

Manchester Metropolitan Library Transformation Project

External Lighting Strategy

1044B-BHE-XX-XX-RP-M-200002

053621

26 October 2023

Revision P03

Revision	Description	Issued by	Date	Checked
P01	Issued for Comment	JW	11/08/23	MR
P02	Issued for Planning	JW	16/10/23	MR
P03	Updated Layouts Incorporated	JW	26/10/23	MR

[https://burohappold.sharepoint.com/sites/053621/02_Documents/04_Reports/MEP/02_Planning Reports/1044B-BHE-XX-XX-RP-M-200002 - External Lighting Strategy.docx](https://burohappold.sharepoint.com/sites/053621/02_Documents/04_Reports/MEP/02_Planning%20Reports/1044B-BHE-XX-XX-RP-M-200002-External%20Lighting%20Strategy.docx)

Report Disclaimer

This Report was prepared by Buro Happold Limited ("BH") for the sole benefit, use and information of Manchester Metropolitan University for Planning. BH assumes no liability or responsibility for any reliance placed on this Report by any third party for any actions taken by any third party in reliance of the information contained herein. BH's responsibility regarding the contents of the Report shall be limited to the purpose for which the Report was produced and shall be subject to the express contract terms with Manchester Metropolitan University. The Report shall not be construed as investment or financial advice. The findings of this Report are based on the available information as set out in this Report.

author **Jon Whiteley**

date **26th October 2023**

approved **Mei Ren**

signature

date **26th October 2023**

Contents

1	Executive Summary	5
2	Introduction	6
2.1	Context	6
2.2	Site Description	6
2.3	Description of Development	6
2.4	External Lighting Strategy Description	7
3	Design Criteria	8
4	Existing Site Condition	9
4.1	Aerial Views	9
4.2	View Along Oxford Road	10
5	Proposed Lighting Strategy	11
5.1	Proposed Lighting Strategy Drawing	11
5.2	Proposed External Lighting Luminaires	11
5.3	Conclusion and Recommendations	12
	Appendix A Proposed Lighting Strategy Drawings	13

Glossary

Term	Definition
CIBSE	Chartered Institute of Building Services Engineers
DLOR	Downward Lighting Output Ratio
ILP	Institute of Lighting Professionals
LED	Lighting Emitting Diode
LOR	Light Output Ratio
LTP	Library Transformation Project
MMU	Manchester Metropolitan University
ULR	Upward Light Ratio
U _o	Uniformity of Light

1 Executive Summary

This design note serves to outline the design requirements of the external lighting for the Library Transformation Project at Manchester Metropolitan University.

The new lighting scheme is to be provided to limit light spill and to reduce the impact on the existing neighbourhood and local ecology. The reduction of glare and limiting of obtrusive light are also driving factors in the design of the external lighting. As a result of utilising LED technology and efficient luminaire optics, the light spill will not exceed the recommendations of the ILP Guidance Note "GN01 – Guidance notes for the reduction of obtrusive light."

With the new proposed lighting controls the lighting levels can be adjusted to accommodate differing lighting levels required for the times of day/night. The luminaires can be turned off when the building is unoccupied. Along with reducing the impact of the lighting on the surrounding area it also allows for a more economical lighting solution.

2 Introduction

This external lighting strategy document is intended to describe the basis of design and outline description of the external lighting system associated with the Library Transformation Project at Manchester Metropolitan University. It has been produced as a requirement of the planning authority.

2.1 Context

BuroHappold Engineering have been appointed by Hawkins Brown as part of the design team working for Manchester Metropolitan University to undertake design works for the proposed re-development of the existing All Saints Library. The project comprising a partial demolition of the existing building, followed by construction of a 12 storey new build element to provide high quality flexible study spaces. The final element of the project includes the full refurbishment of the existing/retained element of the building.

2.2 Site Description

The Site lies within the City Centre, and within the Regional Centre as defined by MCC's Core Strategy 2012. The Site boundary extends to c.0.7 hectares. The Site is bound to the east by Oxford Road, to the north by the Mancunian Way, Manchester Metropolitan University's Faculty of Business and Law to the west, and All Saints Park to the south.

The Site currently comprises the All Saints Library Building, a seven storey brick building, currently used as a library facility for students and staff of Manchester Metropolitan University, and comprising desk spaces, book clusters and meeting rooms. The Site is currently occupied, and it is intended that part of the site will remain in operation through the five year refurbishment and construction period.

