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TECHNICAL SUBMITTAL – No21
External Lighting Calculations
Document Ref: 63068-ABE-ZZ-ZZ-TS-E-0021

Project:	St Michaels		
A&B Contract No:	8855	Date:	20.05.2024
Engineers:	Jordan Thompson		Rev.P01

Proposal:

Please see attached External Lighting Calculations to suit layout proposals.

External Lighting

Installation : St Michaels, Manchester

Project number : SY0919-22

Customer : A&B

Processed by : Paul Franks

Date : 26.04.2024

Project description:
Rev E External Calculation

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

Object : External Lighting
Installation : St Michaels, Manchester
Project number : SY0919-22
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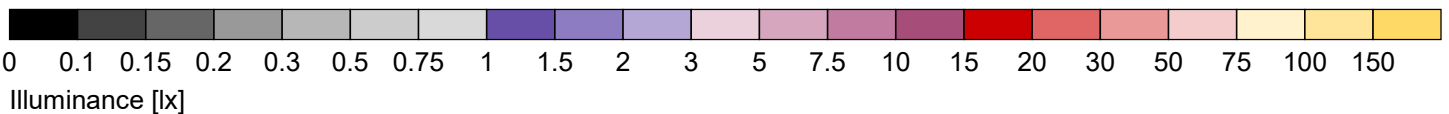
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1 Exterior 1 Ligman

1.1 Summary, Exterior 1 Ligman

1.1.1 Result overview, North Colonnade



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux	186675 lm
Total power	2117 W
Total power per area (5100.00 m ²)	0.42 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	35 lx
Minimum illuminance	E_{min}	5 lx
Maximum illuminance	E_{max}	120 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:7.54 (0.13)
Diversity U_d	E_{min}/E_{max}	1:25.9 (0.04)

Type No. \ Make

		Dextra Group PLC
1	3 x	Order No. : BTECM65 L22
		Luminaire name : DEXTRA LIGHTING - BTEC IP65
		Equipment : 1 x Dextra 14.6 W / 1885 lm
		Emergency : 476 lm (25.3 %)
		LIGMAN
2	10 x	Order No. : JE-30361-VW-VW-8030
		Luminaire name : JET 36 Surface facade luminaires
		Equipment : 1 x 1&1 COB 3000K 27 W / 2738 lm

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1 Exterior 1 Ligman

1.1 Summary, Exterior 1 Ligman

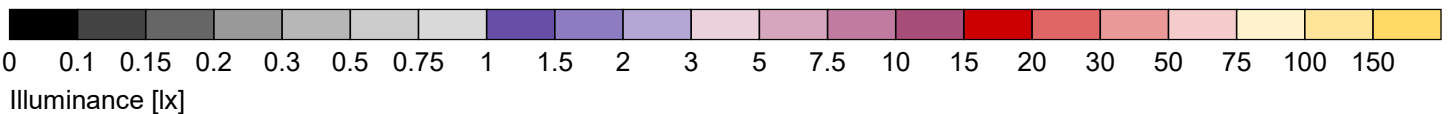
1.1.1 Result overview, North Colonnade

IBL		
3	92 x	Order No. :
		Luminaire name : Weiss XL 60x35 500mm
		Equipment : 1 x LED 19.6 W / 1670 lm

Object : External Lighting
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1.1 Summary, Exterior 1 Ligman

1.1.2 Result overview, Main Entrance



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	186675 lm
Total power	2117 W
Total power per area (5100.00 m ²)	0.42 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	121 lx
Minimum illuminance	E_{min}	77 lx
Maximum illuminance	E_{max}	171 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	1:1.57 (0.64)
Diversity U_d	E_{min}/E_{max}	1:2.22 (0.45)

Type No. \ Make

1	3 x	Dextra Group PLC	
		Order No.	: BTECM65 L22
		Luminaire name	: DEXTRA LIGHTING - BTEC IP65
		Equipment	: 1 x Dextra 14.6 W / 1885 lm
		Emergency	: 476 lm (25.3 %)
2	10 x	LIGMAN	
		Order No.	: JE-30361-VW-VW-8030
		Luminaire name	: JET 36 Surface facade luminaires
		Equipment	: 1 x 1&1 COB 3000K 27 W / 2738 lm

