F6 – Street Lighting

Street Lighting	1
New Lighting Schemes	2
Locating Street Lighting	3
Options	5
In the Vicinity of Street Trees	7
Utilities	8
World Heritage Sites	9
Conservation Areas	10
Cycleways and Paths	11
Reducing Street Clutter	12

Amendments:

Street Lighting

Lighting is a critical component in the design of high quality public realm and it has an important role in supporting place-making across the city.

Lighting should be considered as an integral part of the design in any new development, from the pre-application/planning in principle stages through to the detailing planning as well as the road construction consent (RCC) stage, Section Works and listed building consents.

Street lighting can contribute to:

- Improving road safety;
- Encouraging walking, cycling and the use of public transport.
- Discouraging crime and vandalism;
- Making residents and street users feel safe;
- Assisting emergency services to identify locations, reducing response times;
- Permitting the effective use of CCTV during the hours of darkness;

Key lighting principles

- Lighting should be appropriate to context and street function.
- Lighting should illuminate both the carriageway and the footway.
- The height of the street lighting units should be appropriate to the cross-section of the street.
- In general wall mounted lighting options should be considered, especially in city centre areas.
- Lighting columns should be placed so that they do not impact on the available widths of footways.

See "Street Lighting Management Arrangements" and "A Sustainable Lighting Strategy for Edinburgh" 2012 (Appendix A and B) for further principles and details.

Energy Efficient Lighting

Legislation on the use of Energy using or related Products (EuP/ ErP), together with greater awareness on the use, handling and disposal of hazardous materials has driven changes to luminaires used in the street lighting market.

The introduction of Light Emitting Diodes (LED), which have seen rapid growth in their efficacy and more recently their optical control, are now offering energy savings in excess of 50% over conventional lighting.

The rapid growth of the latest energy efficient lamps and the full implications of the EuP/ErP legislation has seen increased costs for maintaining conventional SOX and SON lamps as they are gradually being withdrawn from the market place.

LED lighting is sometimes considered to appear "darker" than conventional lighting. This is due to the fact that it can be more effectively targeted at areas that need lit, resulting in less spillage of light into gardens etc.

There are many benefits of LED technologies, including energy savings and the associated carbon production, greater control of were the light goes, reducing light pollution and the impact on the natural environment, removing glare and a shift to 'white' light which allows better colour recognition.

The City of Edinburgh Council

The City of Edinburgh Council

Relevant Factsheets:

Road Construction Consent (G11)

Street Furniture Layout (F1)

New Lighting Schemes

New lighting schemes should consider:

- Location within street hierarchy which will determine the type of equipment, level and tone of lighting. See **A Sustainable Light Strategy for Edinburgh (2012)** Appendix B for details including column heights;
- Historic research evidence produced to inform the lighting design solution;
- The use of luminaries appropriate to the urban environment and sensitive to conservation areas and the World Heritage Site;
- The family of columns to be used;
- The need to retain, replace or replicate any historic or original street light fittings;
- The mounting height, wall bracket, column and lantern style;
- The source type and luminance of the lighting. In most cases a neutral white light colour will be used within a given range of temperatures; and
- Lighting levels, which should seek to achieve compliant lighting levels with good uniformity that will achieve safety for pedestrians and road users.
- The extents of the development and its interface/tie-in to the existing surrounding area out with the boundary of the site.

Operating System

The use of a Central Management System (CMS) has been included as part of the roll out of energy efficient lanterns across the city and new street lighting must be compatible with this system.

This will allow the lighting levels in streets to be remotely altered via an office computer. This will make this change process significantly easier and more cost effective.

A CMS will also provide an easy mechanism to adapt lighting levels in response to changing demands on the service and changing dynamics of traffic flows and street usage in future years.

Prior to a new site being adopted, the commissioning of the new system will consist of scanning the barcodes which are on each respective unit (the Node/Cut-outs/As built Drawing) and these will be entered into the CEC asset management system when the maintenance period ends.

Maintenance

The relevant lighting classes should be maintained by an appropriate luminaire cleaning and light source replacement routine and accounted for by the designer with reference to local policies. For CEC, this is a 6-year maintenance and clean regime with a design life of L80/B10 or greater at 100,000 hours for LEDs.