The building's pedestrian access is currently from All Saints Park to the south of the building. There is no car parking associated to the library building.

The Site forms a key site along the Oxford Road Corridor, a priority location for higher education and an opportunity to strengthen and diversify the economy by creating high added value growth in sectors such as Creative and Digital, Health, Science and Innovation, and Advanced Materials and Engineering.

Low rise buildings are located to the east, on the opposite side of Oxford Road, which comprise of shops and commercial properties of approximately 2 to 3 storeys in height. To the south, All Saints Park provides public realm, surrounded by Manchester Metropolitan University Buildings, and St Augustine's Church.

To the west, there are further University buildings, and student accommodation. To the north, Mancunian Way runs east to west, and to the north of that, the Manchester Metropolitan University John R Dalton Building and Circle Square.

2.3 Description of Development

The proposed overall quantum of development is set out within Table 1.1.

	Proposed Parameters
Site area (inside red line)	C. 6,700 sq m
Use (Library)	21,800 sq m GIA

Use (Terrace)	900 sq m GEA
Height	63 m, ground + 12 storeys
Parking	No car or cycle parking directly associated to the site, utilising the existing Manchester Metropolitan University travel plan.

2.4 External Lighting Strategy Description

An external lighting scheme is required to provide both functional and feature lighting to the external spaces immediately adjacent to the building. Promoting safe movement, adequate illumination for security and the creation of engaging communal spaces. The primary emphasis of the external scheme is to provide lighting to the following areas:

- Entrances to the building along Oxford Road, All Saints Park and to the rear of the building adjacent Mancunian Way
- Perimeter walkways to the building:
 - Front of the building adjacent All Saints Park
 - Rear of the building adjacent car park below Mancunian Way

The aim of this design note is to outline the strategy and design for the external lighting scheme that provides artificial lighting to the various areas listed. The new lighting scheme will limit light spill to the surrounding areas through the use of appropriate luminaires with good optics and careful positioning, to minimise the impact on the surrounding ecology and neighbouring buildings. Luminaires will utilise the latest LED technology where possible to reduce power consumption and optimise the efficiency of the lighting.

3 Design Criteria

The external lighting scheme will be design in accordance with the SLL Code for Lighting, BS EN:12464-2, CIBSE Lighting Guide 6 "The External Environment" and the ILP Guidance Note GN01 "Guidance Notes for the Reduction of Obtrusive Light". The external lighting scheme is also to be developed with reference to the Manchester Metropolitan University Design Guides.

Relevant areas and lux levels are provided in the table below.

Area	Maintained Illuminance (Lux)	Standard
Roadways and general movement	5	BS EN:12464
Walkways, Perimeter Zones, Security	20	BS EN:12464
Cleaning and servicing	50	BS EN:12464
Trees/Bushes (where illuminated)	10	BS EN:12464
Steps/Hazards	50	BS EN:12464