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1.1 Summary, Exterior 1 Ligman

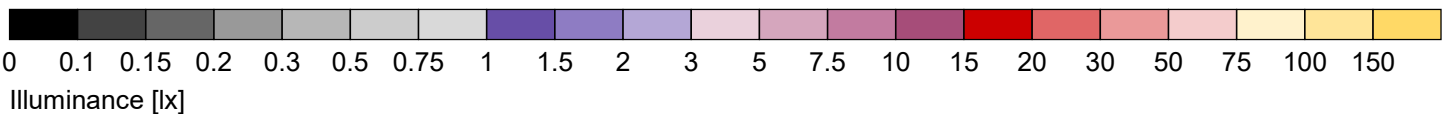
1.1.2 Result overview, Main Entrance

IBL		
3	92 x	Order No. :
		Luminaire name : Weiss XL 60x35 500mm
		Equipment : 1 x LED 19.6 W / 1670 lm

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1.1 Summary, Exterior 1 Ligman

1.1.3 Result overview, Level 3 Overhang



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	186675 lm
Total power	2117 W
Total power per area (5100.00 m ²)	0.42 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	92 lx
Minimum illuminance	E_{min}	64 lx
Maximum illuminance	E_{max}	142 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	1:1.44 (0.69)
Diversity U_d	E_{min}/E_{max}	1:2.23 (0.45)

Type No. \ Make

1	3 x	Dextra Group PLC	
		Order No.	: BTECM65 L22
		Luminaire name	: DEXTRA LIGHTING - BTEC IP65
		Equipment	: 1 x Dextra 14.6 W / 1885 lm
		Emergency	: 476 lm (25.3 %)
2	10 x	LIGMAN	
		Order No.	: JE-30361-VW-VW-8030
		Luminaire name	: JET 36 Surface facade luminaires
		Equipment	: 1 x 1&1 COB 3000K 27 W / 2738 lm

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1.1 Summary, Exterior 1 Ligman

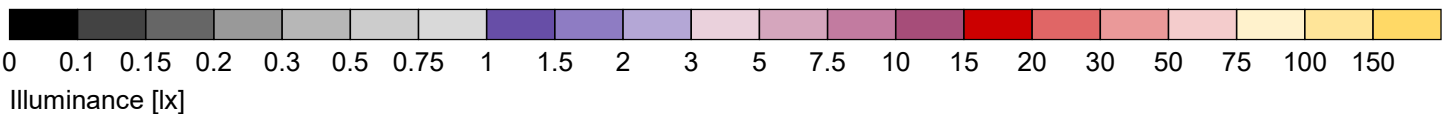
1.1.3 Result overview, Level 3 Overhang

IBL		
3	92 x	Order No. :
		Luminaire name : Weiss XL 60x35 500mm
		Equipment : 1 x LED 19.6 W / 1670 lm

Object : External Lighting
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1.1 Summary, Exterior 1 Ligman

1.1.4 Result overview, Level 2 Overhang



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	186675 lm
Total power	2117 W
Total power per area (5100.00 m ²)	0.42 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	121 lx
Minimum illuminance	E_{min}	79 lx
Maximum illuminance	E_{max}	182 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.55 (0.65)
Diversity U_d	E_{min}/E_{max}	1:2.31 (0.43)

Type No. \Make

1	3 x	Dextra Group PLC	
		Order No.	: BTECM65 L22
		Luminaire name	: DEXTRA LIGHTING - BTEC IP65
		Equipment	: 1 x Dextra 14.6 W / 1885 lm
		Emergency	: 476 lm (25.3 %)
2	10 x	LIGMAN	
		Order No.	: JE-30361-VW-VW-8030
		Luminaire name	: JET 36 Surface facade luminaires
		Equipment	: 1 x 1&1 COB 3000K 27 W / 2738 lm

Object : External Lighting
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1.1 Summary, Exterior 1 Ligman

