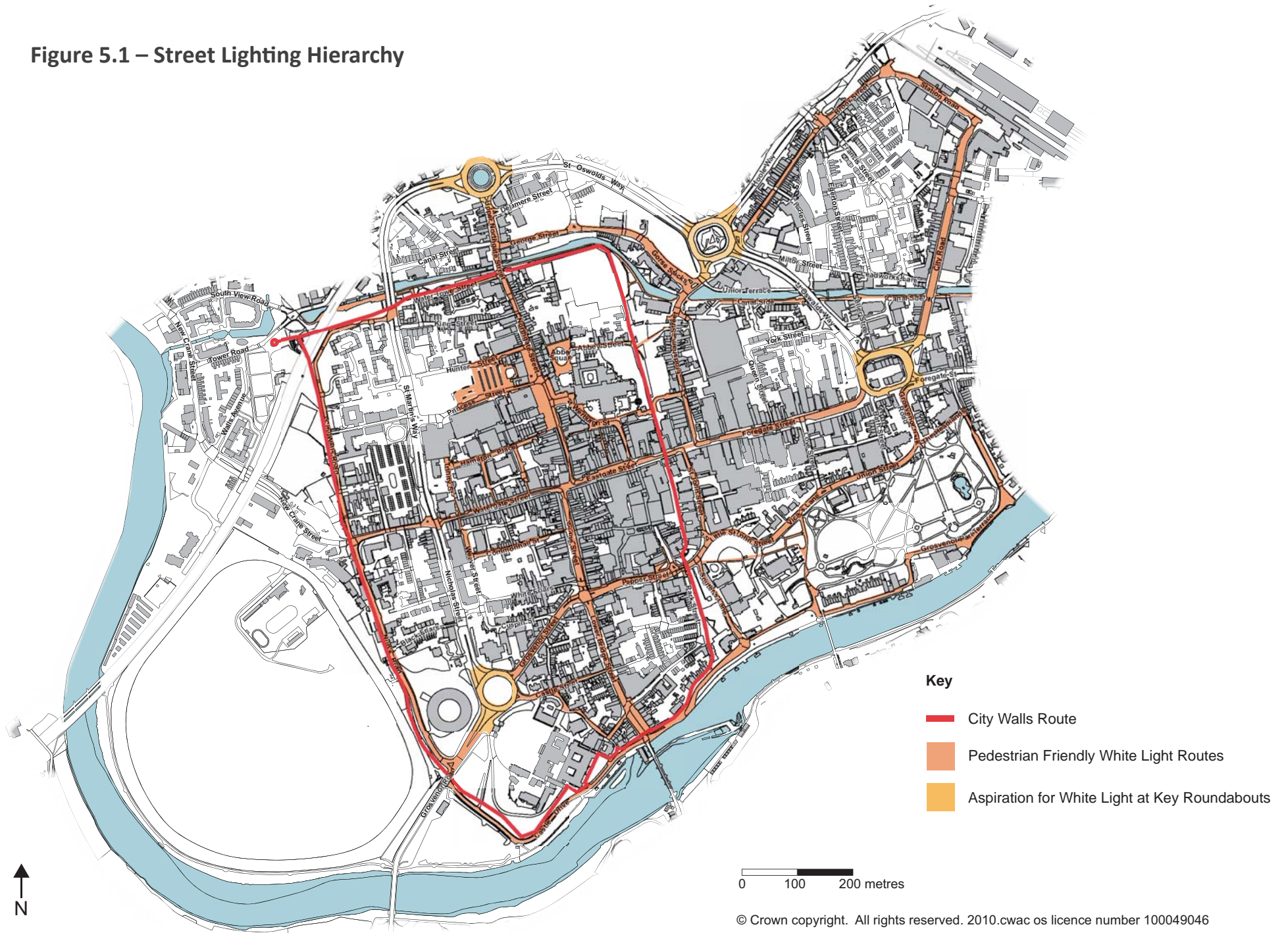


Figure 5.1 – Street Lighting Hierarchy



Lighting Strategy

5.5 ~ Street Lighting Hierarchy...

In order to help improve the environment for pedestrians and redress the balance between vehicles and people, a hierarchy of streets has been identified (see Figure 5.1). The hierarchy has taken into account existing usage and proposals for further development. Night-time use has been considered and the connections between additional gateways and key arrival points, such as car parks, have been integrated.

