

Building 401- Unit 1 Manchester Airport

Lighting Strategy

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Quality information

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Revision History

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1. Introduction

Columbia Threadneedle Investments have commissioned Aecom to prepare an external lighting strategy for the proposed development of a site in the Global Logistics area of Manchester Airport. Building 401 currently occupies this site, formerly known as the Skychef building.

The site is bounded by the Avro Way to the north, Pinfold Lane to the East and Wilmslow Old Road to the south. The A538 Wilmslow Road is located to the west. The Site is situated within a predominately urban area and comprises industrial units, offices and roads. The new DNATA facility sits to the East of the proposed site with the existing DNATA food facility to the west.

An outline masterplan for the site has been provided by RPS (drawing ref: 020598-RPS-SI-XX-DR-A-0110) and comprises a 84,000 square foot warehouse building(s) which is split into 3 no units with individual integral office space. Office space is assumed to comprise 10% of the overall GIFA for the purposes of this Strategy.



Figure 1 – Site Location Plan

This lighting strategy report is to inform future developers and design teams of the existing site constraints and propose a lighting solution that meets with the legislative and mitigates the constraints imposed upon the site.

2. Existing Condition

2.1 General

Several large warehouse/commercial buildings are present within the Site. The buildings are comprised of a combination red brick bases, glass windows and metal sheet walls and roofs. Other structures include metal storage containers and metal shelters

The remaining areas of the site comprises hard-standing in the form of roads, pavements and car-parks/vehicle storage areas. Some small areas of bare ground were present within amenity grassland adjacent to pavements.

A woodland area is located along the western side of the Site, adjacent to Wilmslow Old Road and contains semi-mature trees.

It Is noted that the proposed new development does not constitute a “change of use”, and the new site will have a similar function to that existing.

2.2 Existing Site Lighting

The existing external lighting is predominantly in the form of floodlighting fixed to the building facades. There is little consideration to glare or pollution control from these luminaires.

Road lighting to Avro way and Pinfold Lane comprise of column mounted road lighting lanterns. These are generally located in the grass verge on the perimeter of the site.

There is no road lighting on Old Wilmslow road on the Western perimeter of the site



Figure 2 – Avro Way / Pinfold Lane



Figure 32 – Old Wilmslow Road

3. Constraints and Sensitive Receptors

When developing the new lighting strategy, the following items have been considered due to the impact that any new lighting scheme may have upon them.

3.1 “The Romper” Public House

Located to the west of the site there is an existing established Public House. This is on the far side of Old Wilmslow road, and is currently shielded to some degree by the woodland and trees located on the western perimeter of the

site. There is currently also a large hardstanding area between the perimeter of the site and the existing building 401, which acts as a buffer to the lighting mounted on the building.



The new development will bring the buildings much closer to the woodland area, and any new lighting mounted to the building will need to be carefully considered so as not to cause excessive light intrusion into the Public House and its grounds.

Refer to section 4 for the proposed lighting strategy and mitigation measures to be introduced.

3.2 Areas of Ecology

An ecology report has been produced by Aecom and this has identified that there is “potential” for Bat roosting in Oak trees located in the woodland area located to the west of the site. Whether the area is used by bats is subject to further investigation, and will be confirmed at later stages of the development.

However, it should be noted that mitigation measures may be required to reduce light impact on the roosting and/or flight paths of any bats found to be in the vicinity.

Refer to section 4 for the proposed lighting strategy and mitigation measures to be introduced.

3.3 Airfield and Aircraft Movements

The proposed development site is located adjacent to the live airport environment, but sufficiently far away as to not be impacted by Obstacle limitation surfaces and Radar installations. Consideration should still be given to any upward light and / or high glare sources that may have an impact on the approaching / departing aircraft.

Refer to section 4 for the proposed lighting strategy and mitigation measures to be introduced.

4. Proposed Lighting Solution

The proposed external lighting strategy shall be to provide artificial lighting to the building perimeter, loading dock areas, hard standing areas, vehicle parking areas and roads, to allow safe vehicle and pedestrian movement around the site, as well as providing a level of security.

Careful consideration shall be given to reducing obtrusive light during the night and the visual impact of the lighting scheme during the day, whilst maintaining an adequate level of illuminance for its application on the site. Particular attention shall be paid to minimising any glare or sky glow produced by the scheme or intrusion onto nearby developments & wildlife habitats.

