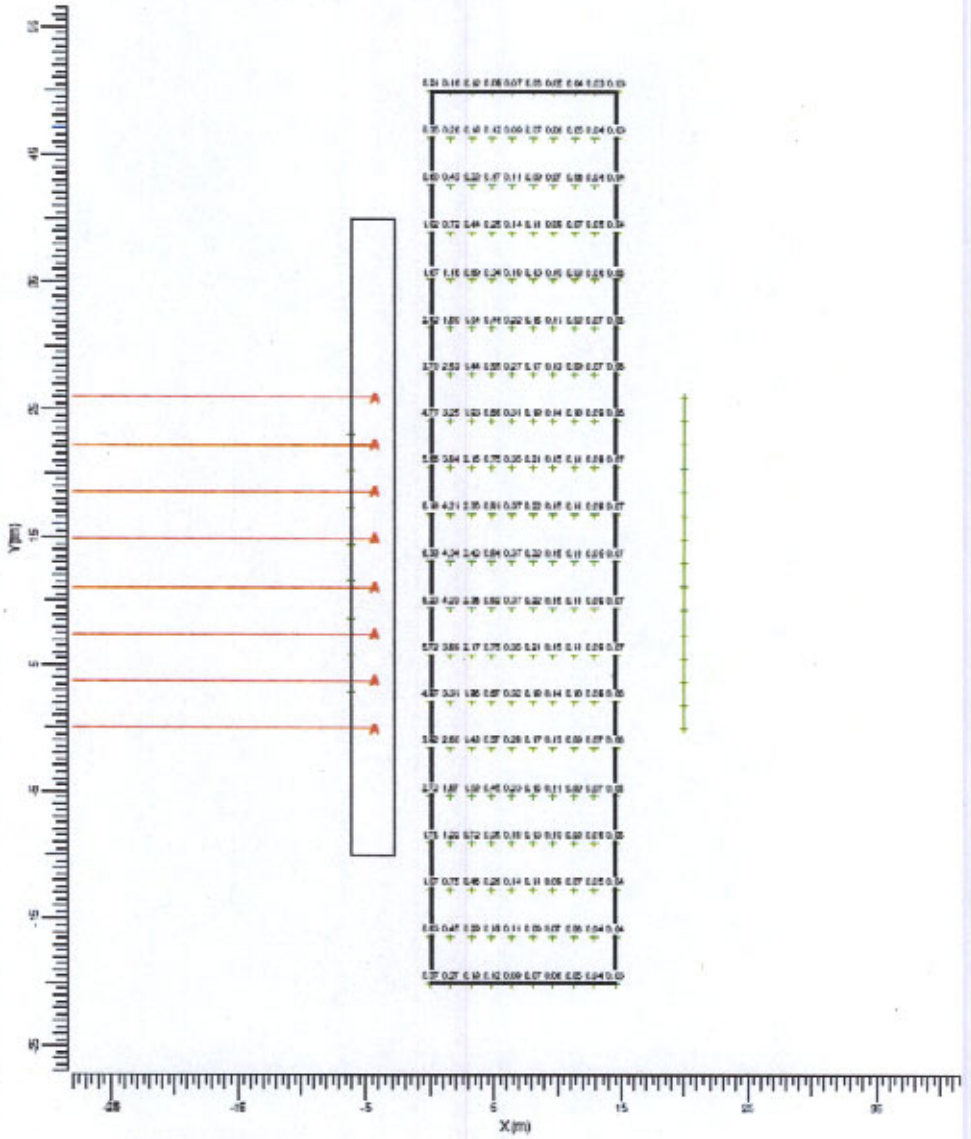
Grid : deansgate at Z = 0.00 m
Calculation : Surface Illuminance (lux)