Lighting designs must utilise raising and lowering columns where vehicles are prohibited such as on pathways. The orientation of the unit must be considered when in proximity to walls or fences. New assets will be numbered in accordance with CEC guidelines so that faults can be reported by the public, pillar schematics should be provided for ease of fault finding.

The City of Edinburgh Council: LED Lantern

Further Guidance:

- The City of Edinburgh Council: Street Lighting Management Arrangements
- The City of Edinburgh Council: A Sustainable Light Strategy for Edinburgh (2012)
- BS 5489-1: 2013 - Code of Practice for the Design of Road Lighting – Part 1: Lighting of Roads and Public Amenity Areas
- PAN 51: Planning, Environmental Protection
- PAN 77: Designing Safer Places.

The City of Edinburgh Council: Asset numbering plate

Relevant Factsheets:

Road Construction Consent (G11) Street Furniture Layout (F1)

Locating Street Lighting

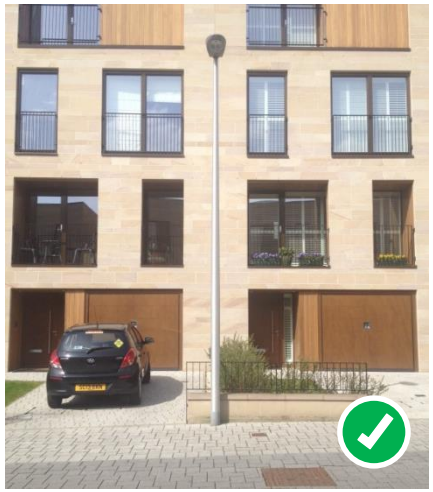
Individual lighting column positions should be checked on site for existing roads, or against the road design for new roads, to ensure that they are feasible, and for aesthetic acceptability.

The major issues that are encountered at this stage include:

- overhead power lines or other hazard;
- underground power lines or other utility services;
- trees, including potential growth and accounting for summer foliage;
- dropped kerbs;
- minimizing obtrusive light;
- locations on property boundaries and away from windows;
- avoiding locations where lighting columns could be struck by a vehicle.
- avoiding locations within 2m of electric vehicle charging points

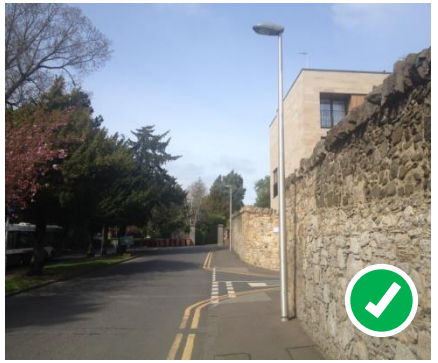
General principles

- Lighting columns should **NEVER** be located in the carriageway space.
- Where possible placement of lighting columns should be staggered, not all on one side of the street, to ensure both sides of the street are sufficiently lit. However single sided lighting may be a good solution in combination with street trees.
- Light columns should be placed at the back of the footway/service strip and either in between properties or in line with property boundaries.
- The placement of the lighting columns must ensure maintenance access, in difficult to reach locations, raising and lowering columns may be used.
- Shared surfacing can bring challenges to the suitable placement of lighting columns. Additional service strips or alterations to the landscaping detail may be required to avoid utility clashes with lighting assets. Normally columns in shared surface areas will require retention sockets.



The City of Edinburgh Council: Good positioning of lighting column between properties at rear of shared space.

The City of Edinburgh Council: Good positioning of lighting column off carriageway and at property boundary.



The City of Edinburgh Council: Good example, with consideration in new development given lighting in relation to junction and tie in with existing roads.

The City of Edinburgh Council: Good positioning with clear service strip area and demarcation line for ownership, also no tree/bushes planted near the columns.

Relevant Factsheets:

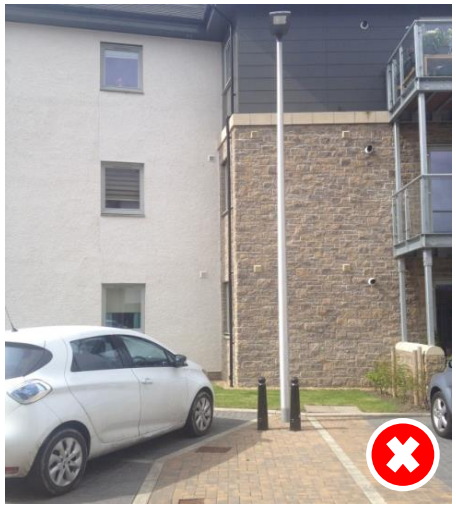
Road Construction Consent (G11)

Street Furniture Layout (F1)

The City of Edinburgh Council: Poor positioning of street lighting, this should never be located in the carriageway space.