Building mounted lighting shall be provided in the form of floodlights. Floodlights shall be chosen to have good light control and cut off angles to reduce light spillage and zero horizontal cut off to eliminate any upward light.

Where necessary to achieve the lighting levels stated in section 4.2, additional column mounted luminaires may be installed. These will generally be of a height to ensure clearance of the proposed vehicle types, but not excessive so as to cause light spill outside of the site boundary.

4.1 Standards and Legislation

Environmental Protection Act:

The Environmental Protection Act 1990 (Section 102 of the Clean Neighbourhoods and Environment Act (CENA): 2005, gives local authorities the power to consider obtrusive artificial light as a Statutory Nuisance. The Act makes 'exterior light emitted from premises so as to be prejudicial to health or a nuisance' a criminal offence.

ILP Guidance Notes for the Reduction Obtrusive Light Guidance Note 1 2021:

The ILP (Institution of Lighting Professionals) has proposed lighting guidance and criteria for lighting impact assessments with a recommendation that they are incorporated at the local plan level. The guidance defines various forms of light pollution and describes a series of environmental zones (Table 1) against which limits for obtrusive light are defined. These guidance notes therefore provide suitable criteria against which the effects of artificial lighting have been assessed in this chapter.

Construction Industry Research and Information Association:

Good practice guidance documents prepared by the Construction Industry Research and Information Association (CIRIA) note that lighting on construction sites is typically required for onsite security and health and safety requirements during the night-time period and is temporary and short-term in nature.

CIE 150: Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations:

This guide sets out guidelines for assessing the environmental impacts of outdoor lighting and gives recommended limits for relevant lighting parameters to contain the obtrusive effects of outdoor lighting within tolerable levels.

CIE 126: Guidelines for Minimising Sky Glow:

The report gives general guidance for lighting designers and also policy makers about the ways the interference by sky glow of astronomical observations can be reduced or even avoided. The report gives guidance for the design of lighting installations and lighting equipment.

CIE 136: Guide to the Lighting of Urban Areas:

The purpose of this publication is to supplement the recommendations for the lighting of public thoroughfares within urban areas. This guide includes the justification for the lighting of these public thoroughfares and methods

of lighting specific areas such as cycle tracks, pedestrian areas and malls, residential and other non-arterial routes, alleys and lanes.

BS EN 12464 Part 2: Lighting of Workplaces, Outdoor Workplaces:

This British Standard focuses on the recommendations for outdoor work places that are used at night and advice on limiting the effects of light obtrusion within the environment.

BS EN 13201 Road Lighting Part 2: Performance Requirements 2015:

This standard defines lighting classes for road lighting according to photometric requirements and aiming at the visual needs of road users.

BS 5489 Part 1 2020 Code of practice for the design of road lighting:

Provides recommendations on the general principles, aesthetic and technical aspects of road lighting and advises on statutory provisions, operation and maintenance of lighting. The standard provides recommendations for the design of lighting for all types of highways and public thoroughfares, including those specifically for pedestrians and cyclists, and for pedestrian subways and bridges. It also provides recommendations for the design of lighting in urban centres and public amenity areas.

CIBSE Lighting Guide LG6: Exterior Environment:

Looks to reflect changes in the area of exterior lighting which have occurred since 1992 and to supply a firm foundation useful when approaching exterior lighting design.

Society of Light and Lighting: Code for Lighting

Definitive reference source for lighting design in the UK.

4.2 Illumination Levels

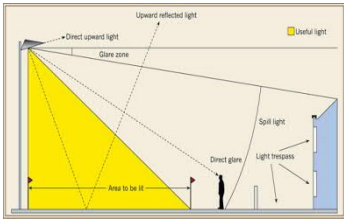
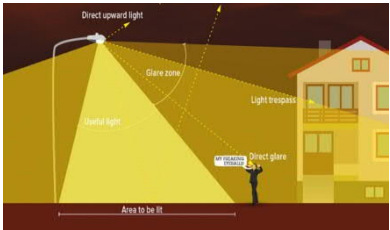
Lighting levels shall be designed in accordance with the standards as listed above.

The recommended lighting levels according to SLL Code for Lighting –:

- Outdoor Car Parks 20 Lux Maintained Average and 0.25 uniformity.
- Vehicle turning, loading & unloading points - 50 Lux Maintained Average and 0.4 uniformity
- Below loading canopies – 100 Lux Maintained Average and 0.4 uniformity
- Walkways exclusively for pedestrians are 5 Lux Maintained Average and 0.25 uniformity.