X (m) / Y (m)	0.00	1.61	3.22	4.83	6.44	8.06	9.67	11.28	12.89	14.50
50.00	0.21	0.16	0.12	0.09	0.07	0.05	0.05	0.04	0.03	0.03
46.32	0.35	0.26	0.18	0.12	0.09	0.07	0.06	0.05	0.04	0.03
42.63	0.60	0.43	0.28	0.17	0.11	0.09	0.07	0.06	0.04	0.04
38.95	1.02	0.72	0.44	0.25	0.14	0.11	0.09	0.07	0.05	0.04
35.26	1.67	1.16	0.69	0.34	0.18	0.13	0.10	0.08	0.06	0.05
31.58	2.62	1.80	1.04	0.44	0.22	0.15	0.11	0.08	0.07	0.05
27.89	3.70	2.53	1.44	0.55	0.27	0.17	0.13	0.09	0.07	0.06
24.21	4.77	3.25	1.83	0.66	0.31	0.19	0.14	0.10	0.08	0.06
20.53	5.66	3.84	2.15	0.75	0.35	0.21	0.15	0.11	0.09	0.07
16.84	6.19	4.21	2.35	0.81	0.37	0.22	0.15	0.11	0.08	0.07
13.16	6.38	4.34	2.42	0.84	0.37	0.22	0.15	0.11	0.09	0.07
9.47	6.23	4.23	2.36	0.82	0.37	0.22	0.15	0.11	0.09	0.07
5.79	5.72	3.89	2.17	0.75	0.35	0.21	0.15	0.11	0.08	0.07
2.11	4.87	3.31	1.86	0.67	0.32	0.19	0.14	0.10	0.08	0.06
-1.58	3.82	2.60	1.48	0.57	0.28	0.17	0.13	0.09	0.07	0.06
-5.26	2.72	1.87	1.08	0.45	0.23	0.15	0.11	0.09	0.07	0.05
-8.95	1.75	1.22	0.72	0.35	0.18	0.13	0.10	0.08	0.06	0.05
-12.63	1.07	0.75	0.46	0.26	0.14	0.11	0.08	0.07	0.05	0.04
-16.32	0.63	0.45	0.29	0.19	0.11	0.09	0.07	0.06	0.04	0.04
-20.00	0.37	0.27	0.18	0.12	0.09	0.07	0.06	0.05	0.04	0.03

Average	Min/Ave	Min/Max	Project maintenance factor
0.74	0.03	0.00	0.80

3.2 deansgate: Graphical Table

Grid : deansgate at Z = 0.00 m
Calculation : Surface Illuminance (lux)

