



TETRA TECH

Argosy Drive

External Lighting Strategy Addendum

PRESENTED TO

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1 INTRODUCTION

The following report is an addendum to the previous Aecom External Lighting Strategy Report for the Argosy Drive Development.

The original scheme brought forward for planning consisted of 3 blocks of terraced logistics units outlined in Figure 1 below consisting of the following units:

Unit 1 – 8 individual units

Unit 2 – 3 individual units

Unit 3 – 3 individual units



Figure 1 – Original Argosy Drive scheme

Following market testing and a period of value engineering Columbia Threadneedle Investments have decided to reduce the number of Units in the Unit 1 terrace from 8 to 6 whilst maintaining the overall footprint of the Unit. Units 2 + 3 remain the same. The new masterplan is presented in Figure 2 below:

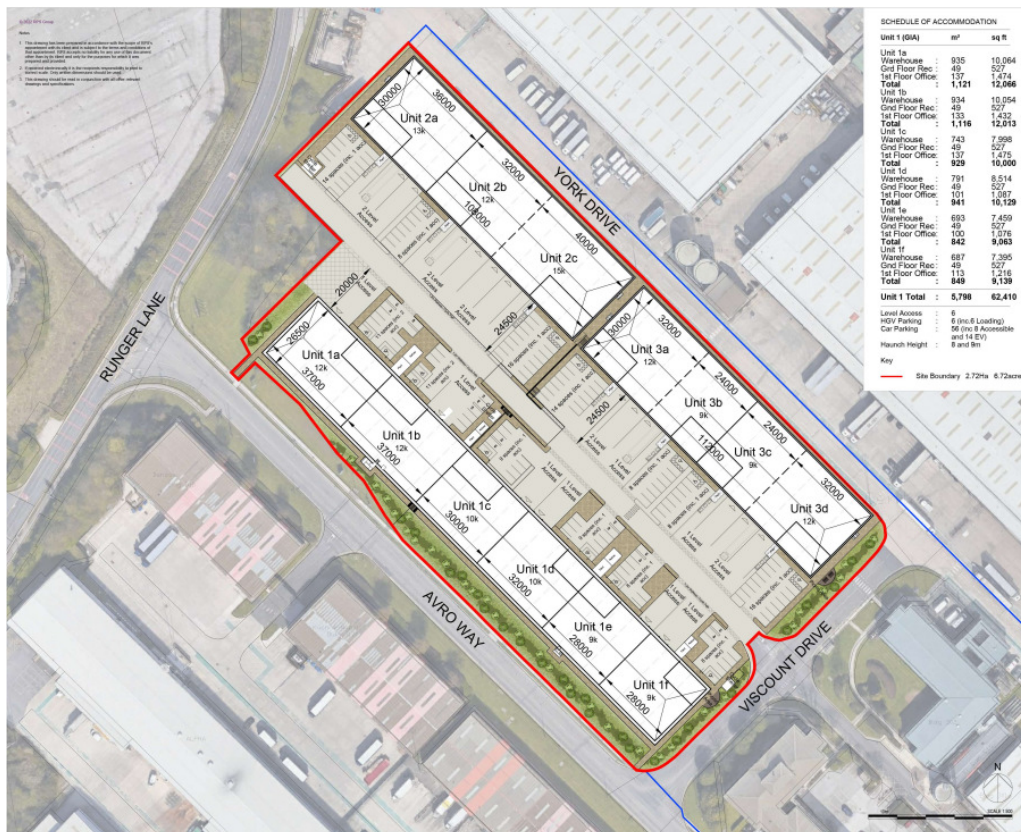


Figure 2 –Revised Argosy Drive scheme

This addendum report aims to highlight that the key principles of the original strategy are being maintained and to confirm where amendments are being made to suit the change in the master plan. It is also the intention to phase the development by delivering Unit 1 ahead of Unit 2+3. Further amendments to the original strategy are proposed to reflect the requirements of the phasing.

The design changes of the redevelopment of Argosy Drive require the lighting to be adjusted to suit the new phasing of the scheme. The initial phase of the construction of Unit 1 is still to be constructed, Units 2 & 3 will follow at a future stage rather than as one scheme. The first building to be constructed, unit 1, has also been altered from 8No. terrace units to 6No. terrace units to provide units with a larger usable space while maintaining the same overall building footprint.

The following report outlines the amendments to the original strategy.

The original Aecom external lighting strategy report is provided in Appendix A for reference.

2. EXISTING SITE LIGHTING

The existing site lighting is summarised by the original Lighting Strategy prepared by Aecom and provided in Appendix A. Since the issue of the original strategy Building 305 has been demolished. At the time of writing the original strategy there was no observed lighting on Building 305 itself and the external lighting columns referenced have been retained.