The City of Edinburgh Council: Poor positioning of street lighting, it could be placed further back in the footway so that it does not unnecessarily reduce the clear footway zone.

The City of Edinburgh Council: Poor positioning of street lighting, unclear to public/home owners whether the column is located in a service strip of front garden.



The City of Edinburgh Council: Poor positioning of street lighting, unclear whether the column is located on carriageway/footway/shared space and erecting bollards for protection from vehicles has a negative impact on street clutter.

Relevant Factsheets:

Road Construction Consent (G11) Street Furniture Layout (F1) Minimising Street Clutter (P7)

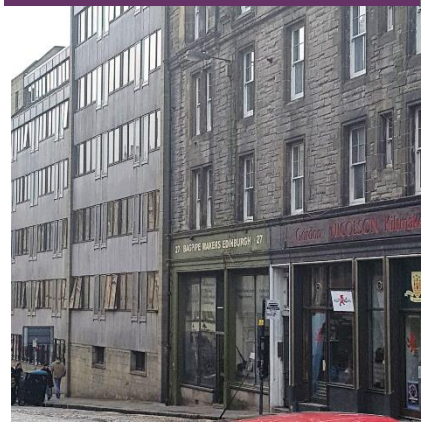
Options

Wall mounted

This is the preferred option, especially within city centre areas, and new developments should accommodate the future provision of wall mounted street lighting.

Wall mounted on Clerk Street

Wall mounted on St Mary's Street



Back of footway

Where wall mounting is not practicable, the lighting should be located at the back of the footway. If the footway includes an additional cycleway and/or grass verge, the set back of the columns needs additional thought and their continuity of positioning along the entire road also needs to be carefully considered to ensure optimum positioning.

At back of footway on New Street

At crossings

At puffin and toucan crossings, careful consideration should be given to the positioning of lighting columns to ensure good lighting of the crossing without excessive street clutter. Consideration should be given to mounting signal heads etc. on lighting columns, especially where separation would narrow the footway significantly.

Located at crossing on Princes Street

All images: The City of Edinburgh Council

Supply Pillars

Consideration must also be given to the location of feeder pillars/supply cabinets.

Pillars should be positioned in the vicinity of the new entrance to developments with additional cabling and ducting provided out with the site boundary for future expansion. Where additional pillars are required within a site, these should be positioned where they can utilise several circuits, typically this would be at a junction, and located away from the front of any new property

Relevant Factsheets:

Road Construction Consent (G11)

Street Furniture Layout (F1)

Options Continued

Front of footway

The preference should always be to locate lighting columns at the back of the footway.

However, in some instances there may be an obstruction here (e.g. a cellar, which is quite common in Edinburgh) or the carriageway width is excessive. In such cases it may be more appropriate to have the lighting columns at the front of the footway.

At front of footway on Jeffrey Street, Edinburgh

Similarly, in Conservation Areas it is sometimes either required, or more appropriate to locate the street lighting columns at the front of the footway.

When locating new lamp columns near the front of the footway, there is a need to balance risk of vehicle impact with the potential for obstructing pedestrian movement.

The advice provided in BS5489-1:2013 on lighting column set back from the footway edge gives high priority to absolutely minimising the risk of a vehicle/column impact, with a recommended set back from the kerb edge of 800mm. However, following this guidance would result in significant obstruction to pedestrians on many Edinburgh footways.

The majority of existing front-of-footway mounted lighting columns in Edinburgh are mounted much closer to the kerb edge, many 300mm or less. Some of these will be for the reasons noted above (eg cellars), some simply because they pre-date specific set back guidance.

When placement at the back of the footway is not possible, the presumption should be in favour of using the set backs from the front of kerb recommended in table 1. The exception to this is where there is considered to a significant risk of collision with the lighting column - in such cases, the set back recommended by BS5489-1 should be adopted.