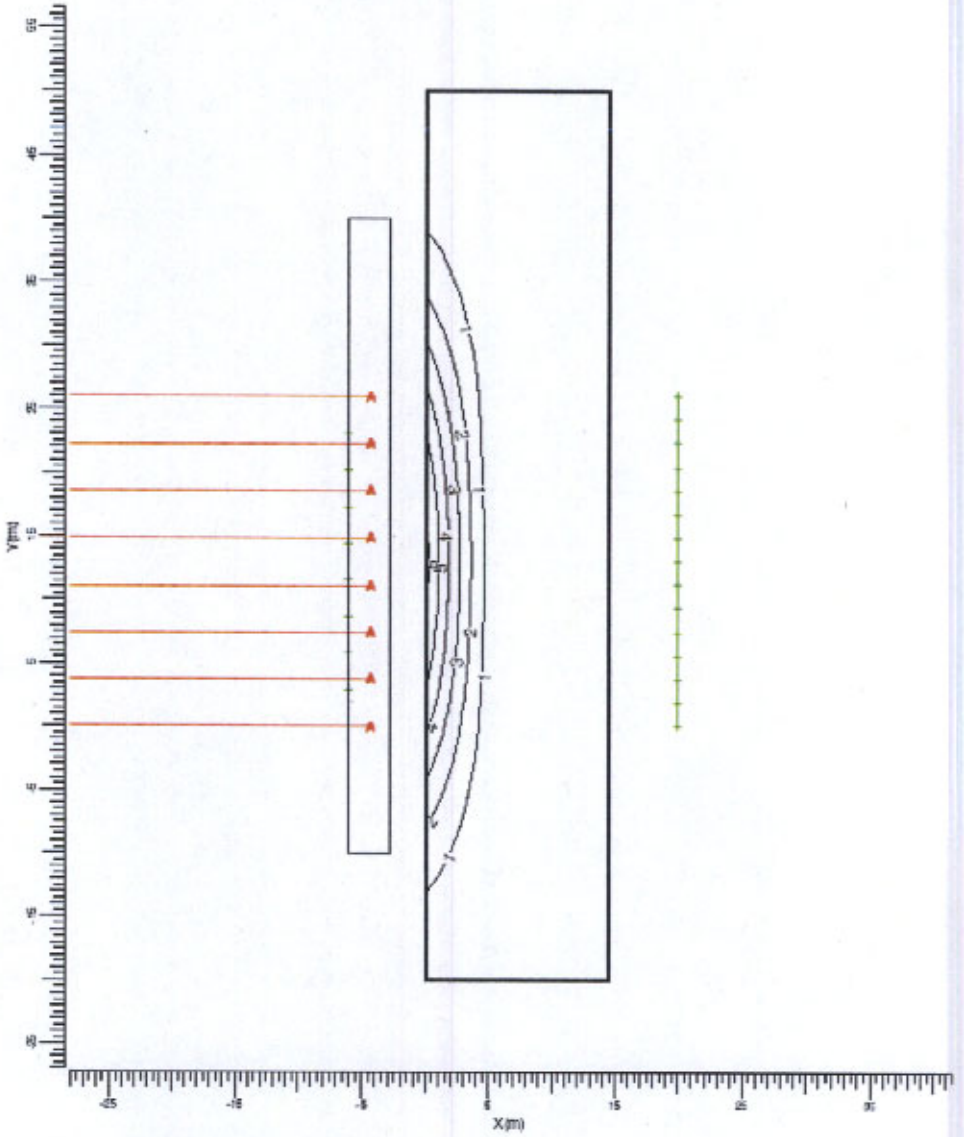


A AZMET 70

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
0.74	0.03	0.00	0.80	1:400

3.3 deansgate: Iso Contour

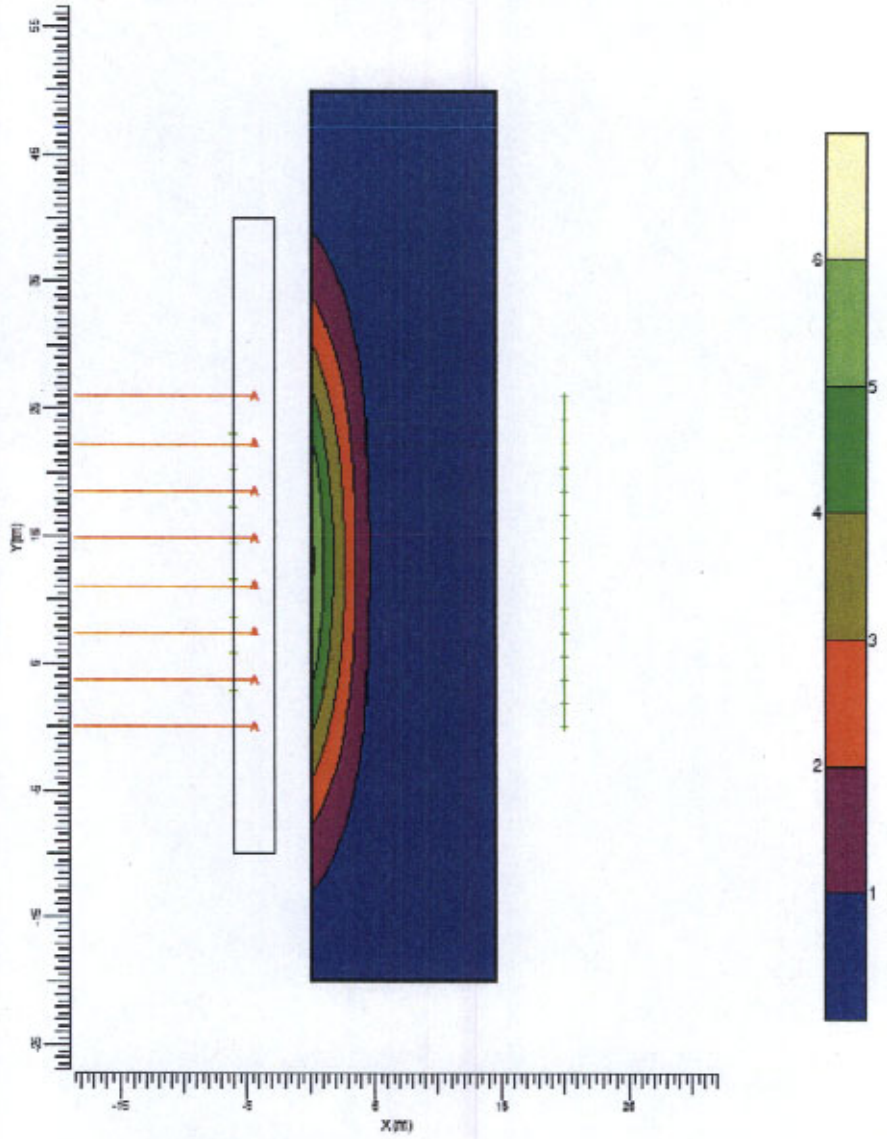
Grid : deansgate at Z = 0.00 m
Calculation : Surface Illuminance (lux)



Average	Min/Ave	Min/Max	Project maintenance factor	Scale
0.74	0.03	0.00	0.80	1:400