3. CONSTRAINTS AND SENSITIVE RECEPTORS

The proposed development site is located within the logistics area of Manchester Airport and as such many of the surrounding facilities are of a similar nature to the proposed development, and the proposed external lighting will have minimal impact. To the northwest are adjacent warehouse buildings with the airfield beyond.

To the east is Avro way, which is an access road to the logistics area, with warehouse facilities beyond that. To the northwest are two hotel facilities, with the M56 motorway beyond. To the south there are two office buildings adjacent to the site with more warehousing and airport support facilities, beyond that.

The logistics centre is a 24hr operational area with a great deal of vehicular movement throughout the day and night. The original Aecom strategy considered the following constraints and receptors:

- The premier inn hotel.
- The holiday inn express hotel.
- Building 308
- Building 302
- Avro Way
- Viscount Drive
- York Drive
- Airfield

The proposed Argosy scheme is to be delivered in two phases. In Phase 1, Unit 1 will be delivered with Units 2 & 3 to follow in Phase 2. The principles outlined in the Aecom strategy for consideration of key receptors has been considered and adopted in the Unit 1 detailed design and will need to be considered in the design of the future Units 2 & 3. A summary of the requirements is provided as follows :

Premier Inn + Holiday Inn Hotel

The Aecom strategy raised glare as a concern from the proposed development causing light intrusion to bedroom windows facing the proposed development site.

The Unit 1 design provides only two low level wall mounted luminaires on the façade facing the hotel whilst no high mast lighting has been proposed to external areas. Lighting to external areas is provided via low level columns as are normally used within the highway's environment. This ensures that the development is no more onerous than that of the street lighting on Runger Lane.

Existing and proposed landscaping also offers protection at the corner of the site.

The same principles will be adopted for the detailed design of Units 2 + 3.

Building 308

The Aecom strategy raised glare as a concern from the proposed development causing light intrusion to office windows facing the proposed development site.

The Unit 1 design ensures lighting to the loading areas does not create onerous light shed onto Building 303 whilst the existing lighting to Viscount Drive is to be maintained with the same coverage and LUX levels. The impact on Building 308 is negligible.

The same principles will be adopted for the detailed design of Units 2+3.

Building 302

The Aecom strategy raised glare as a concern from the proposed development causing light intrusion to office windows facing the proposed development site.

The rear of the proposed Unit 1 faces Building 302. Only wall mounted luminaires to provide emergency and low-level lighting to the rear of the building is proposed on this façade. No high mast lighting is proposed meaning all lighting to external yard areas will be contained on the opposite façade of the proposed unit below the maximum building height. No adverse glare is expected to Building 302.

Avro Way

The Aecom strategy raised glare as a concern from the proposed development causing glare to road users on the highway.

The rear of the proposed Unit 1 faces Building 302. Only wall mounted luminaires to provide emergency and low-level lighting to the rear of the building is proposed on this façade. No adverse glare will impact on the highway.

Existing street lighting to Avro Way will be maintained as existing.

Viscount Drive

The Aecom strategy raised glare as a concern from the proposed development causing glare to road users on the highway.

Whilst there may be light shed from the yard areas to this area it is not deemed to be a risk of glare to road users. Lighting levels in this area will maintain the required lighting level to provide a safe and operable junction as per relevant highways guidance.

York Drive

Located to the northeast of the site, York Drive is a single carriageway with a 20MPH speed limit giving access to the loading bays of the existing warehouse buildings. The proposed development requires the demolition of some of the existing warehouse units and extends into the existing area currently designated as loading.

The new development will therefore affect the existing lighting along this section of York Drive. The area is currently lit by 3 No. 25 metre High Mast Lighting (HML) columns. These currently illuminate York Drive and all of the loading bays on either side of the road. The new proposals clash with the existing High Mast Lighting and at least one will need to be removed or relocated.

There is also building mounted floodlighting to provide local lighting to the individual tenants loading bays.

The proposed lighting scheme will require illumination of the loading bays to the retained northern warehouse units and illumination of York Drive itself. Whilst the amount of traffic and maneuvers will be reduced, this will remain a high-risk area due to the size and number of vehicles and the number of movements of large articulated vehicles.

The new external lighting will need to maintain lighting levels and uniformity to at least the same standard as the existing, without causing glare to road users. These requirements will be adopted in the detailed design of Units 2 & 3.

Airfield

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.

The Unit 1 detailed has been developed to ensure no upward light and / or high glare sources that may have an impact on the approaching / departing aircraft are proposed. The same principles will be adopted in the detailed design of Units 2 & 3.