4.3 Light Pollution

Wherever possible luminaires are to be orientated towards the site, away from the land outside the site to make them less intrusive. Luminaires shall be chosen that have good light control and cut off angles to reduce light spillage. All the luminaires shall be angled to minimise glare.

Description	Example of Good Practice	Example of Non-compliance
Luminaires with no upward light spill (i.e. horizontal flat glass lens, compact light for better light control).		
Luminaires correctly specified and installed to efficiently place the light on the task area and not beyond.		
Area lighting with horizontally mounted asymmetric luminaires.		

4.4 Further Mitigation Measures

Additional measures to be taken to minimise light obstruction from any lighting installed:

- Use of physical barriers e.g. buildings to obscure the view of lighting from sensitive receptors;
- Use modern technologies with constant output control gear. Light output will reduce with time and age and traditionally the scene is over-lit when new to ensure the lighting level is still acceptable after a period of time. Modern lighting control technologies enable the lighting to be maintained at the optimum output level throughout the life of the installation;
- Luminaires correctly specified to efficiently place the light on the task area and not beyond. Light source not visible from beyond the Proposed Development site;
- All external lighting to have horizontally mounted asymmetric luminaires with 0 degree horizontal cut-off optics i.e. no direct upward light;
- Impose a curfew; extinguish all non-essential lighting after 22.30 where possible.
- Install lighting baffles to luminaires closest to the site boundary, to significantly reduce the light intrusion from the back of the luminaire into areas beyond the site boundary

5. Construction Phase Lighting

It is anticipated that the key potential sources of lighting during the construction phase will include the following:

- Floodlight and security lighting associated with temporary car parking areas for workers, the secure compound and any perimeter fencing/hoarding.
- Security and health and safety lighting associated with working areas, (e.g. where equipment is stored and safety hazards may be present).
- The potential for light trespass and glare from internal lighting associated with site offices and welfare facilities.
- Lighting required for operational purposes associated with construction when working during the late afternoon in the winter period (including light from headlamps of vehicles).

It is anticipated that the construction phase working hours will be from 07:00hrs to 19:00hrs Monday to Saturday with only minimal working on Sunday or bank holidays. However certain operations are seasonal and weather dependent and these circumstances it may be necessary to extend working hours to take advantage of daylight hours, subject to prior agreement.

Consequently, it is likely that sources of light will be predominate in winter months when working hours fall within hours of darkness. However it is assumed that some of level of security lighting (associated with compound and perimeter fencing/hoarding) will be required during periods of darkness.