3.4 deansgate: Filled Iso Contour

Grid : deansgate at Z = 0.00 m
Calculation : Surface Illuminance (lux)



A AZMET 70

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
0.74	0.03	0.00	0.80	1:400

4. Luminaire Details

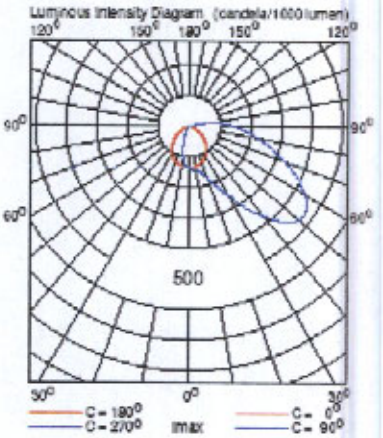
4.1 Project Luminaires

AZMET 70

Light output ratios
- DLOR : 0.66
- ULOR : 0.03
- TLOR : 0.70

Lamp flux : 4300 lm
Luminaire wattage : 62.0 W
Measurement code : I BY: THX

Note: Luminaire data not from database.



Appendix C Number 1 Deansgate Calculation

Date: 05-02-2009

Designer: Stephen Halliday

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply

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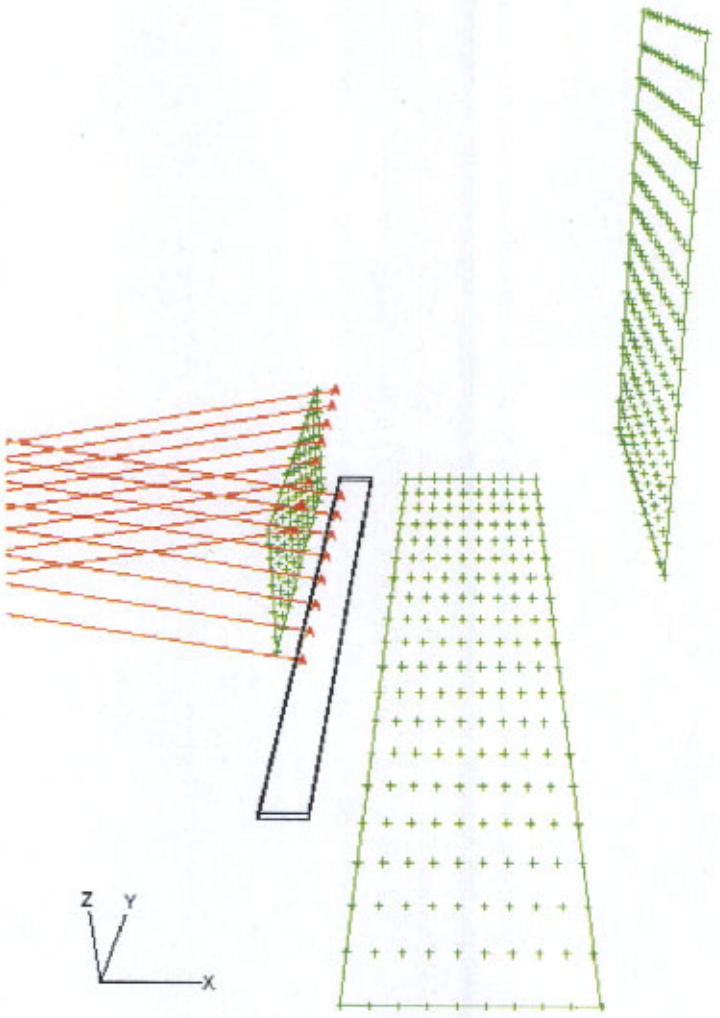
1. Project Description

1.1 3-D Project Overview



A AZMET 70

2. Summary

2.1 General Information

The overall maintenance factor used for this project is 0.80.

2.2 Obstacle Information

Obstacle	Transparency (%)	Position: X (m)	Y (m)	Z (m
canopy	0	-6.00	-13.00	4.30

2.3 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
A	16	AZMET 70	1 *	82.3	1 * 4300

The total installed power: 0.99 kWatt

2.4 Calculation Results

Illuminance Calculations:

Calculation	Type	Unit	Ave	Min/Ave	Min/Max
Number One Deansgate	Surface Illuminance	lux	0.04	0.31	0.22

3. Calculation Results

3.1 Number One Deansgate: Textual Table

Grid : Number One Deansgate at X = 20.00 m
Calculation : Surface Illuminance (lux)