4. PROPOSED LIGHTING SOLUTION

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

Unit 1, 2 & 3

Car park areas are proposed to be illuminated via 6 metre high column-mounted floodlights from the perimeter of the car park to save space and declutter. Building-mounted floodlights are proposed for the loading bays to achieve the lighting levels.

For the building perimeter footpaths, building-mounted bulkheads are proposed to ensure that the paths are adequately illuminated and provide security.

Argosy Drive

The road lighting of Argosy Drive is proposed to be carried out in the initial phase of the construction of Unit 1. Argosy Drive is proposed to be illuminated via 6 metre high column-mounted floodlights. There are two existing lighting columns located on the grass verge on one side of the road proposed to be taken down and set aside.

Viscount Drive

As the proposed new development is accessed from Viscount Drive, there is one existing light column at the junction between Argosy Drive and Viscount Drive proposed to be taken down and reused.

The proposed external lighting layout is provided in Appendix B for reference.

York Drive

Located to the northeast of the site, York Drive is a single carriageway with a 20MPH speed limit giving access to the loading bays of the existing warehouse buildings. The proposed development requires the demolition of some of the existing warehouse units and extends into the existing area currently designated as loading.

The new development will therefore affect the existing lighting along this section of York Drive. The area is currently lit by 3 No. 25 metre High Mast Lighting (HML) columns. These currently illuminate York Drive and all of the loading bays on either side of the road. The new proposals clash with the existing High Mast Lighting and at least one will need to be removed or relocated.

There is also building mounted floodlighting to provide local lighting to the individual tenants loading bays.

The proposed lighting scheme will require illumination of the loading bays to the retained northern warehouse units and illumination of York Drive itself. Whilst the amount of traffic and maneuvers will

be reduced, this will remain a high-risk area due to the size and number of vehicles and the number of movements of large articulated vehicles.

The new external lighting will need to maintain lighting levels and uniformity to at least the same standard as the existing, without causing glare to road users. These requirements will be adopted in the detailed design of Units 2 & 3.

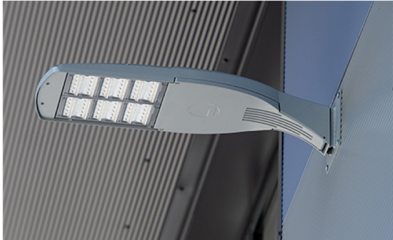
4.1 Illumination Levels

Achieve the average maintained illuminance values for the external areas, as specified below:

- | | | |
|-----------------------|--------|-----------------------|
| • Outdoor Car parks | 20 lux | uniformity ratio 0.25 |
| • Roadways | 20 lux | uniformity ratio 0.25 |
| • Loading Bays | 50 lux | uniformity ratio 0.4 |
| • Perimeter Footpaths | 5 lux | uniformity ratio 0.25 |

4.2 Luminaires

The proposed luminaires are as follows:

Description	Luminaire Images	Usage Location
- LED Light - Column mounted at 6m - Forward Throw light distribution - IP65 - Controlled via a time-switches, photo-cells and contactors system with an override switch provided adjacent distribution board		Car parks
- LED Light - Column mounted at 6m - Long and Narrow light distribution - IP65 - Controlled via a time-switches and photocells		Argosy Drive
- LED Light - Wall mounted at 6m - Forward Throw light distribution - IP65 - Controlled via a time-switches, photo-cells and contactors system with an override switch provided adjacent distribution board		Loading Bays
- LED Light - Wall mounted at 4m - Long and Narrow light distribution - IP65 - Controlled via a time-switches, photo-cells, PIR sensor and contactors system with an override switch provided adjacent distribution board		Perimeter Footpaths

4.3 Light pollution and Mitigation measures

The proposed light pollution and mitigation measures have been adopted as per the original Aecom strategy for the detailed design of Unit 1 and should be adopted for the future detailed design of Units 2 & 3.

4.4 Drawings & Proposals

The detailed design drawings for Unit 1 are provided in Appendix B. Detailed design proposals for Unit 2 & 3 will be developed at a later date to meet the requirements and principles outlined in this document.

5. CONSTRUCTION PHASE LIGHTING

The Construction Phase lighting requirements should be as per the original Aecom Strategy in Appendix A.