1.1.4 Result overview, Level 2 Overhang

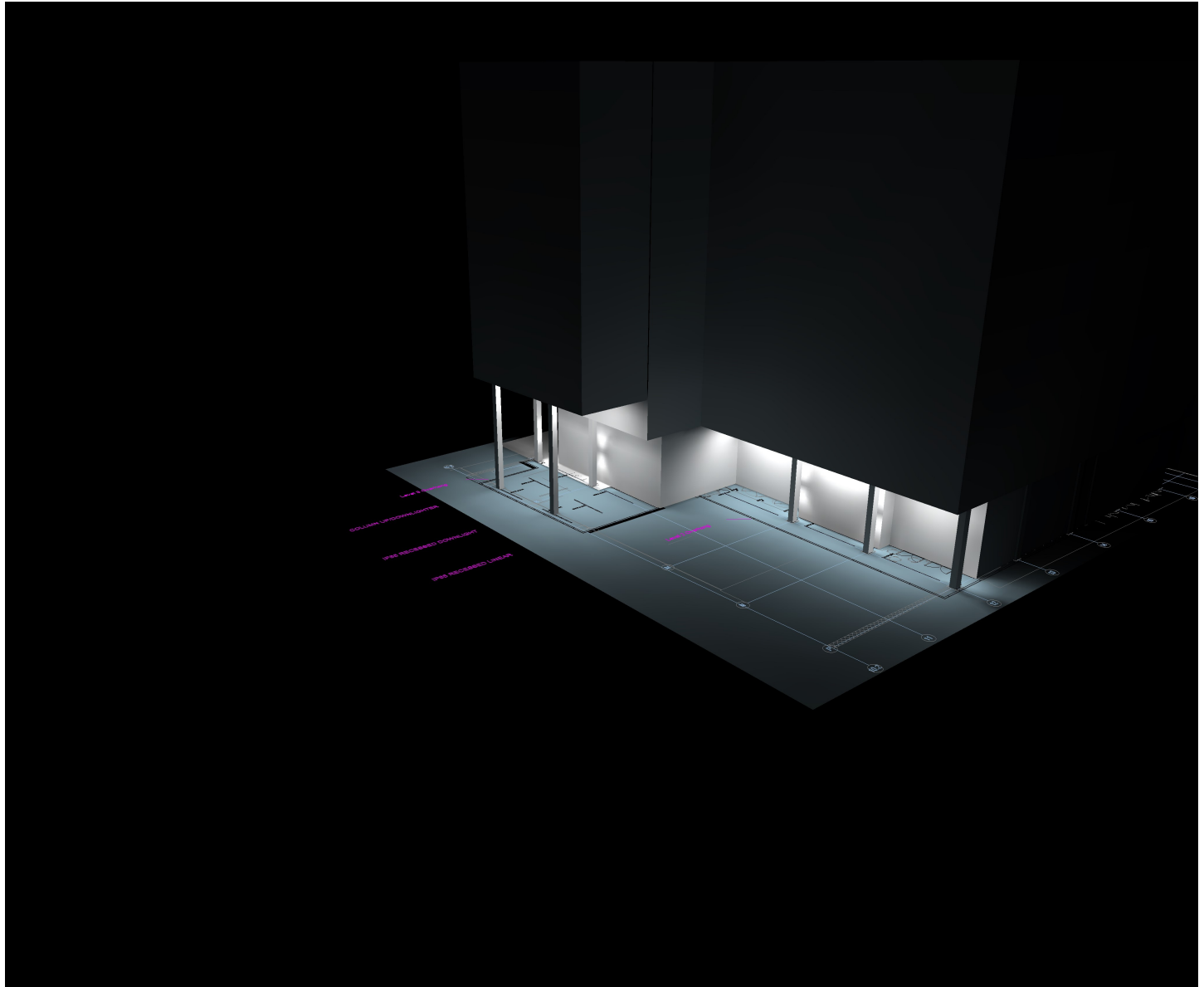
IBL		
3	92 x	Order No. :
		Luminaire name : Weiss XL 60x35 500mm
		Equipment : 1 x LED 19.6 W / 1670 lm