Y (m) / Z (m)	26.00	24.14	22.29	20.43	18.57	16.71	14.86	13.00	11.14	9.29	7.43	5.57	3.71
50.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
47.57	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
45.14	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
42.71	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
40.29	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
37.86	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
35.43	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04
33.00	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05>	0.05	0.05	0.05	0.05	0.05
30.57	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04
28.14	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
25.71	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.03	0.03	0.03
23.29	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
20.86	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
18.43	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
16.00	0.01<	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Continue »

Average	Min/Ave	Min/Max	Project maintenance factor
0.04	0.31	0.22	0.80

< Continue

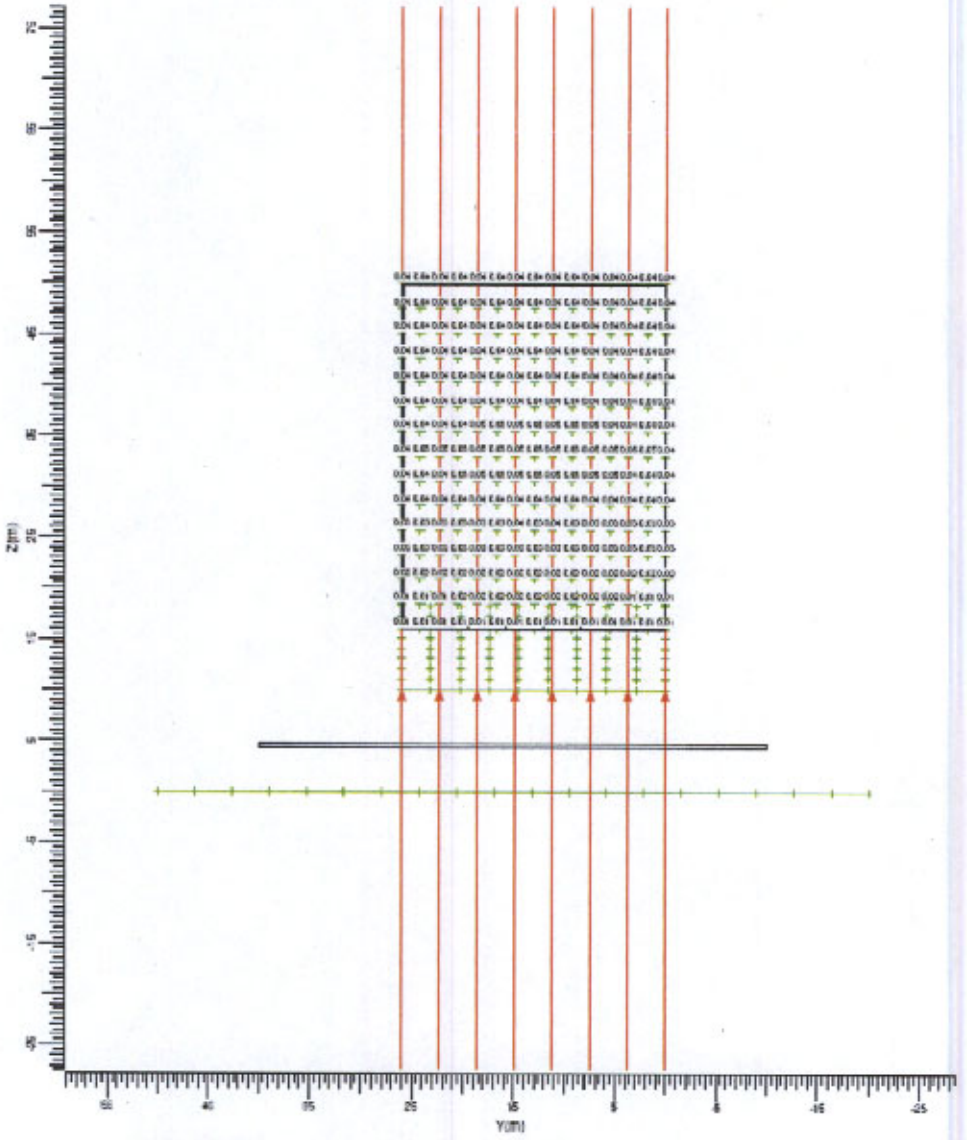
Grid : Number One Deansgate at X = 20.00 m
Calculation : Surface Illuminance (lux)

Y (m) / Z (m)	1.86	0.00
50.00	0.04	0.04
47.57	0.04	0.04
45.14	0.04	0.04
42.71	0.04	0.04
40.29	0.04	0.04
37.86	0.04	0.04
35.43	0.04	0.04
33.00	0.05	0.04
30.57	0.04	0.04
28.14	0.04	0.04
25.71	0.03	0.03
23.29	0.03	0.03
20.86	0.02	0.02
18.43	0.01	0.01
16.00	0.01	0.01

