Additional Lighting Information

DFL (the applicant's independent lighting consultant) has reviewed the lighting related comments regarding issues of light spill associated with the proposed development (Ref: 21/00087/FUL).

Lighting levels for the service yards has been proposed by Holophane in accordance with BS EN 12464-2:2014, which sets out the minimum recommended lighting levels for outdoor work places and associated tasks requiring lighting. To reduce the potential for light spill and other components of obtrusive light to occur, luminaires that can be mounted flat (I.E with 0-degree tilt) have been proposed), to ensure light is focussed where required for work-place safety. The lighting calculations have included the junctions with Test Lane within them between the application site and Test Lane. Note that Test Lane itself is not lit, although the pedestrian / cycle route is lit with Local Authority owned lighting. It is unlikely that additional lighting will be required for the junctions.

In terms of light spill onto habitats adjacent to Unit 1 and Unit 2, luminaires on the building façade been carefully selected to ensure they emit light in a downward distribution only and contain this to the perimeter footprint of the building, to reduce the potential for light spill onto the east boundary vegetation (between the application site and the M27 motorway), as well as to the south of the application site (between the application site and the John Lewis development).

Vertical light spill shown on Holophane drawing: *P155-2081-Rev H1 Vertical Calcs* demonstrates light spill onto the east boundary would typically fall between 0.0 and 0.4 lux, with the exception of a small number of individual calculation points nearest the service yard of Unit B. However, this demonstrates the maximum adverse scenario when all lighting operates simultaneously. The lighting strategy outlined in DFL technical report: *1753-DFL-LA-001-C* explains in Section 4 of the document that lighting controls would be implemented, to ensure that lighting would be dimmed in areas of reduced operation. Such as, above unoccupied loading bays.

Lighting has been designed to ensure that lighting towards the designated sites (SSSI and SAC) west of Test Lane are unlikely to subjected to adverse levels of increased light spill as a direct result of lighting associated with the proposed development. Whilst Holophane drawing *P155-2081-Rev H1* does not consider the existing street lighting levels, the Local Authority owned lighting appears to provide lighting for the footpaths specifically, rather than for the road itself. This is apparent through the low mounting height and considerable distance that the lighting columns are set-back from the carriageway. Therefore, the light spill levels demonstrated on the vegetation / foliage immediately west of the application site provides an absolute worst case light spill level in accordance with the Institution of Lighting Professional's Guidance Note 08 – Bats and Artificial Lighting in the UK, which states: *'Where absolute darkness is required on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is below 0.2 lux on the horizontal plane or below 0.4 lux on the vertical plane.'*

Considering the adjacent John Lewis Site to the south, Holophane Drawing: *P155-2081-Rev H1 Horizontal Calcs* demonstrates ground level light spill to not exceed 0 lux over an approximate buffer of 5 metres, between Unit 3 and the south boundary of the application site. Whilst the lighting calculations have been unable to take the adjacent John Lewis site lighting into account within the results provided, the drawing demonstrates a 0 lux increase on the baseline when all lighting is fully operational. Again, this does not consider the reduction in lighting levels associated with dimming as outlined within the technical report.

As mentioned above, luminaires have been meticulously selected to prioritise the reduction of obtrusive light, and allow flexibility in the lighting levels across the site so they can be dimmed in accordance with operations. Luminaires have been focused into the site and shielding options have not been modelled in order to demonstrate the absolute worst case scenario on the light spill drawings.

This information has been provided to help clarify the queries raised regarding the proposed lighting approach and the supporting lighting assessment, and to provide confidence to the ecologist that the lighting scheme has been designed in accordance with the necessary British Standards and ILP Guidance. The proposed design allows for the use of lighting controls, which would see post installation light spill levels lower than those presented on the drawings when dimming was implemented. It should also be noted, that the drawings do not take into consideration any shading effects of landscape features or the topography, which would also provide light blocking effects that would give rise to minor reductions in the light spill levels presented on drawings: *P155-2081-Rev H1 Horizontal Calcs* and *P155-2081-Rev H1 Vertical Calcs.*