APPENDIX A

A.1 Aecom External Lighting Strategy Report

Argosy Drive Development

External Lighting Strategy Report

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Threadneedle Curtis Ltd

18 March 2022

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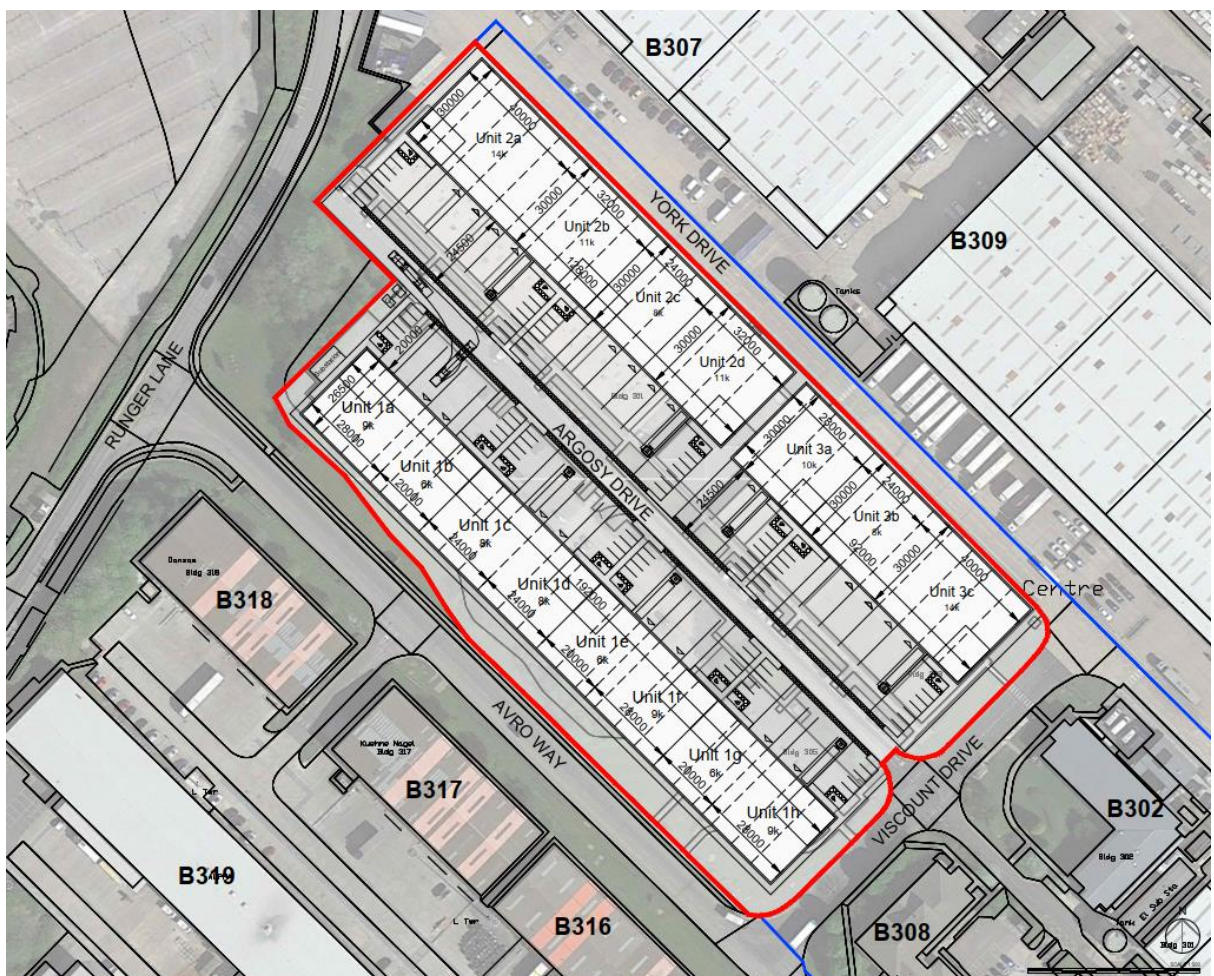
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1. Introduction

Threadneedle Curtis Ltd (Legal Entity) also known as Columbia Threadneedle Investments (CTI) have commissioned AECOM to prepare an external lighting strategy for a proposed logistics development on the existing Argosy Drive area in the global logistics area at Manchester Airport.

An outline masterplan for the site has been provided by RPS showing three new units, called Unit 1, Unit 2 and Unit 3. The development comprises of 143,000sq ft of warehouse buildings, each split into a number of internal individual units with associated office Spaces.

External to the building, there is a re-configured road entrance leading to car parking and loading bay access to the front of the units. Pedestrian access will be required to the rear and side elevations of the buildings for safety and maintenance. The rear of units 2 and 3 will face onto the existing York Drive, allowing vehicular access to these areas, though vehicular access is not required.



2. Existing Condition

2.1 General

Argosy Drive Developments are located on Argosy Drive within the global logistics area at Manchester airport. The site is bound by York Drive to the north, Viscount Drive to the east, Avro Way to the south and Runger Lane to the west. The site is situated within a predominately urban area and comprises industrial units, offices and roads.