At front of footway on Calton Road, Edinburgh

Table 1: Recommended lighting column set back from front of kerb when back of footway location is not possible

Speed Limit	Set back[a]
20 mph	0.3 m
30 mph	0.45 m
40 mph+	See note b

Notes:

a) At junctions with side roads, lighting columns on the primary road should be placed at least 800mm back from the *side road* kerb line. (they should be 0.3m/0.45m back from the main road kerb line as appropriate)

b) Lighting columns should not be placed at the front of footways on roads with a 40mph+ speed limit. If, in exception circumstances, they are, there should be a presumption in favour of following the guidance in BS5489-1:2013.

All images: The City of Edinburgh Council unless stated otherwise

Relevant Factsheets:
Road Construction Consent (G11) Street Furniture Layout (F1) Footways (P3)

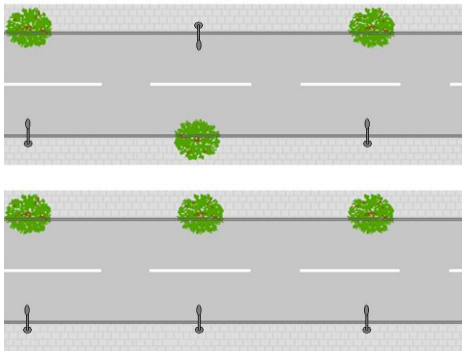
In the Vicinity of Trees

Where possible, lighting columns should not be located close to trees. If this is unavoidable, they should be sited so as to minimise issues such as incorrect photocell operation; impaired maintenance access; and damage to luminaire, column, foundation and electrical cables. The following general principles apply:

- In new streets where trees are to be planted, the lighting should be designed in consultation with the landscape architects and/or by taking into account the landscaping plan or the tree schedule. **Lighting should be shown on the hard and soft landscaping plans**.
- Where there is an alternative location, away from the tree, then utilise this location and reconfigure the design accordingly.
- Lighting columns when first installed should be sited so as not to require substantial cutting back of trees, taking into account the fully mature spread of the tree.
- Careful siting of trees and luminaires can help to minimize interference with the performance and operation of the lighting by the foliage.
- In tree-lined roads, lower mounting heights than usual may be used to bring luminaires below the tree canopy. Consider the impact on the photocell operation.
- It may be possible to locate a column underneath the tree canopy but it must be at least 1m clear above the lantern and the designer must be sure that this space will not be encroached upon at a later date.
- When locating columns amongst trees, lanterns must be clearly visible when standing at the mid point between columns
- Ideally street trees should be located on the opposite side of the street from lighting columns. If this is not possible, they should be halfway between lighting columns with at least 5m clearance between the face of the lighting column and the anticipated tree canopy extent.

Good example of street lighting and trees located within a new development in a common area without conflict.

Example layouts of trees and lighting columns, to minimise conflict.



Further guidance

- Recommendations for trees in relation to design, construction and demolition, including some guidance relating to lighting schemes, are given in BS 5837.
- Lighting columns should be located away from mature and newly planted trees and roots in accordance with NJUG Guidance.

All images: The City of Edinburgh Council

Relevant Factsheets:

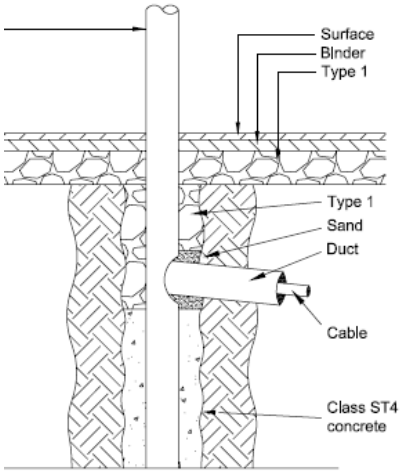
Road Construction Consent (G11) Street Furniture Layout (F1) Street Trees (F5)

Utilities

Consideration should be given to ensure access to existing public utilities is maintained and to ensure that safe access for new utilities and street lighting maintenance can be provided.