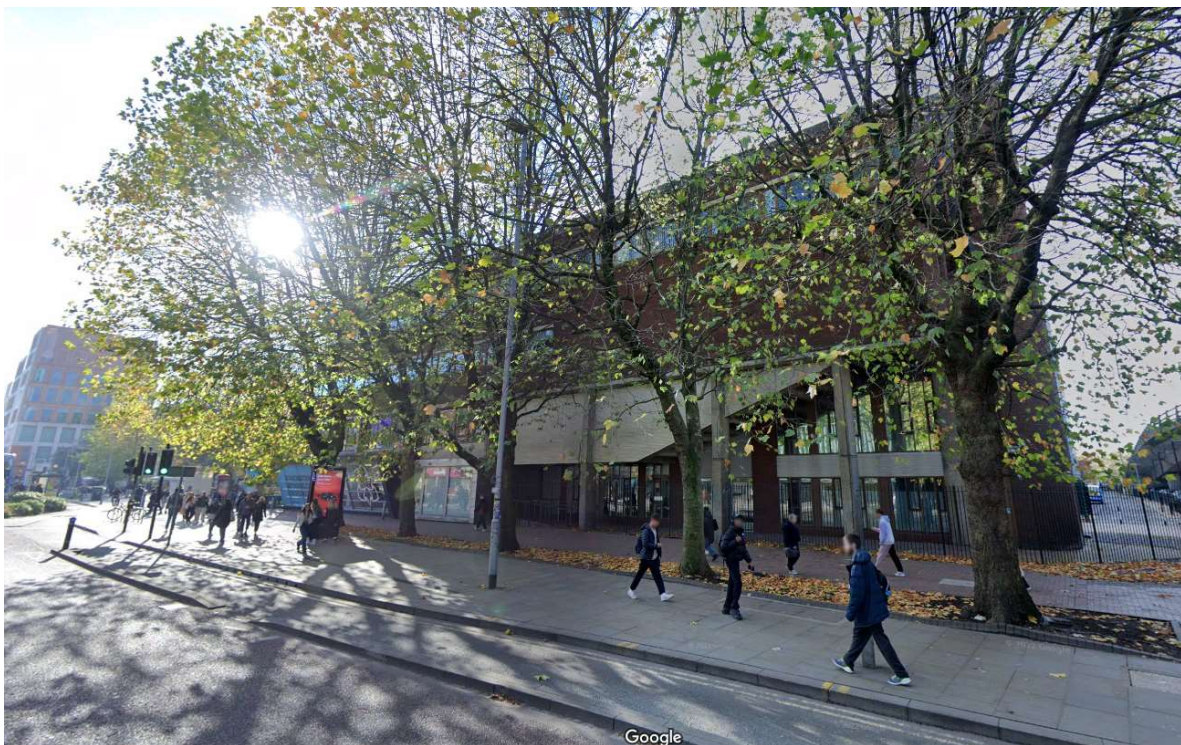
For the purposes of designing the external lighting it is assumed that the development sits within a classification E4 Environmental Zone – Urban surroundings with high district brightness and therefore the following design criteria shall be adopted from the ILP Guidance Note GN01:

Obtrusive Light Limitations for Exterior Lighting Installations						
Environmental Zone	Sky Glow ULR [Max %]	Light Intrusion (into windows) E _v [lux]		Luminaire Intensity I [candelas]		Building Luminance Pre-Curfew
		Pre-Curfew	Post-Curfew	Pre-Curfew	Post-Curfew	Average, L [cd/m ²]
E0	0	0	0	0	0	0
E1	0	2	0	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

4.1 Aerial Views



4.2 View Along Oxford Road



5 Proposed Lighting Strategy

5.1 Proposed Lighting Strategy Drawing

Refer to Appendix A

5.2 Proposed External Lighting Luminaires

Lighting will predominantly be LED energy efficient technology and will comprise several luminaire mounting types including:

- Wall mounted
- Recessed downlights installed within underside of building overhangs

The lighting design will be developed further during RIBA Stages 3 and Stage 4, however the following luminaires have been assumed for calculation and coordination purposes during the current design stage:

Reference	Description	Location	Image of Luminaire
EX1	Ground mounted, IP66 rated, Die-cast aluminium body with a polycarbonate lens	Ground mounted to illuminate trees on Level 05 terrace and at Ground Floor along Oxford Road	
EX2	Surface mounted LED flexible luminaire, IP68 rated	Surface mounted under/within planters and seating to provide wash of light	
EX3	Recessed IP68, low energy LED	Installed within the vertical face of the planters / seats installed in the walkway	
EX4	Ground mounted, IP68 rated, bollard luminaire	Ground mounted at rear of building	

EX5	Wall mounted, IP66 rated, Die-cast aluminium body with a polycarbonate refractor to minimise upwards light (less than 2%).	Wall mounted outside final exits and pedestrian walkways.	
EX6	Surface mounted, IP68 rated, Impact and moisture resistant LED luminaire	Surface mounted in Bin Store	
EX7	Recessed luminaire, IP65 rated, wide beam with low glare.	Recessed within the underside of the building overhang outside the front and rear entrances to the building.	