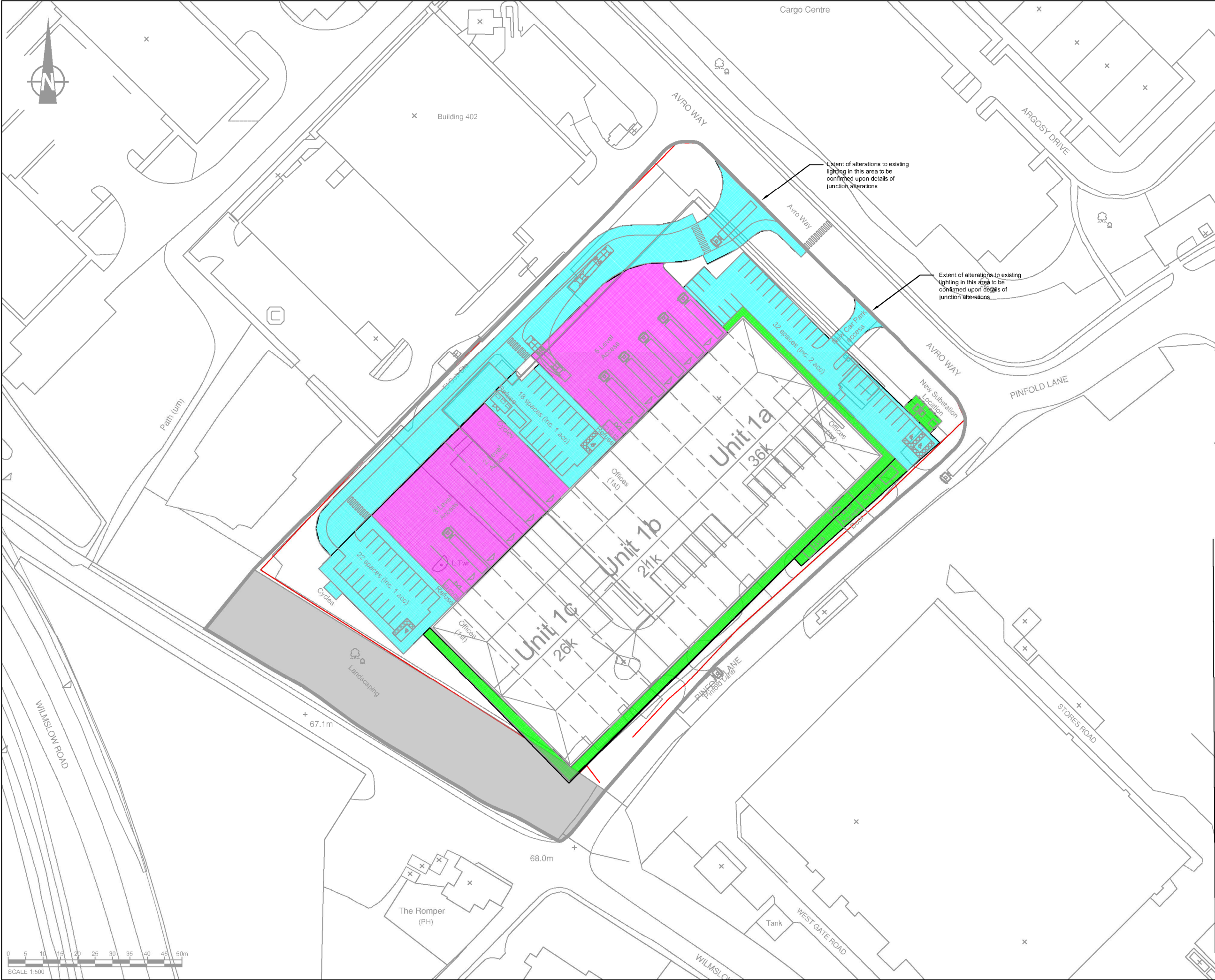
As such, temporary lighting associated with the construction phase will need to be designed and installed generally in accordance with the lighting strategy described above for the operational lighting.

In addition:

- Procedures will be implemented to ensure effective liaison with the neighbouring properties, adjacent residents and local community through newsletters, letter drops (when construction activities are likely to affect local residents) and information boards.
- The sites will be registered to the Considerate Constructors Scheme to ensure the construction process is audited and monitored with the aim of maintaining the highest possible standards: and
- Specifically in relation to temporary lighting, lighting will be kept to the minimum required for the activity (meeting health and safety requirements) and lighting will be located and directed away from the sensitive receptors where possible.

Appendix A : Proposed Lighting Layout

ISO A1 594mm x 841mm
Project Management Initials: Designer: _BH_ Checked: _JW_ Approved: _VB_
Last saved by: STEVE LEES (2021-09-27) Last Plotted: 2021-09-27
Filename: I:\UKMCR2\PPSW001\NA\AECOM\NET\COM\DATA\PROJECTS\60663052 - MAG PLOT 401\08-BM_CAD\08.1.1 CAD\08.1.1 WP\08.1.1 CAD\08.1.1 ELEC\08.1.1.1 CURRENT DRAWINGS\60663052-ACM-XX-XX-DR-E-06001 P1 - UNIT 1 PROPOSED LIGHTING LEVELS.DWG



PROJECT

BUILDING 401

CLIENT

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KEY

- 50 Lux Ave - 0.4 Uniformity
Vehicle turning & loading areas
100 Lux Ave under loading canopies
- 20 Lux Ave - 0.25 Uniformity
Vehicle parking areas & roadways
- 5 Lux Ave - 0.25 Uniformity
Pedestrian only routes

NOTES

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS.
- IF RECEIVED ELECTRONICALLY, IT IS THE RECIPIENT'S RESPONSIBILITY TO PRINT TO THE CORRECT SCALE. DO NOT SCALE FROM THIS DRAWING AND ONLY WRITTEN DIMENSIONS SHALL BE USED.



Typical column mounted
luminaires



Typical building mounted
luminaires

ISSUE/REVISION

REV	DATE	DESCRIPTION
P1	20/09/21	FIRST ISSUE
1/1	DATE	DESCRIPTION

PROJECT NUMBER

60663052

SHEET TITLE

BUILDING 401 - UNIT 1
INDICATIVE PROPOSED SITE
LIGHTING LEVELS

SHEET NUMBER

60663052-ACM-XX-XX-DR-E-06001 P1