

The background of the entire page is an abstract, low-angle photograph of a ceiling or floor composed of large, dark, rectangular panels. These panels are arranged in a staggered, grid-like pattern. Bright, rectangular light sources are embedded within the dark panels, creating a strong contrast and casting long, sharp shadows. The perspective is looking down at an angle, making the panels appear to recede into the distance.

QODA LIGHT

Introduction

The purpose of this document is to assess the current floodlighting installation to the Lower Yard at the Merthyr Motor Auction site and demonstrate how this installation can be amended to ensure no excessive light spill across the site boundaries.



Google map view of lower yard



MMA Lower Yard site boundary

Existing Lighting Installation

The existing lighting within the Lower Yard consists of 4no. 6m columns. The approximate location of these columns can be seen on the adjacent plan.

Each column has 2no. LED floodlights mounted to a bracket at the top of the columns. All floodlights are currently installed at an angle of tilt of approximately 60°.



Existing lighting columns and luminaire arrangement



Existing lighting installation layout

West and East Boundaries

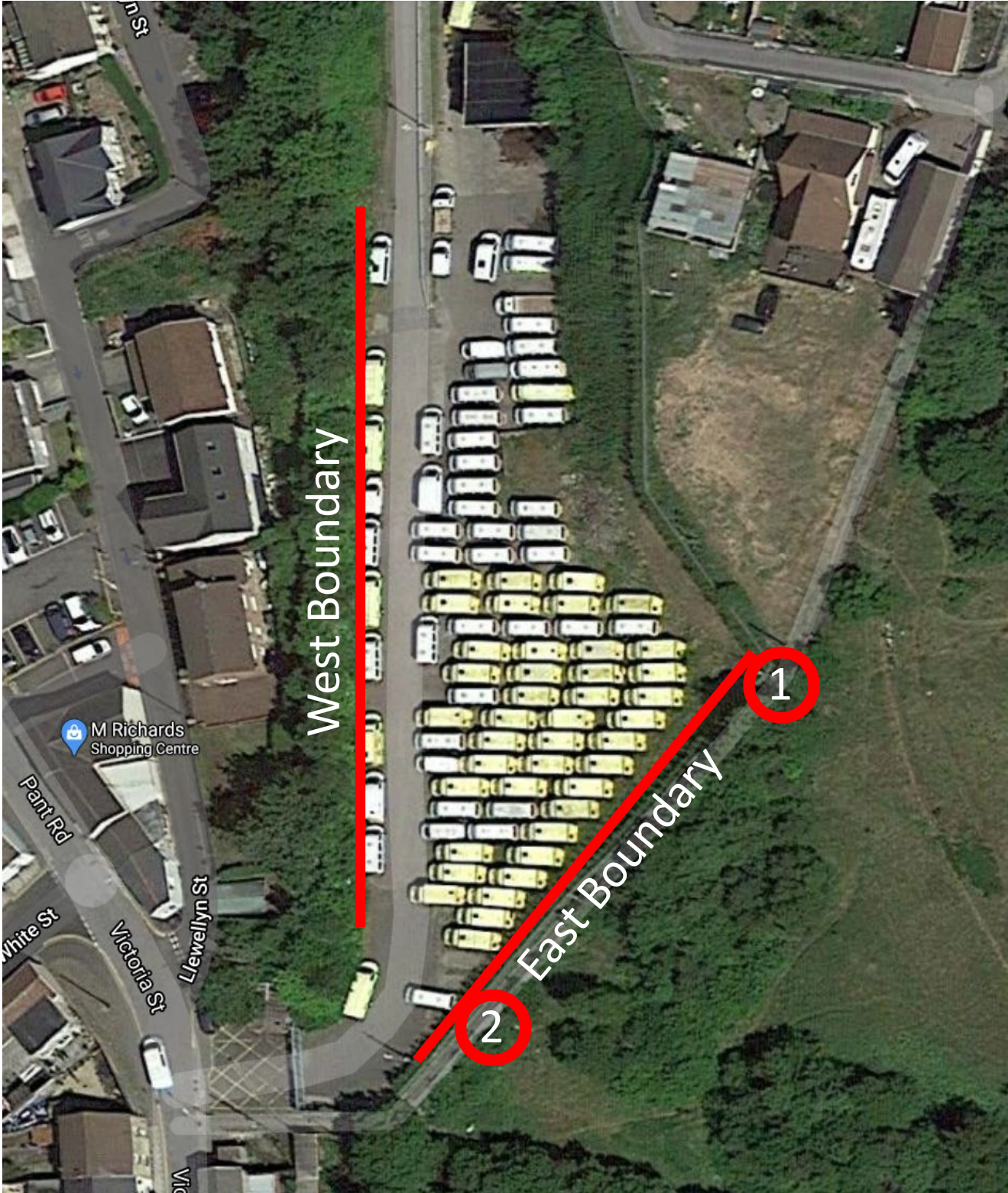
The Western boundary sits behind the column mounted luminaires within the lower yard and borders the rear of the Llewellyn Street properties.

The Eastern boundary of the site adjoins a public footpath leading from Victoria Street to the lane at the rear of Wern Street.