The existing site comprises hard-standing in the form of roads, pavements and a car-park. There is a wide grass verge between the site and Avro way, and a small area of tress at the junction of Avro way and Runger Lane.

2.2 Existing Site Lighting

The existing external lighting can be divided into 4 main areas:

Viscount Drive

This is the access road from Avro way into the logistics area. This road is illuminated by road lighting columns located in the grass verge on one side of the road. The road has a 20MPH speed limit.



Viscount Drive from Jct with Avro Way



Viscount Drive from Jct with York Drive

York Drive

This area consists of loading bays either side of York Rd serving the existing warehouse facilities. The width of the area is approximately 50 metres between opposing buildings. The area is predominantly lit by 3No. 25 metre High Mast lighting columns each with multiple luminaires. Each building also has wall mounted flood lighting luminaires to provide local illumination of the loading bays.

York Road is a heavily trafficked area with heavy goods vehicles and articulated lorries carrying out complex manoeuvres. The speed limit is 20MPH but is still considered to be a high hazard area, and as such this area is currently lit to a very high standard.



York Drive from Jct with Viscount Drive



York Drive looking towards Jct with Viscount Drive

Argosy Drive

This is the access road from Viscount Drive to the "office" side of the existing warehouse units and also to the car park area. This road is illuminated part way by lighting columns (2 No only) with dual floodlight heads located in the grass verge on one side of the road. Beyond this, there are no road lighting luminaires, though there will be contribution from the adjacent car park lighting, and from the buildings, though this is not consistent and cannot be relied upon as road lighting.

Argosy drive has a 20MPH speed limit and a 7.5 Tonne weight restriction. It is used mainly by office staff and visitors in cars and is therefore a much lower risk environment than York Road.



Argosy Drive from Jct with Viscount Drive



Argosy Drive (unlit section by car park)

Car Park

The car park is an open area of tarmac, with white line markings setting out the car park bays. The area is illuminated via a number of low level columns with 4 flood light luminaires on each. At the time of viewing, a large number of luminaires were not in operation and the lighting was quite poor.



Argosy Drive Car Park area



Note that all of the aforementioned roads are unadopted.

3. Constraints and sensitive Receptors

The proposed development site is located within the logistics area of Manchester Airport and as such many of the surrounding facilities are of a similar nature to the proposed development, and the proposed external lighting will have minimal impact. To the north west are adjacent warehouse buildings with the airfield beyond. To the east is Avro way, which is an access road to the logistics area, with warehouse facilities beyond that. To the north west are two hotel facilities, with the M56 motorway beyond. To the south there are two office buildings adjacent to the site with more warehousing and airport support facilities, beyond that.

The logistics centre is a 24hr operational area with a great deal of vehicular movement throughout the day and night.

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

3.1 The Premier Inn Hotel

This hotel consists of two buildings with the nearest being approximately 60 metres away from the nearest point of the development. Runger Lane passes between the hotel and the new site, and there are some low level trees and planting providing minimal shielding. Light spill and glare from the new development will therefore need take due consideration of the hotel premises, as many of the bedroom windows face out in this general direction. Light intrusion through windows will need to be minimized and any potential sources of glare designed out at an early stage.



Premier Inn



Holiday Inn Express

3.2 The Holiday Inn Express Hotel

This hotel consists of a single building and is approximately 125 metres away from the nearest point of the development. Runger Lane passes between the hotel and the new site, and there are some low level trees and planting providing shielding. Light spill from the proposed new site is unlikely to reach as far as the hotel or cause any particular issues. However, glare from the new development will need to be taken into consideration, as a number bedroom windows face out in this general direction. Light intrusion through windows will need to be minimized and any potential sources of glare designed out at an early stage.

3.4 Building 308 - Offices

Located adjacent to the site in a south easterly direction is Building 308 which is a 3 storey office block. Although the tenants are mainly airport related, the working hours are more typical of an office environment and are not necessarily 24 hour use. The office is approximately 20 metres away from the proposed new development.

The proposed development is not dissimilar to the existing environment in which Building 308 is currently situated, and as such the users of the building are familiar with the lit environment. The new development may introduce some areas of higher lighting levels as the loading bay areas will be closer to the office building. Therefore, the external lighting will need to be designed to minimize light trespass into the office demise, and not make the existing condition worse than currently experienced. Sources of glare will need to be minimized by careful positioning and aiming of the proposed luminaires, so as not to cause nuisance to the office users.



Blding 302 (Background) & Blding 308 (foreground)

3.5 Building 302 – Warehouse / Offices

Located adjacent to the site in a south easterly direction is Building 302 which is a 2 storey unit with offices at the upper level. It is believed that the current tenant uses the facility 24hrs a day. The building is approximately 20 metres away from the proposed new development.