In order to differentiate between pedestrian and traffic priorities, white light is proposed in pedestrian friendly streets. This will improve the night-time environment for people and in conjunction with coordinated public realm design can act as a signal to vehicle drivers that they are in an area where pedestrians should have a higher priority.

Reasons for the Use of White Light

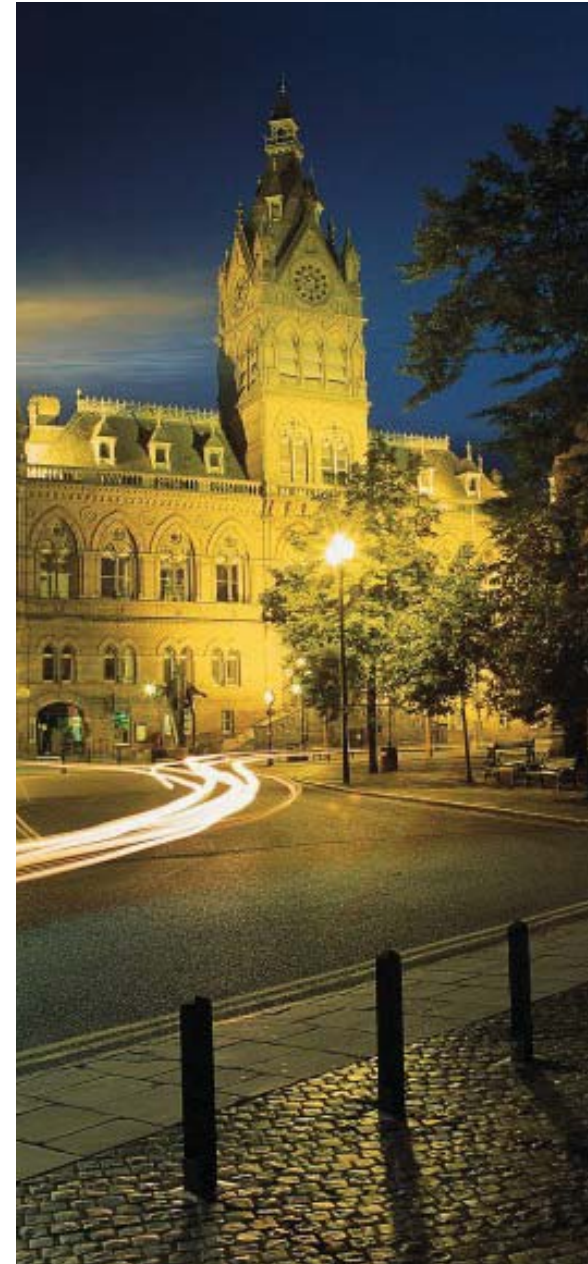
White light has been shown in academic research and through practical experience in the UK and internationally to have tremendous benefits over traditional sodium street lighting.

- The more natural colour and better colour rendering of white light sources (with a colour rendering index of >60) promotes a greater feeling of well being.
- It has also demonstrated a marked reduction in the perception of crime, leading to increased use of urban areas at night and a consequent actual reduction of street crime at night.

- Another benefit of white light in an integrated approach to public realm design, particularly in a heritage city such as Chester, is that it allows the lighting of buildings and architecture to work in combination with street lighting. By using white light in the heritage core of the city the black and white buildings will remain black and white at night. The feature lighting to elements of buildings will blend seamlessly with the spill and reflected light from the street lighting, making the composition of the night-scape more coherent and offering a sensitive approach to this important conservation area.

- CCTV also performs better under white light and operators are more able to identify colours accurately, aiding crime prevention and detection.

For these reasons many towns and cities across the UK are now introducing white light street lighting in one form or another.



The Town Hall, Chester © Alan Novelli Fee

Recommendations Regarding Light Sources

Due to the historic nature of the city and the human-scale ambience it creates, warm white light should be used. In general, the Cosmopolis white with a colour temperature of 2700K and a colour rendering of >60 is recommended, although in some instances a ceramic metal halide of 3000K and a CRI > 90 would be appropriate, along with LED sources up to 3100K.

The 2700K Cosmopolis White lamp has benefits of:

- High lumen output.
- Good lumen maintenance and reasonable maintenance frequency compared to conventional metal halide.
- A colour temperature nearer to that of incandescent light and the light produced by gas lamps, which is appropriate in a historic context.
- A warm white light which will also respond well to many of the materials used on the historic buildings and the walls, showing their colours accurately but still bringing out the warmth of the original colours of these materials.