In hours of darkness this footpath is illuminated with a number of column mounted luminaires, located along the footpath itself.



Existing lighting columns along pedestrian footpath



West and east boundary locations

Method of Assessment

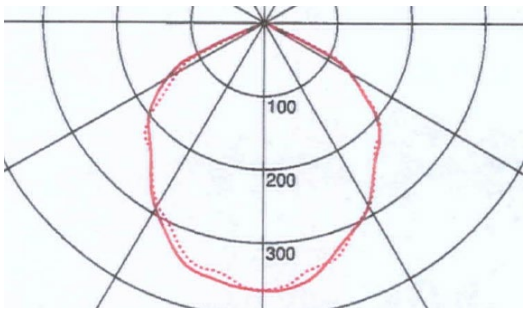
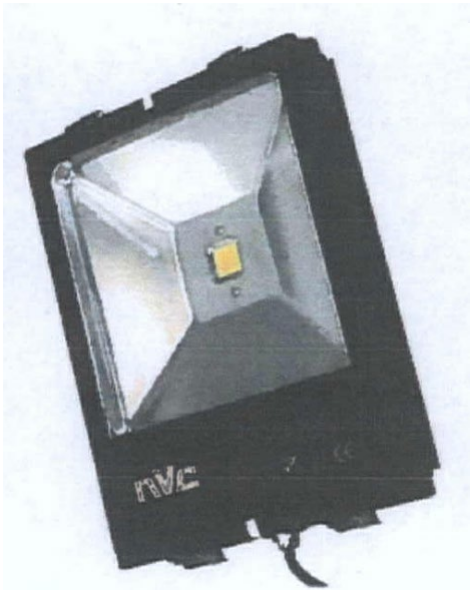
Lighting calculation software was utilised to create a computer model of the site and current installation in order to assess the existing installation and how this could be amended to ensure there is no excessive light spill onto or across the site boundaries.

The luminaire currently installed on site is no longer available and as such the technical data required for the calculation software was also no longer available.

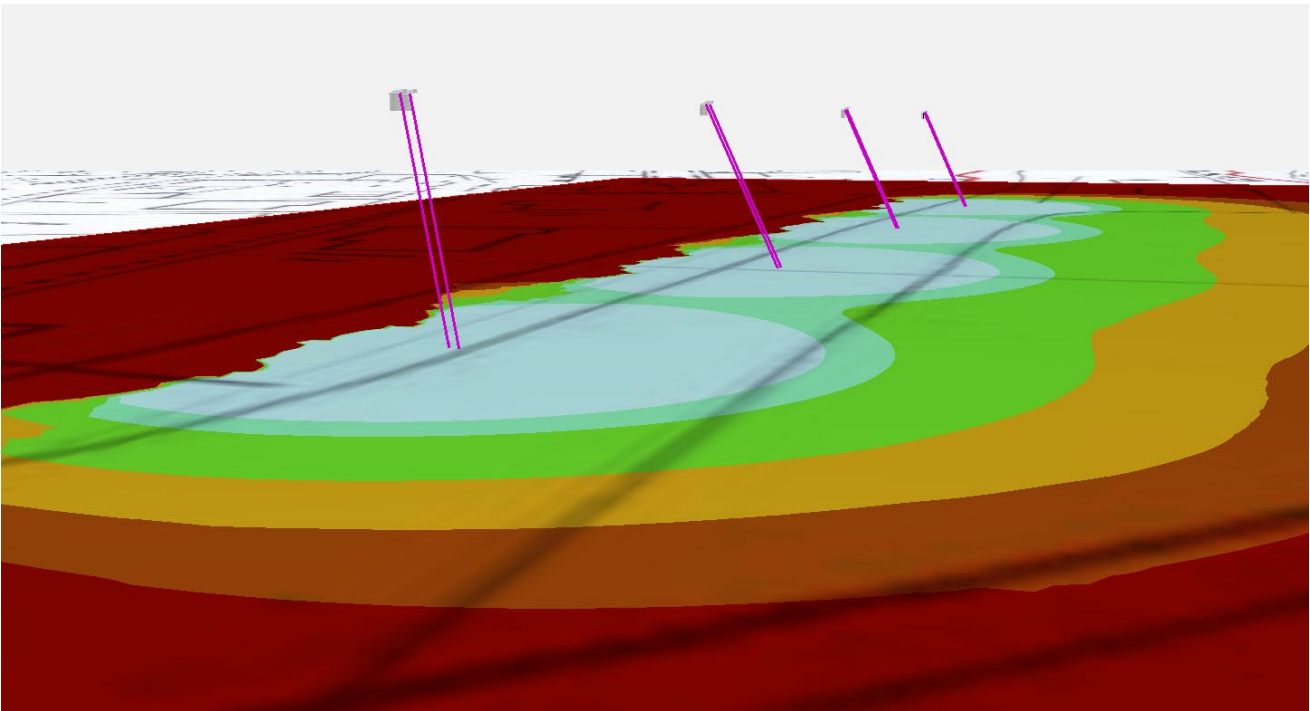
For the purposes of an accurate calculation a luminaire with a comparable photometric curve was selected and the output of the luminaire adjusted to match that of the luminaires currently installed within the Lower Yard.