Average	Min/Ave	Min/Max	Project maintenance factor
0.04	0.31	0.22	0.80

3.2 Number One Deansgate: Graphical Table

Grid : Number One Deansgate at X = 20.00 m
Calculation : Surface illuminance (lux)

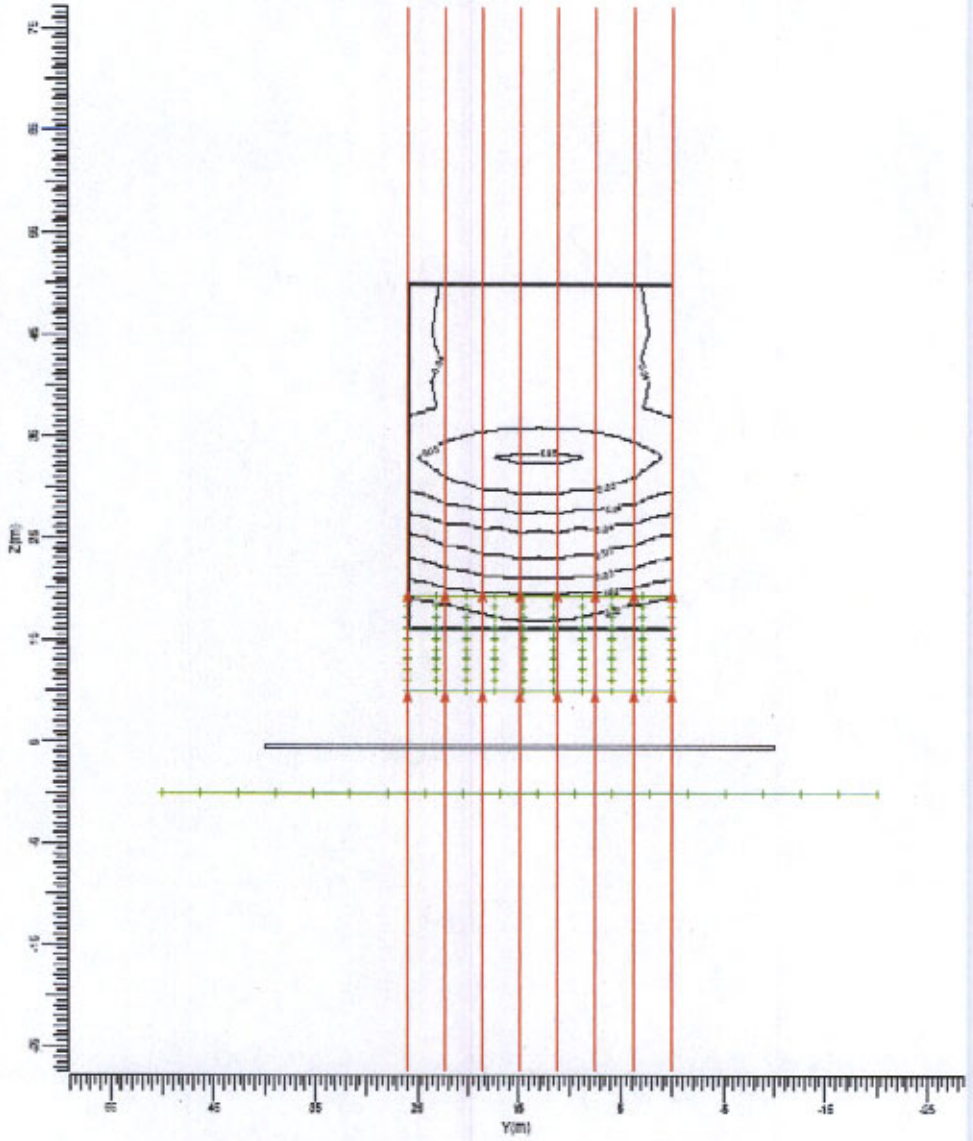


A → AZMET 70

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
0.04	0.31	0.22	0.80	1:500

3.3 Number One Deansgate: Iso Contour

Grid : Number One Deansgate at X = 20.00 m
Calculation : Surface Illuminance (lux)