Cool white light in excess of 3200K would generally not be appropriate for most applications in historic areas of the city. Standard metal halide should also not be used as it can have inconsistent colour, and often a green cast that would be wholly inappropriate.

Figure 5.1 shows the primary pedestrian friendly streets that could benefit from the use of warm white sources. All other streets should be lit using a high quality high pressure sodium source, for example the SON Comfort lamp which has a colour temperature of 2200K and a colour rendering index of > 60. However, where existing schemes are to be replaced it may not be possible to achieve acceptable results with the SON Comfort lamp due to its lower output and in these instances a high quality SON lamp - 2000K CRI >20, should be used.

Lighting of the Ring Road Roundabouts

In order to aid permeability across the ring road and to reduce the negative impact that crossing at the four major roundabouts has on pedestrians, the roundabouts have been classified as gateways. As such it would be desirable for them to be lit in white light providing continuity along the pedestrian routes. It is not currently possible to provide an acceptable technical solution for using white light on these roundabouts, however with the advent of new lamp sources/ technology it may become possible during the lifetime of this document to achieve an acceptable solution. These roundabouts have been included as aspirational for this reason. In the meantime it is suggested that illuminated wayfinding could be used to bridge the gap across these busy roads. Alternatively lighting the pedestrian crossings in white might be an acceptable alternative approach.

The Railway Station Gateway

The Railway Station is an important gateway and the routes along both City Road and Brook Street are important pedestrian routes, they should therefore also be considered for upgrade to white light, linking the station to the city centre.

Other Areas

In the longer-term it would be appropriate for other roads within the walled city to benefit from white light and this could be undertaken as part of normal maintenance upgrade programmes. The lighting to major traffic routes outside of the designated pedestrian friendly areas should remain as sodium, in order to maintain the hierarchy and continue to identify to drivers the difference between traffic and pedestrian friendly routes.

It is acknowledged that there may be technical or other reasons to preclude the use of white light on certain streets and consequently all streets should be considered on an individual basis, using this strategy as guidance. All proposals will be considered by Cheshire West and Chester Council and all technical details regarding lamp source, colour and the rationale behind its choice will need to be submitted before approval can be obtained.



St Werburgh Street, Chester

The Walls

The Roman / mediaeval walls are currently lit using reproduction Victorian heritage lanterns. This is only appropriate insofar as the lanterns are of a traditional, heritage type appearance. Ideally there should be no columns or lanterns on the walls and any lighting should be discreet and preferably invisible by day. Although there is a requirement to provide public safety lighting on the walls particularly on regularly used routes any lighting must not conflict with the overriding requirement to conserve and enhance this feature of international importance.

There are currently proposals in development to replace the columns and lanterns with bespoke luminaires, built into the stanchions of the iron railings running the length of much of the wall. If carefully considered there is no reason why this approach could not provide a very successful solution to lighting the wall effectively and in a historically sensitive way. In the design development it is recommended that prototype luminaires be manufactured and trialled, which meet the following design criteria:

- Luminaires should be louvred to minimise glare. Due to the nature of the problem some upward component of light will be inevitable but should be kept to a minimum. This can be assessed by the mock-up.
- Luminaires need to be robust to protect against vandalism – being compact and discreet will also be of benefit here.

- The light source should be energy efficient, low wattage and long life. LED should be considered.
- The light source should have a warm white colour temperature to coordinate with the other pedestrian friendly lighting within the city centre.

The walls are a scheduled monument and therefore any proposals are likely to need scheduled monument consent.

The Canal

The tow path and roads that run adjacent to the canal have been included as a high priority route. Much of the length of the canal as it runs through the city is already lit. It is proposed that these lights should be upgraded to white light and fitted with flat glass lanterns to reduce obtrusive light for aesthetic reasons and also to minimise impact on wildlife. Lights in the vicinity of water can impact on wildlife, in particular the feeding habits of bats and it is therefore not recommended to extend the canal side lighting beyond what is already there. An assessment of luminaires in close proximity to the canal should be undertaken as it may be appropriate for time switches to be fitted reducing operating hours thereby reducing potential negative impact.



Views across the River Dee of the Old Dee Bridge and City Walls at Bridgegate, Chester