For the basis of the lighting calculations a maintenance factor of 1.0 has been used as recommended in the relevant guidance. This predicts the worse case scenario, eg when the luminaires are new and initially installed, so before any light depreciation from the LED lamps or the luminaires get covered in dirt and dust.

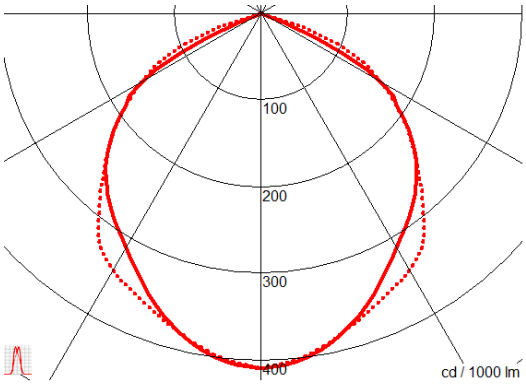
Over time the figures indicated will reduce as the lamps and luminaires all age.



Luminaire installed on site and photometric curve



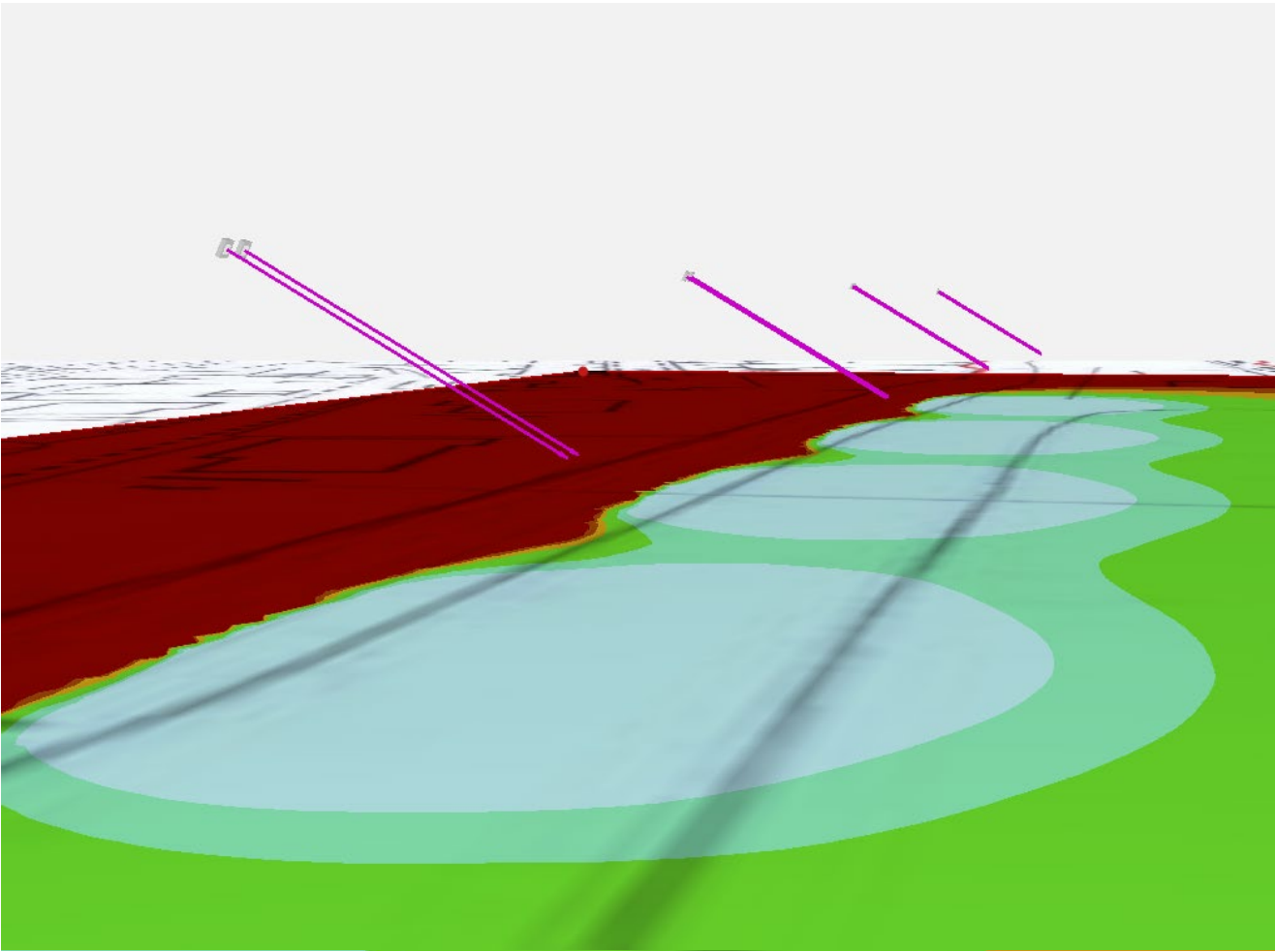
Extract from lighting calculation software (Relux)