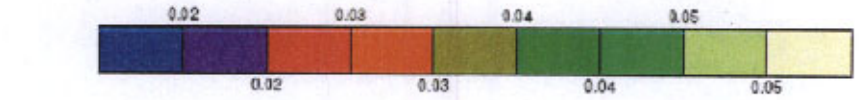


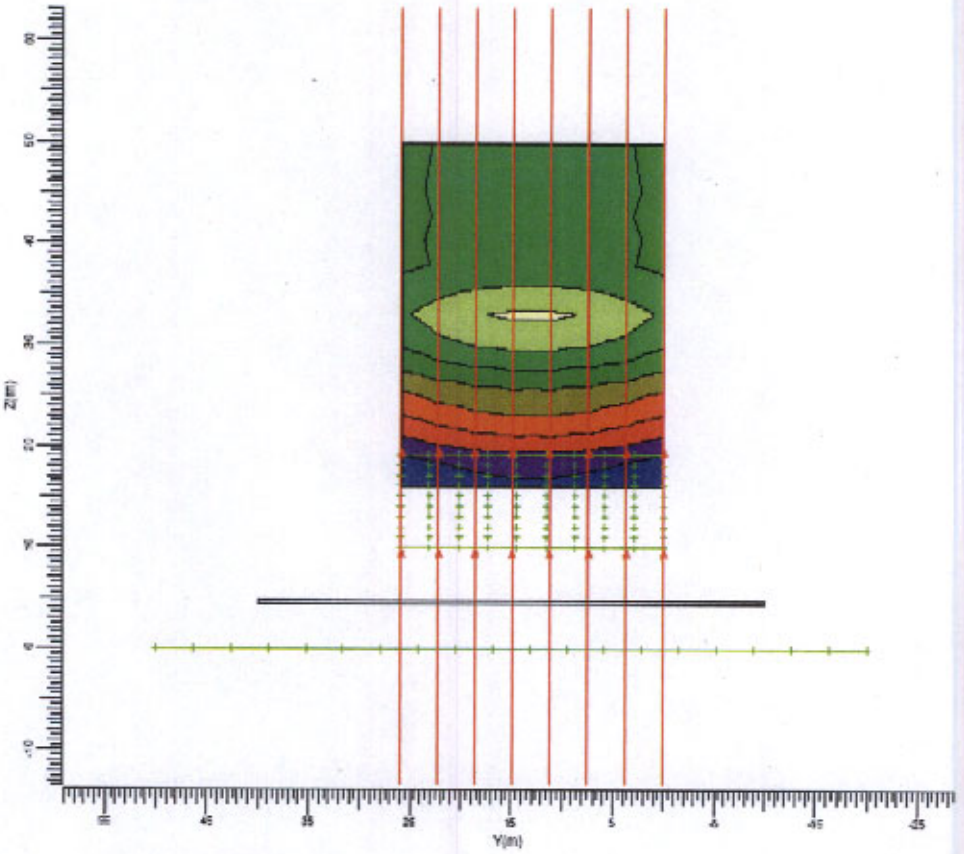
A AZMET 70

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
0.04	0.31	0.22	0.80	1:500

3.4 Number One Deansgate: Filled Iso Contour

Grid : Number One Deansgate at X = 20.00 m
Calculation : Surface illuminance (lux)