The proposed development is not dissimilar to the existing environment in which Building 302 is currently situated, and as such the users of the building are familiar with the lit environment. The new development may introduce some areas of higher lighting levels as the loading bay areas will be visible from the windows of the upper floor office areas of building 302.

Therefore, the external lighting will need to be designed to minimize light trespass into the office windows, and not make the existing condition worse than currently experienced. Sources of glare will need to be minimized by careful positioning and aiming of the proposed luminaires, so as not to cause nuisance to the building users.

3.6 Avro Way

Located to the west of the site, Avro Way is a single carriageway with a 30MPH speed limit. It is lit from existing road lighting columns located in the verge on the opposite side of the carriageway.

The proposed new development backs on to Avro way, with the rear of the units facing the road. This is similar to the existing condition on the other side of Avro way. It is anticipated that the proposed lighting will therefore be restricted to emergency exit lighting and pedestrian access / security lighting mounted to the elevation of the building. This will need to be designed so as not to cause glare or light spill onto Avro Way. Should High Mast lighting be proposed to the loading bay area of the new development on Argosy Drive, this may be visible from the road above the new buildings. This will also need to be designed to minimize light spill and avoid glare onto Avro way.



Avro Way

3.7 Viscount Drive

Located to the south east of the site, Viscount Drive is a single carriageway with a 20MPH speed limit. It is lit from existing road lighting columns located in the verge of the carriageway.

The proposed new development is accessed from Viscount Drive and as such, the approach road is exposed to the loading bay areas and the gable ends of the proposed new buildings. This is not dissimilar to the existing situation where Viscount Road adjoins York Drive. All new lighting to the proposed development will need to be designed so as not to cause nuisance glare to drivers on Viscount Drive.

3.8 York Drive

Located to the north east of the site, York Drive is a single carriageway with a 20MPH speed limit giving access to the loading bays of the existing warehouse buildings. The proposed development requires the demolition of some of the existing warehouse units and extends into the existing area currently designated as loading.

The new development will therefore affect the existing lighting along this section of York Drive. The area is currently lit by 3 No. 25 metre High Mast Lighting (HML) columns. These currently illuminate York Drive and all of the loading bays on either side of the road. The new proposals clash with the existing High Mast Lighting and at least one will need to be removed or relocated. There is also building mounted floodlighting to provide local lighting to the individual tenants loading bays.

The proposed lighting scheme will require illumination of the loading bays to the retained northern warehouse units and illumination of York Drive itself. Whilst the amount of traffic and maneuvers will be reduced, this will remain a high-risk area due to the size and number of vehicles and the amount of movements of large articulated vehicles.

The new external lighting will need to maintain lighting levels and uniformity to at least the same standard as the existing, without causing glare to road users.

3.9 Areas of Ecology

An ecology report has been produced by Aecom and this has identified that there is low potential for bat roosting in the area, and no mitigation measures are identified within the report. There is no evidence of badger activity.

3.10 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.

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 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.

However, to achieve the lighting levels required on the new Argosy drive and adjacent loading bays, the use of High Mast Lighting may be considered. This has the potential to have a wider impact on the surrounding areas and will be designed to minimise light spill outside of the developed area.

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.

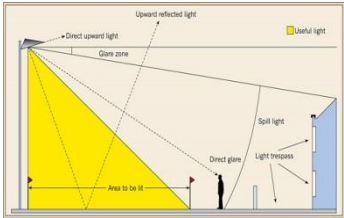
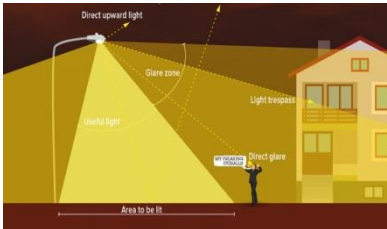
Description	Example of Good Practice	Example of Non-compliance
Luminaires with no upward light spill (i.e. horizontal flat glass lens, compact light for better light control).		
Luminaires correctly specified and installed to efficiently place the light on the task area and not beyond.		
Area lighting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

Table 1 – Luminaire Mounting Examples

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.

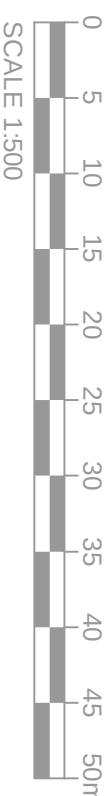
In addition:

- 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

A.1 Proposed lighting Layout



PROJECT

CLIENT



CONSULTANT

AECOM Manchester
1 New York Street,
Manchester, M1 4HD
0161 601 1700 tel
www.aecom.com

KEY

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

NOTES

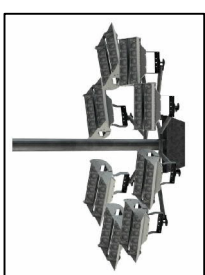
1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS.
2. IF RECEIVED ELECTRONICALLY, IT IS THE RECIPIENT'S RESPONSIBILITY TO PRINT TO THE CORRECT SCALE. DO NOT SCALE FROM THIS DRAWING AND ONLY WRITTEN DIMENSIONS SHALL BE USED.