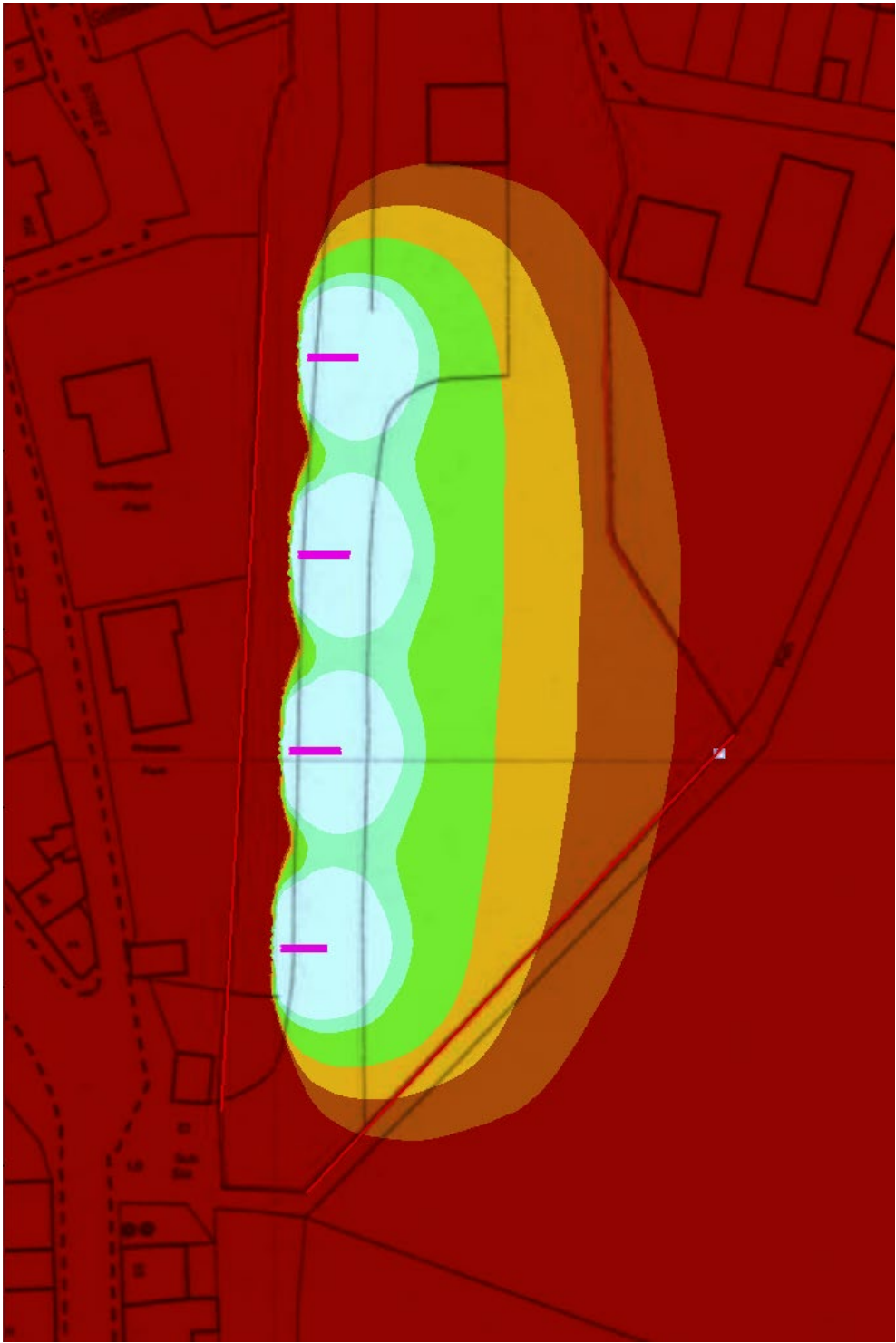
Luminaire selected for calculation purposes and photometric curve

Calculation (**Existing Installation**) – Horizontal Illuminance

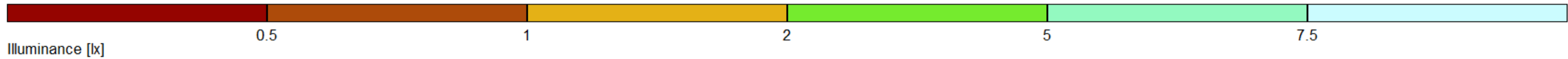
The adjacent calculation results show the horizontal light spill across site boundaries, based on the existing installation.



