

## Lighting Bollard Review February 2021

Our design aims for the lighting are:

- Low level bollard style
- Minimise the number of bollards
- No upward light spill
- No backward light spill
- Directional ground lighting to focus on the Drift
- Restricted lighting period controlled by dawn to dusk sensors linked to a timer
- A design that incorporates PIR switching if this can be achieved with the above criteria
- A bollard design that is appropriate for the environment

This is a very tight specification, we have looked at many options and have found one manufacturer with products that are very close. Arcluce have Klu180 and Gothic180. Many others were looked at but it is worth providing more detail on a selection. The table below tries to provide a subjective analysis on their suitability, the higher the score, the more it was felt that they suited our objective.

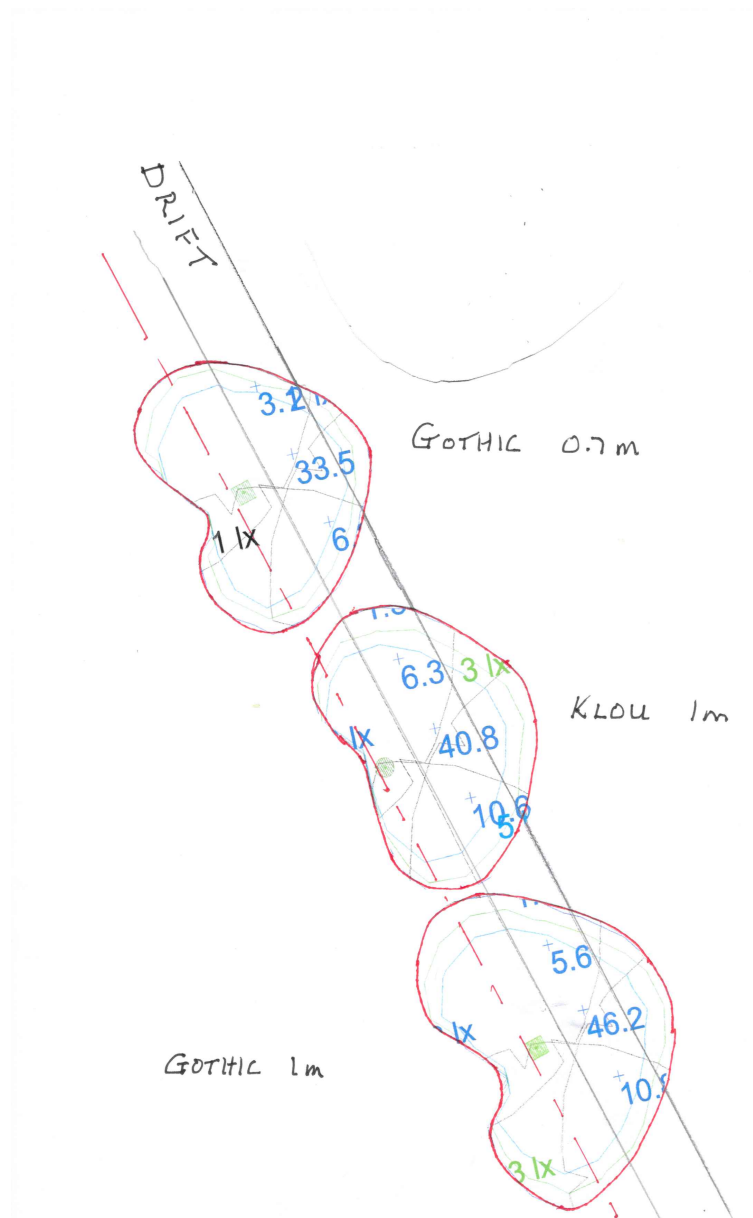
Table 1

	Klu	Gothic 180	Gothic short	Gothic 110	Kubix	Citrine	Pharos
Dark Skies compliance	10	7	7	7	7	5	7
Light focus onto path	10	7	6	5	5	4	4
Backlight	10	5	6	6	6	0	7
Uplight	10	10	10	10	10	6	7
Number of bollards	10	10	10	9	9	10	10
Height	9	9	7	9	9	9	9
Width	9	9	9	5	9	5	5
Visual suitability	8	8	8	9	8	7	6
TOTAL score (80 max)	76	65	63	60	63	46	55

### Light spread diagram

The purpose of the diagram below is to demonstrate the lighting coverage of three bollards, the 1M Klou, the 1M Gothic and the .7M Gothic.

It can be seen that the Klou concentrates most of its light on the target Drift surface and very little backwards beyond the dotted red line. The two Gothic's provide significantly less light on the target and increased backward lighting.



## Klou

<https://www.kingfisherlighting.com/seecmsfile/?id=90>

The Klou was seen installed and the light spread and focus on the target area was extremely good. It would be difficult to find another light that was any better at meeting the dark sky's requirement.

It is available in 3 different heights and lighting plans were looked at to help analyse the difference the height made. The taller the bollard, the wider the light spread over the target area and thus the fewer bollards would be needed. By design it can be ordered to be lit in up to 4x90deg quadrants. We will require two quadrants giving the focused 180 deg light. It is a commercial fixture with a diameter of 180 mm, constructed from Die-cast aluminium and available in a graphite grey or aluminium finish.

Whilst the dark skies compliance was unquestionable, aesthetically they did not score as highly. It was decided to provide a mock up of the installation along the Drift for Councillors to view the overall impact on the recreation ground, this alleviated those concerns.



Installed unit and clearly defined lighting spread



## **Gothic**

<https://www.kingfisherlighting.com/seecmsfile/?id=80>

The Gothic is square in profile and 180mm wide, otherwise the construction is the same as the Klou. The lighting can again be arranged by choice of 4 quadrants, but due to the shape we would need 3 faces lit. This results in the increased off target and backward light.

Whilst it comes on two heights, the lighting shape remains the same, the area covered just changes.

There is a Gothic 110 but this is only 110mm wide, of main concern is whether this will be robust enough for the environment.

## **Kubix**

<https://www.kingfisherlighting.com/seecmsfile/?id=94>

The Kubix is similar to the Gothic but deflects the light differently with not as much directly around the bollard. There is no perceived advantage with the Kubix.

## **Citrine**

[https://uk.schreder.com/sites/default/files/2019-11/Citrine\\_ProductSheet\\_EN\\_0.pdf](https://uk.schreder.com/sites/default/files/2019-11/Citrine_ProductSheet_EN_0.pdf)

This bollard was a suggestion made by the architect, the main concern is that it lights through 360deg and does not meet our criteria. It is also 110mm and less sturdy. Tender responders tell us that this is currently out of production.

## **Pharos**

<https://uk.schreder.com/sites/store5/files/2019-10/Pharos%20Bollard%20-%20English%20Product%20Sheet.pdf>

The Pharos does have the ability to fit an internal shield that prevents backward light but it does not direct the focus of the light downwards to the path, therefore not as dark skies compliant. It is also significantly wider with a diameter of 224 mm.

## **Collingwood bespoke wooden bollards**

<https://www.collingwoodlighting.com/en/oak-bespoke-bollards-triple-led>

In the search for differing styles we looked at wooden ones, whilst visually promising this option, and others similar, just did not seem to provide the technical advantages and the recommended distance between these is 2.5m would result in some 40 bollards as opposed to our planned 10.