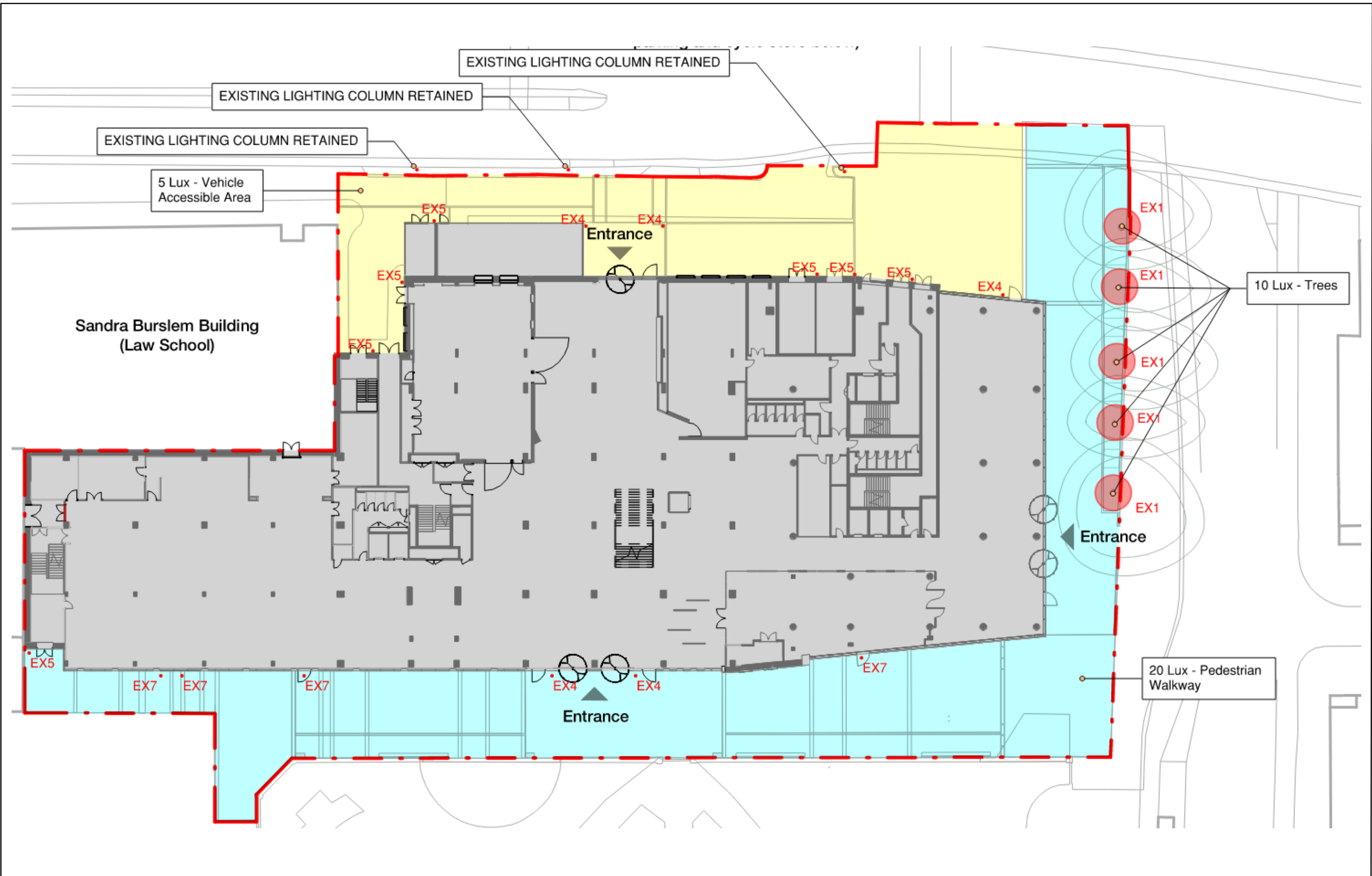
5.3 Conclusion and Recommendations

The lighting design and luminaire selection will be chosen to be in line with MCC requirements and will be designed to avoid light pollution issues at the sensitive receptors on Oxford Road. The final lighting design is to be further developed and agreed via planning condition following the detailed design.