Extract from lighting calculation software

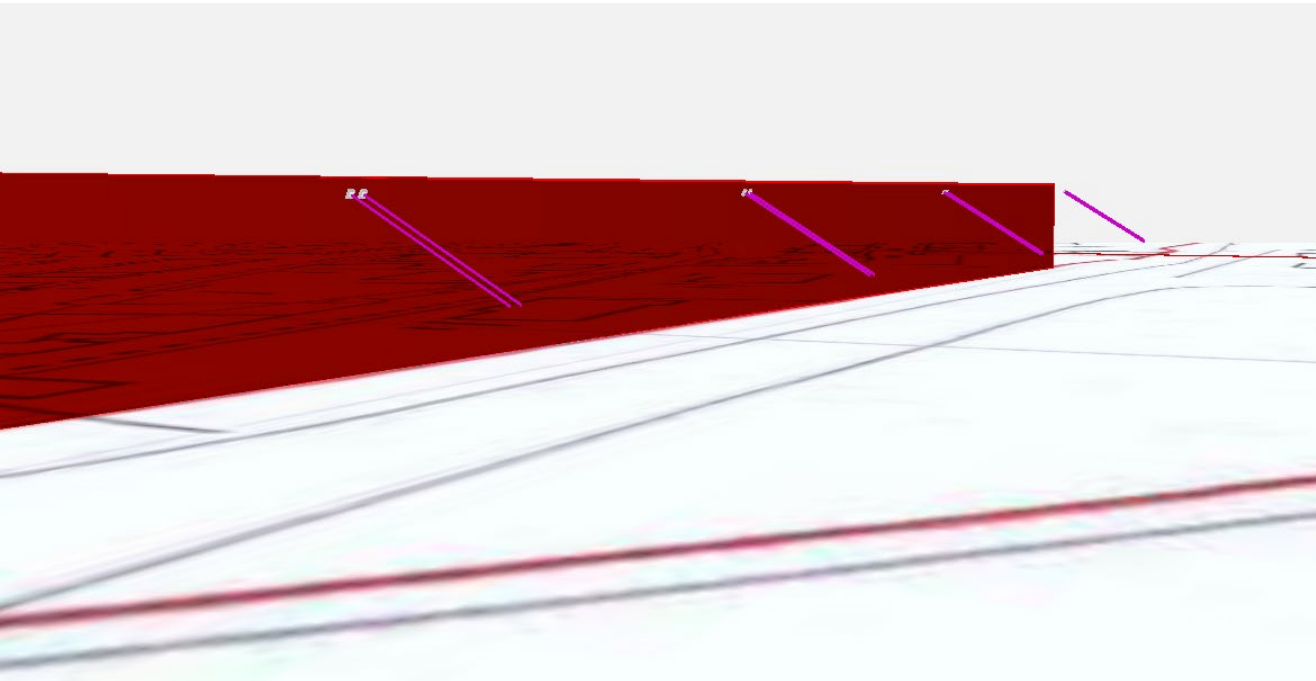


Horizontal illuminance plane



Calculation (Existing Installation) – Vertical West Boundary

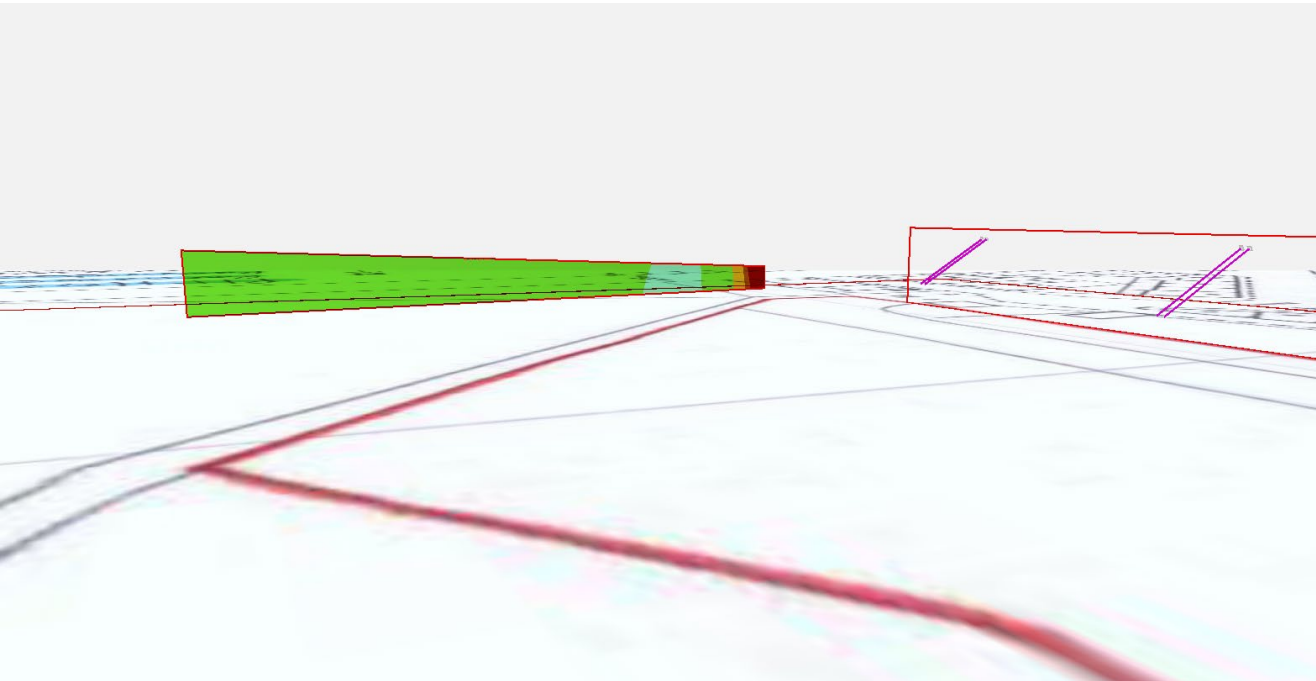
The calculation results for the existing installation currently show no excessive light spill onto the west boundary, due to the installation angle of the luminaires.