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1 Exterior 1 Ligman

1.2 Calculation results, Exterior 1 Ligman

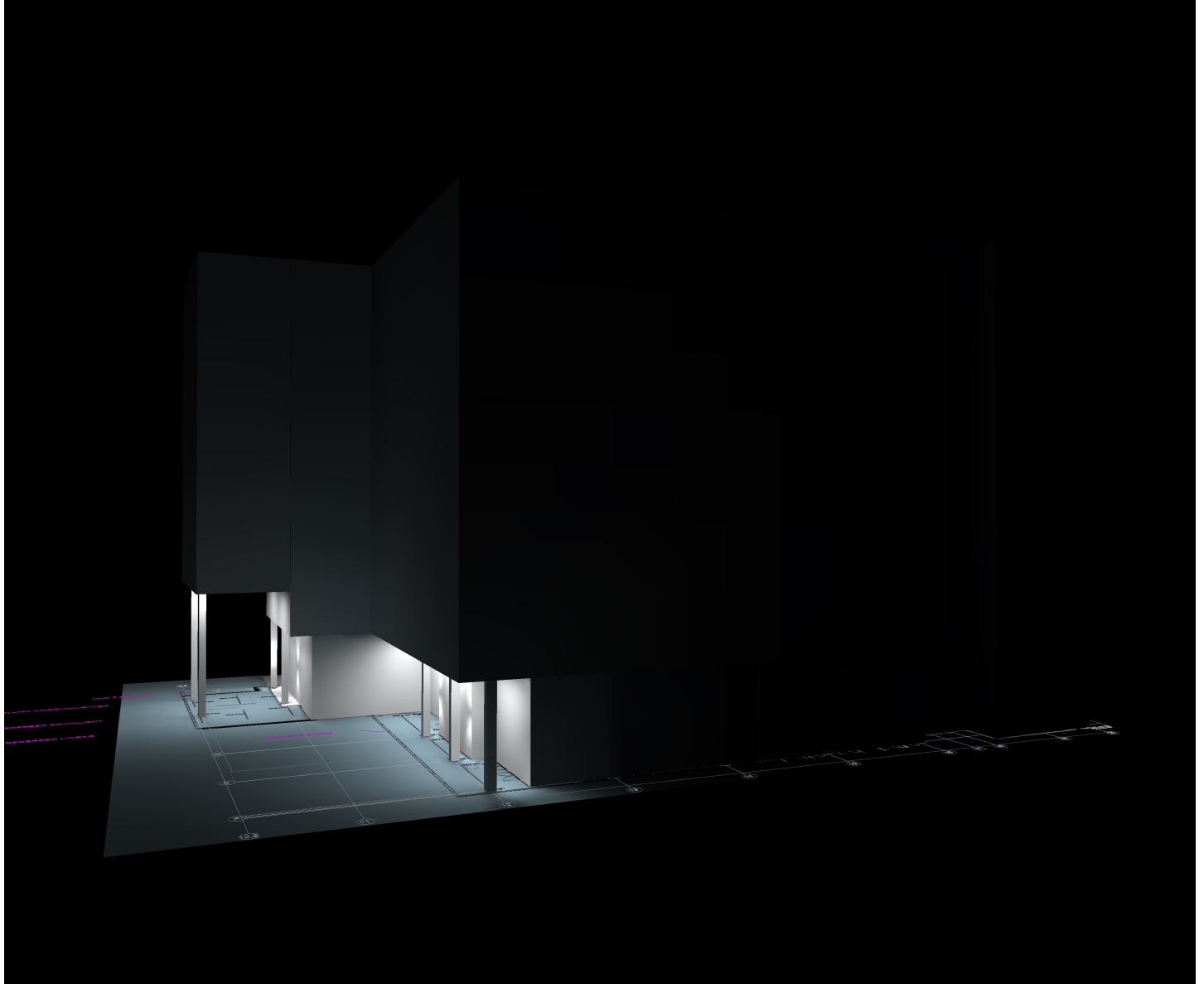
1.2.1 3D luminance, View 1



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1.2 Calculation results, Exterior 1 Ligman