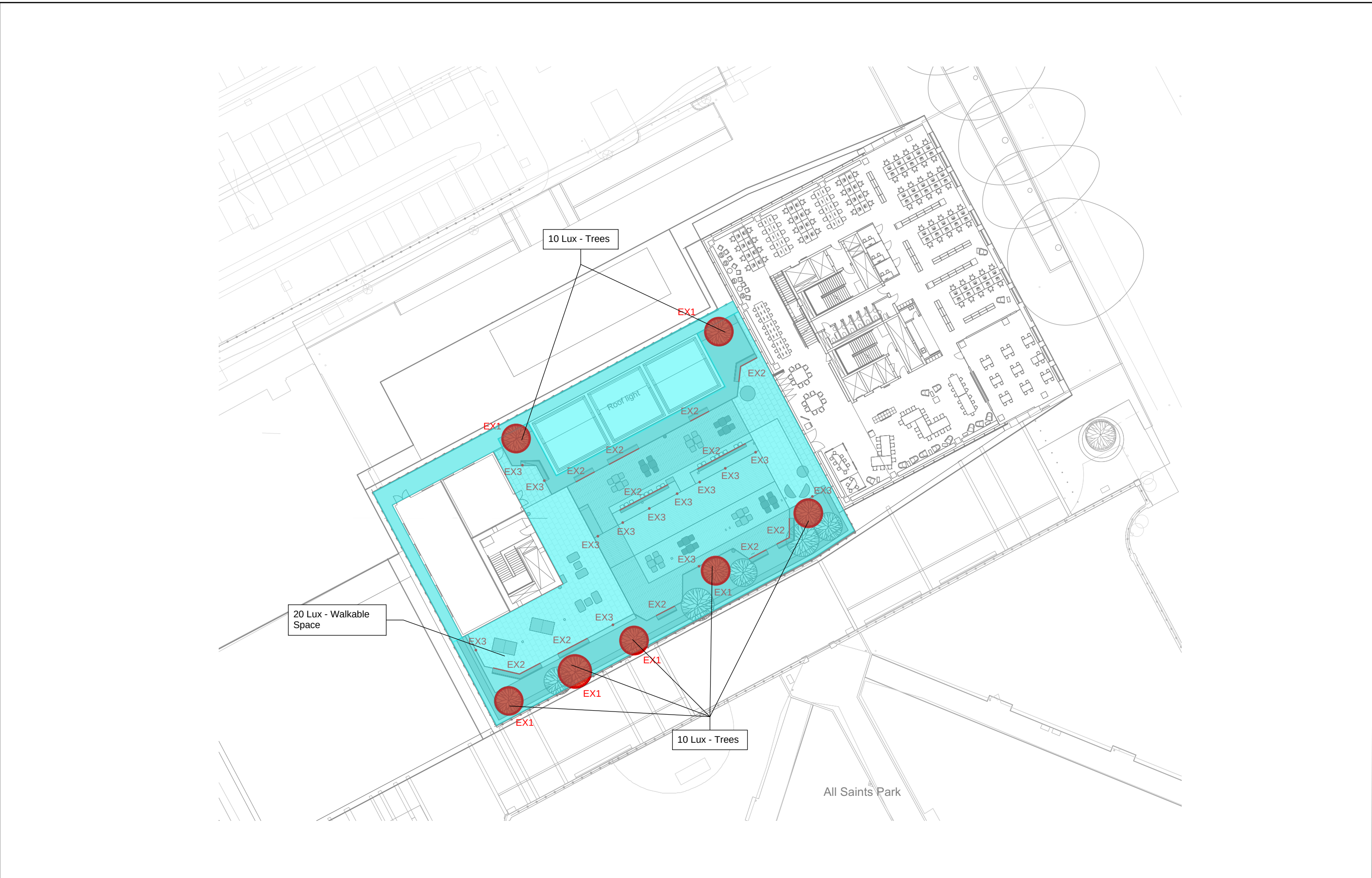
Initial calculations indicate the following:-

- By the selection of luminaires with good optics and light sources the amount of light spill and glare can be restricted to well within the site constraints and ensure surrounding areas are not impacted.
- The use of LED lamps, efficient optics and controls will ensure that the external lighting design is energy efficient, have a very good whole life cost and require minimal maintenance.

Appendix A Proposed Lighting Strategy Drawings



BURO HAPPOLD	Project: ManMet Library Transformation Project	Project Number: 053621	Status: For Information		
	Sketch Title: External Lighting Strategy - Level 00	Sketch Number: SK-MEP-2000	Date: 11/08/23	Initials: JW	Revision: P01



BURO HAPPOLD	Project: ManMet Library Transformation Project		Project Number: 053621		Status: For Information	
	Sketch Title: External Lighting Strategy - Level 05		Sketch Number: SK-MEP-2001		Date: 11/08/23	Initials: JW Revision: P01

Jon Whiteley
Buro Happold Limited
2nd Floor, Eastgate
2 Castle Street, Castlefield
Manchester
M3 4LZ
UK

T: +44 (0)161 233 5000
Email: Jonathan.Whiteley@BuroHappold.com