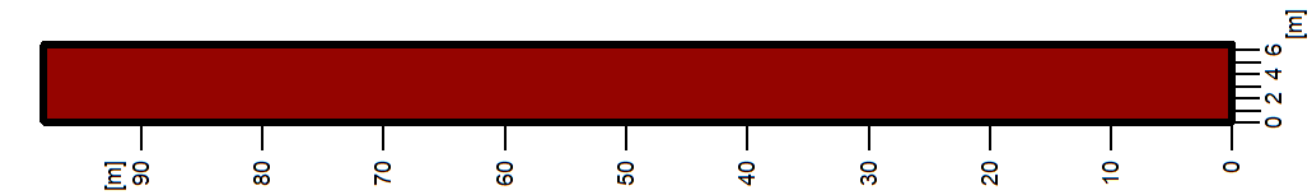
Extract from lighting calculation software showing west boundary calculation plane

Calculation (Existing Installation) – Vertical East Boundary

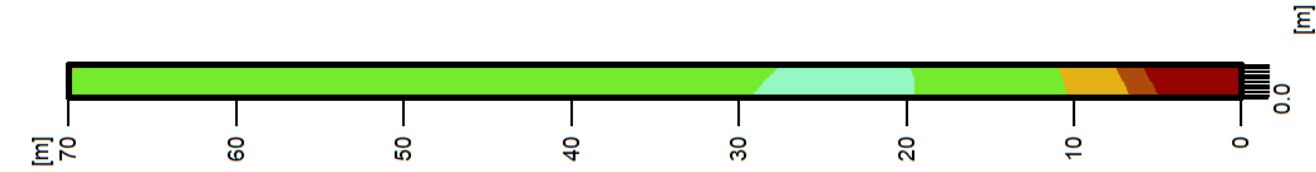
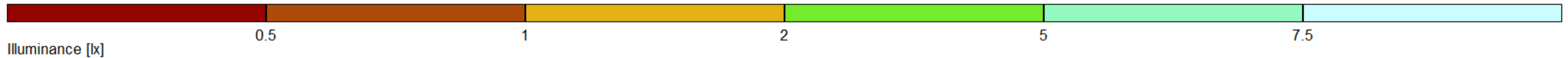
As can be seen in the results below the current installation angles of the luminaires cause a small amount of light spill onto the east boundary, with maximum values just over 5 lux.



Extract from lighting calculation software showing east boundary calculation plane



Vertical illuminance plane



Vertical illuminance plane

Proposed Installation

The proposal is to update the current installation in order to reduce the light spill on the Eastern and Western boundaries.

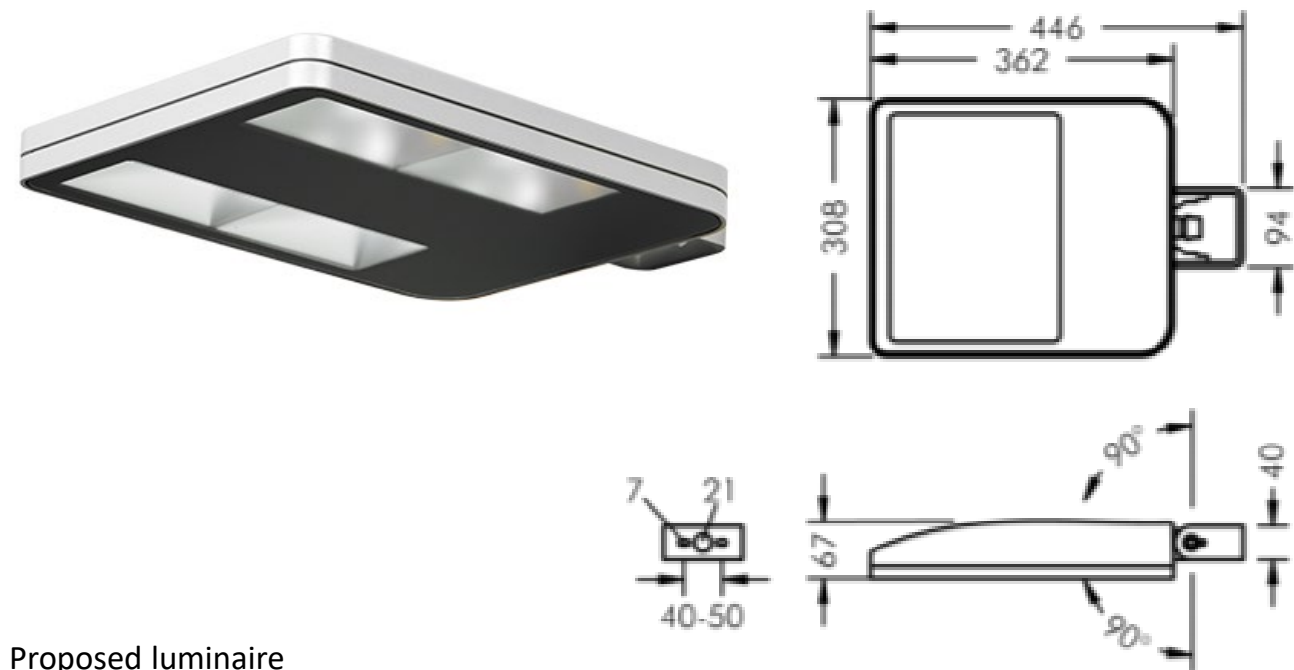
The new design requires the removal of the 8no. existing luminaires and replacing them with 4no. Meyer Monospace luminaires (one per existing column).