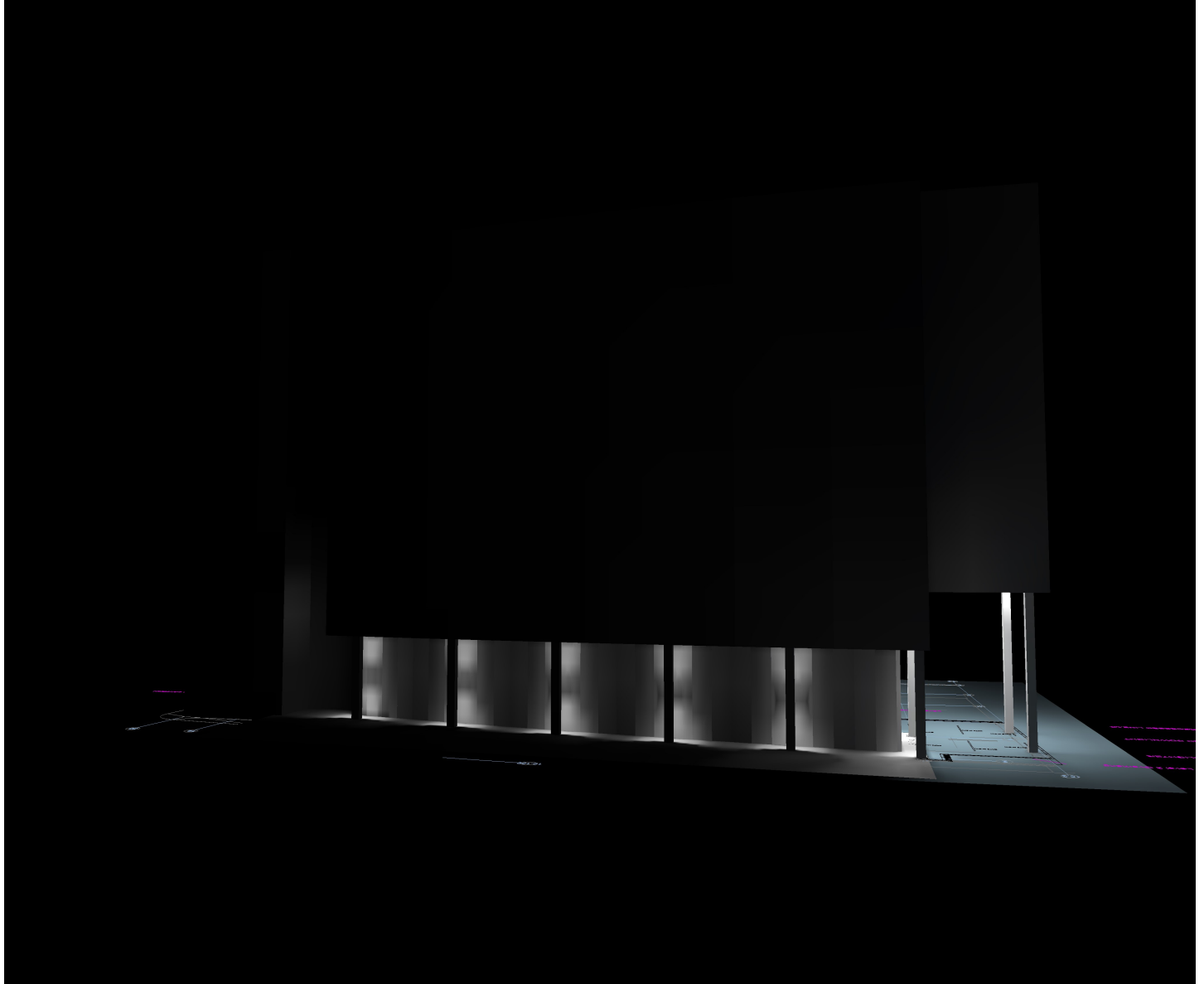
1.2.2 3D luminance, View 2



Object : External Lighting
Installation : St Michaels, Manchester
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1.2 Calculation results, Exterior 1 Ligman

1.2.3 3D luminance, View 3



Object : External Lighting
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1.2 Calculation results, Exterior 1 Ligman

1.2.4 3D luminance, View 4