Typical column mounted
luminaires



Typical building mounted
luminaires



Typical high mass
luminaires

ISSUE/REVISION

P1	21/04/2022	FOR PLANNING
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60663052

SHEET TITLE

ARGOSY DRIVE
INDICATIVE PROPOSED SITE
LIGHTING LEVELS

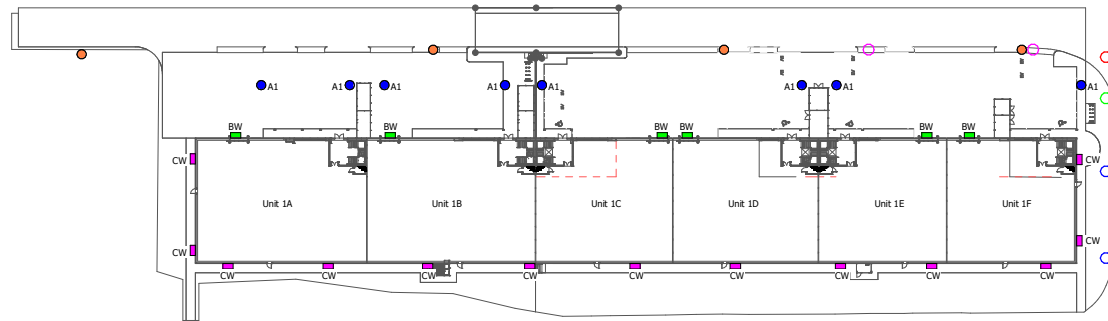
SHEET NUMBER

60663052-ACM-AR1-XX-DR-E-10001

APPENDIX B

B.1 Proposed External Lighting Layout

1 External Lighting Layout



- Notes
1. This drawing shall be read in conjunction with the specification & all other relevant drawings.
 2. This drawing must not be scaled. Work to figured and site obtained dimensions only.
 3. The electrical services contractor is fully responsible for all on-site co-ordination of their services with all other services and building structure.
 4. The sub-contractor shall be responsible for co-ordinating the electrical services so as to ensure a neat and accessible installation.
 5. The electrical sub-contractor shall take full cognisance of the CDM health and safety plan, and provide full method statements for all hazardous operations listed therein. Method statements shall also be provided for any hazardous operation which becomes apparent throughout the construction phase.
 6. All external lighting must be designed to reduce the light spill and light pollution in accordance with planning conditions.
 7. Lighting columns shall be of the fixed planted type with lockable low level access doors, allowing access to the cable terminations and local protective device.
 8. All external fittings selected will be vandal resistant or positioned to limit the opportunity for vandal damage.
 9. Cabling for the external non-building mounted lighting fittings will comprise of multi-core XLPE/SWA cables routed within the underground duct network.
 10. All cable penetrations through the building fabric will be properly sealed out and sealed to prevent ingress of moisture and to maintain the integrity of the external finish.
 11. For the avoidance of doubt this drawing should be printed in colour before reading.
 12. The electrical sub-contractor shall be responsible prior to completion date for ensuring that the lighting levels have been commissioned to meet the required maintained average illuminance levels.

Legend

- A1 Holophane LED C.1000lm-4000K - Column Mounted @ 6m (B10)
- BW Holophane LED C.1500lm-4000K - Wall Mounted @ 6m (L10W)
- CW Holophane LED C.2000lm-4000K - Wall Mounted @ 4m (L10W)
- E1 Holophane LED C.1300lm-4000K - Column Mounted @ 6m (L10W) with power fed from a separate circuit from the external lighting feeder pillar

- Existing Lighting Column along Viscous Drive
- Existing Lighting Column to be retained and connected to the existing circuit
- Existing Lighting Column to be taken down and set aside for reuse
- Lighting Column to be reinstalled and reconnected to the existing circuit
- Existing Lighting Column along Argosy Drive
- Existing Lighting Column to be taken down and set aside for reuse