The Meyer luminaires have a flat glass and asymmetric distribution and are designed to be installed in a horizontal orientation, meaning there is no direct upward light.

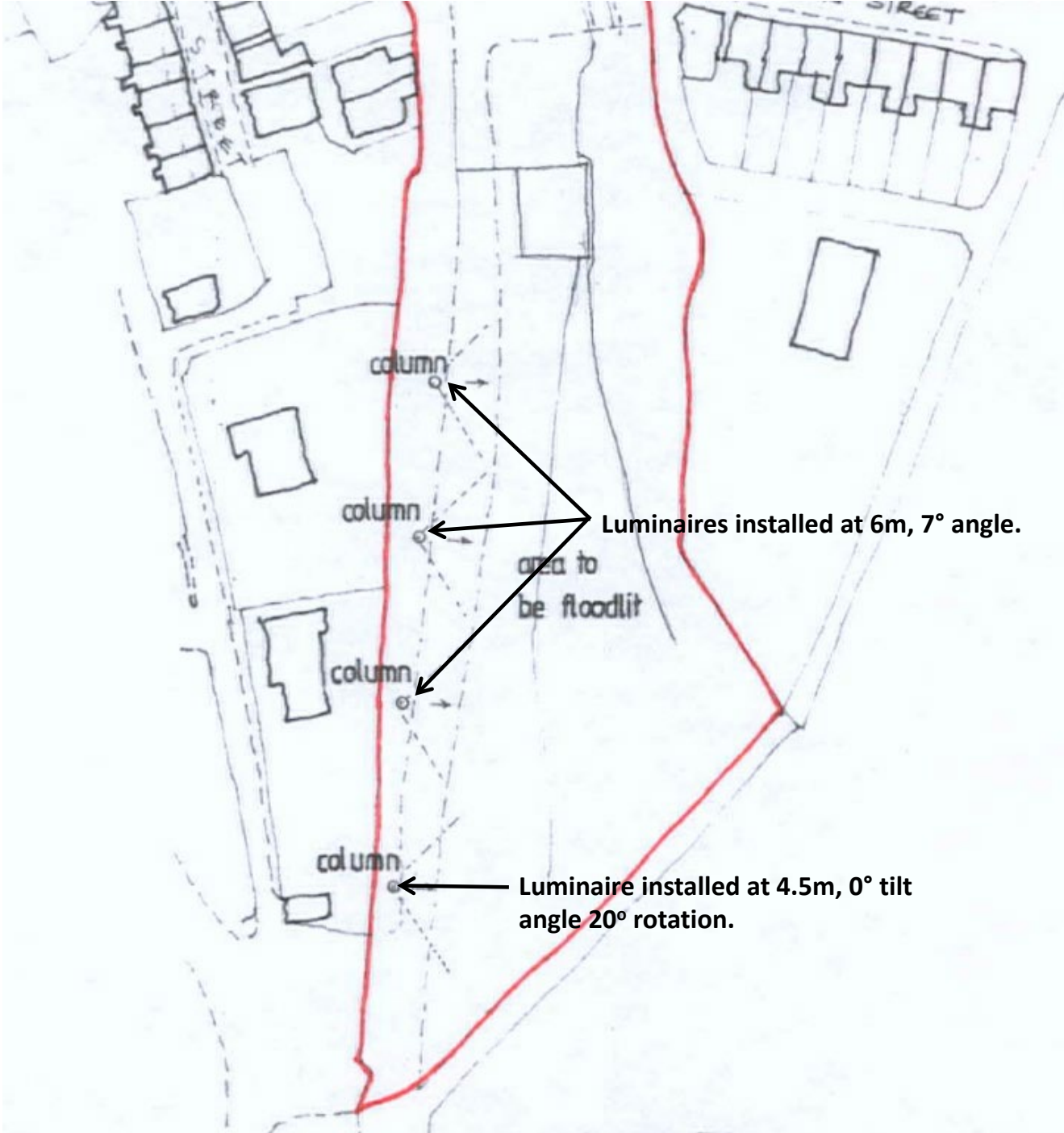
The luminaire uses LED technology which has no UV component and the selected colour temperature of 2700K is a warm white light and this warmer colour temperature causes less impact on bats.

Small installation angles have been applied to a number of the luminaires in order to achieve the best spread of light across the lower yard, whilst ensuring no excessive light spill onto the site boundaries.