A AZMET 70

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
0.04	0.31	0.22	0.80	1:500

4. Luminaire Details

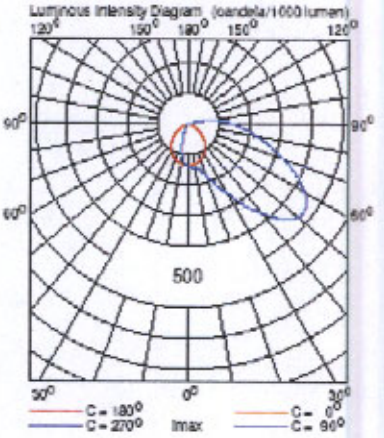
4.1 Project Luminaires

AZMET 70

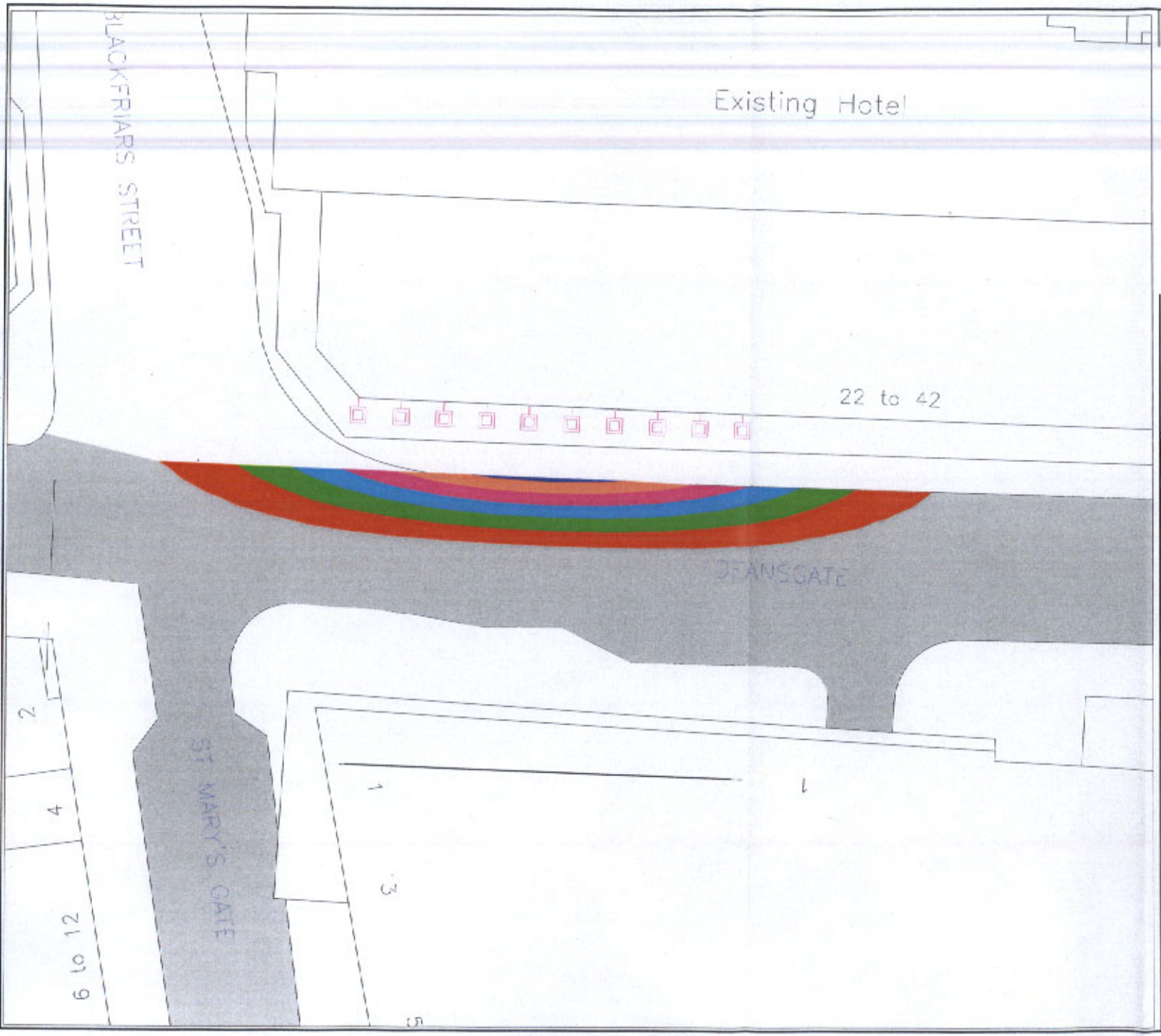
Light output ratios
- DLOR : 0.66
- ULOR : 0.03
- TLOR : 0.70

Lamp flux : 4300 lm
Luminaire wattage : 62.0 W
Measurement code : 1 BY: THX

Note: Luminaire data not from database.



Appendix D Isolux Contour Drawing



DO NOT SCALE

- 0 LUX
- 1 LUX
- 2 LUX
- 3 LUX
- 4 LUX
- 5 LUX
- 6 LUX
- THORLUX AZMET 70 LUMINARE UNIT.(57W PL)

DRAWING STATUS:

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CLIENT:

WEST PROPERTIES UK LTD

PROJECT:

RAMADA
PROPOSED ART AND ADVERTISEMENT

TITLE:

ISOLUX CONTOURS PRODUCED BY
ADVERTISEMENT BANNER
ONTO DEANSGATE

SCALE @ A3:	CHECKED:	APPROVED:
1:250	S.H	I.K.T
CAD FILE: 0250C001-A (APPENDIX B).DWG	DESIGN-DRAWN: M.K	DATE: 05.02.08
PROJECT No: 10700250	DRAWING No: 0250C001	REV: A

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File name: K:\LIGHTING AND ELECTRICAL SERVICES\PROJECTS\WSPE_01\10700250\DWGS\0250C001-A (APPENDIX B).DWG, printed on 06 February 2008 10:44:55, by Halliday, Stephen