P02	Tender Issue	04.11.2022	5/3/2024
P01	Tender Issue	21.10.2022	5/3/2024

Issued Office

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Client

Columbia Threadneedle Investments

Project

Argosy Drive Unit 1

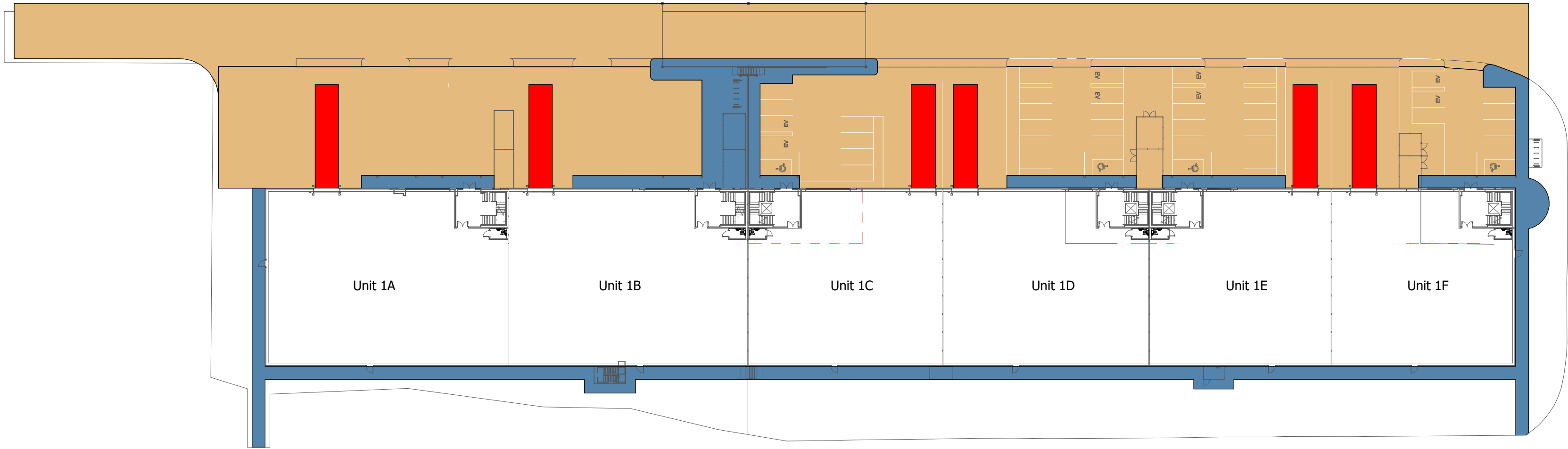
Sheet Title

External Lighting Layout

Model Reference									
B040536-TTE-XX-XX-M3-5-9001									
TTE Project Number	Drawn By	Drawn Date	Checked By	Checked Date	Approved By	Drawn	Scale	Sheet	Subtotal
B040536	JD	04.11.22	JY	04.11.22	JP	04.11.22	1:1	5/3	5/3
Client Project Number	Project	Reference	Location	Specification	Sub	Number	Revision		
B040536	TTE	XX	01	DR	E	9603	P02		

APPENDIX C

C.1 Proposed External Lighting Strategy



1 External Lighting Strategy Layout
1 : 500

- Notes
1. This drawing shall be read in conjunction with the specification & all other relevant drawings.
 2. This drawing must not be scaled. Work to figured and site obtained dimensions only.
 3. The electrical services contractor is fully responsible for all on-site co-ordination of their services with all other services and building structure.
 4. The sub-contractor shall be responsible for co-ordinating the electrical services so as to ensure a neat and accessible installation.
 5. The electrical sub-contractor shall take full cognisance of the CDM health and safety plan, and provide full method statements for all hazardous operations listed therein. Method statements shall also be provided for any hazardous operation which becomes apparent throughout the construction phase.

- Legend
- Loading Bays
50 Lux Average - uniformity ratio 0.4
 - Perimeter Footpaths
5 Lux Average - uniformity ratio 0.25
 - Car Parks and Roadways
20 Lux Average - uniformity ratio 0.25

P02	Tender Issue		04.11.2002	SJ/JY/LM	
P01	Tender Issue		21.10.2022	SJ/JY/LM	
Rev	Description		Date	Rev / Date / App	
Document Control					
Issuing Office					
Tetra Tech Leeds 3 Sovereign Square, Sovereign Street, Leeds, United Kingdom, LS1 4ER Tel: +44 (0)11 3278 7111 www.tetratetecheurope.com					
Client					
Columbia Threadneedle Investments					
Project					
Argosy Drive Unit 1					
Sheet Title					
External Lighting Strategy					
Model Reference					
B040536-TTE-XX-XX-M3-S-9001					
TTE Project Number	Drawn By	Date	Checked By	Date	Approved By
784-B040536	SJ	04.11.22	JY	04.11.22	LM
					04.11.22
					1 : 500
					Suitability
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role
B040536	TTE	- XX	- 01	- DR	- E
					Number
					6301
					Revision
					P02
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