In order to achieve the design criteria it is also necessary to reduce the mounting height of the South most luminaire to around 4.5m and rotate it 20° anti-clockwise. It is proposed the existing column could be modified to achieve this.



Proposed luminaire



Proposed installation heights and angles of luminaires

Calculation (**Proposed Installation**) – Horizontal Illuminance

As can be seen in the adjacent calculation results the proposed luminaire and installation angles ensure a good spread of light across the lower yard, whilst ensuring no excessive light spill beyond the site boundaries, with a maximum horizontal illuminance level of 0.2 lux at the hedgerow.

The measuring plane below shows the upward light component and as can be seen, with the luminaires in the proposed arrangement, even with a minimal tilt to improve the distribution, there is no direct upward light from the luminaires.



Measuring plane showing no direct upward light

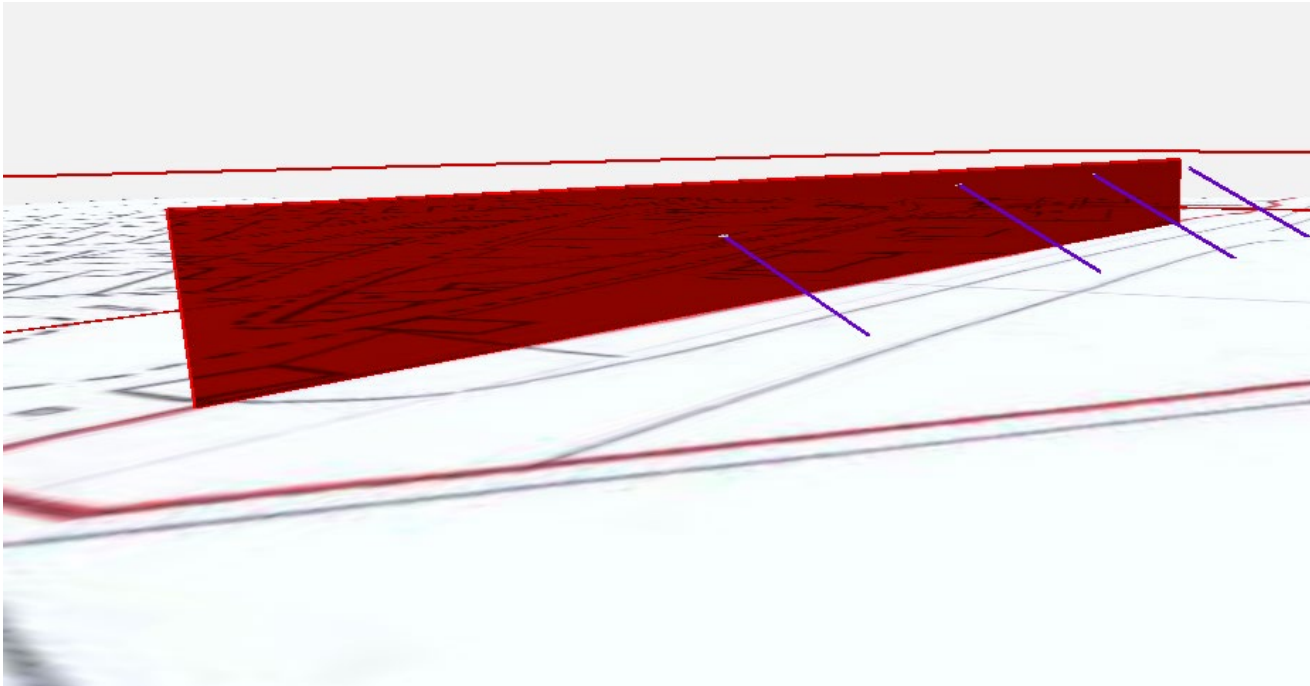


Horizontal illuminance plane



Calculation (**Proposed Installation**) – Vertical West Boundary

The calculation results for the west boundary shows there is no excessive light spill onto the west boundary, with a maximum value below 0.4lux.



Extract from lighting calculation software showing west boundary calculation plane

Calculation (**Proposed Installation**) – Vertical East Boundary

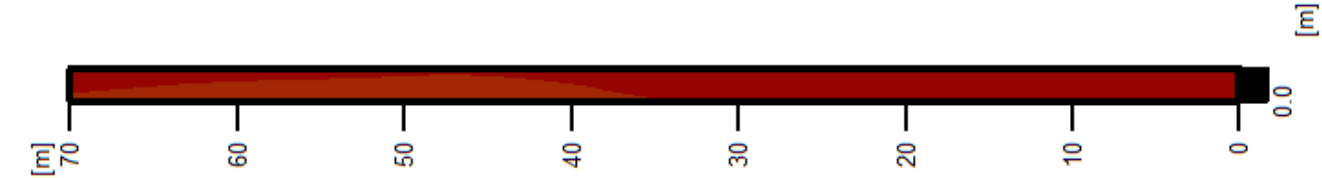
The calculation results for the east boundary shows there is no excessive light spill onto the west boundary, with a maximum value of 0.4lux.



Extract from lighting calculation software showing east boundary calculation plane



Vertical illuminance plane



Vertical illuminance plane

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