General principles

- Lighting columns should be positioned so as to avoid conflict with overhead lines.
- It must be assumed that 'live' services are present underground.
- Cables within ducts shall be laid in footways, footpaths or service strips unless otherwise approved by the Engineer in writing.
- Cable routes to be agreed with CEC street lighting engineer prior to works commencing on site.
- Where ducting is terminated at a column, the duct shall be reduced as necessary by means of an adaptor and smaller duct to ensure the cable is fully protected entering the base of the lighting column.
- Road crossing ducting should have no joints, be positioned directly opposite a street lighting column or pillar and installed at the required depth.



Smaller duct protecting the cable between the main duct and the lighting column.

All Images: The City of Edinburgh Council

Further Guidance

- HSG47 'Avoiding danger from underground services'
- HSG185 'Safety in excavations'
- NJUG publications No. 1, 2, 3 & 4.

Relevant Factsheets:

Road Construction Consent (G11) Street Furniture Layout (F1)

World Heritage Sites

Historic street lighting forms an integral part of Edinburgh's streetscape. Its historic quality significantly contributes to the historic atmosphere of the city, contributing to its overall historic authenticity and integrity.

Design requirements:

- The City of Edinburgh Council: A Sustainable Light Strategy for Edinburgh (2012)

Further information:

- Edinburgh World Heritage: A History of Street Lighting in the Old and New Towns of Edinburgh World Heritage Site (2012)

Images: The City of Edinburgh Council unless stated otherwise

Old town

In the Old Town, the general approach has been to illuminate the wider streets by means of high level lighting fixed to the buildings, with wall-mounted reproduction gas lanterns in the narrow closes and wynds.

New town

In the New Town, the general approach has been to use railing-mounted lamps comprising reproduction oil lanterns on standards made of mild steel (copying wrought iron originals) or (more authentically) cast iron.

Lighting schemes for streets of the New Town should take into consideration the relationship of the position of the lighting to building facades, especially palace frontages, which are one of the most distinctive architectural attributes of the New Town.

For night-time appearance issues, see Conservation areas p10.

Palace frontage, Moray Place (Google Maps)

Railing mounted lamp, Charlotte Square

Reproduction lantern, Old town, North Bridge

Column/railing mounted lamp, Greyfriars Bobby

Relevant Factsheets:

Road Construction Consent (G11)

Street Furniture Layout (F1)

Conservation Areas

The daytime appearance of any installation in a conservation area should relate to the surroundings, so individual appearance, location and scale should all betaken into account in the design. Advice on these points should be sought from the Planning Service at an early stage.

For night-time appearance, the quality of lighting, observed effect, light source colour temperature and colour rendering properties are all important criteria that should be taken into account in the design.

The best lighting effect might be achieved by careful blending of the various lighting measures chosen for individual features within the conservation area.

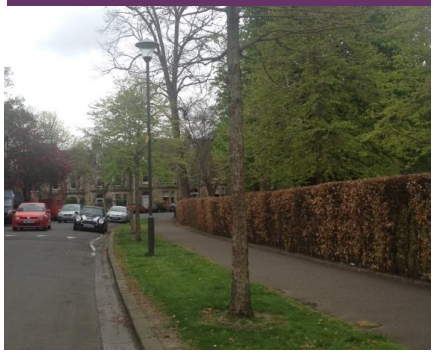
Historic lighting columns

These should be maintained and consideration given to reproductions.

When it becomes necessary to replace equipment following damage or other causes, ideally equipment should be replaced with identical or similar currently approved equipment.

Example of lantern that is currently used by CEC

Street lighting located in grass verge in conservation area



Street lighting located at the rear of footway in conservation area

Street lighting located at the front of footway in conservation area

Images: The City of Edinburgh Council

Relevant Factsheets:

Road Construction Consent (G11)

Street Furniture Layout (F1)

Cycleways and Paths

General Rules

- Street furniture (lighting columns and sign posts etc.) should never be located where they obstruct the path. They should be located out with the path where possible, with a set back clearance of 0.5m preferred.
- Any signs should have a minimum height of 2.5m. Signage should be attached to existing columns where possible.
- If the cycleways are not designed to allow vehicular access, raising and lowering columns should be used for ease of maintenance.
- Luminaires should use cycleway optics for optimum column spacing and uniformity.
- Where a column is to be installed in soft ground, an area of hardstanding should be installed around it where possible. The hardstanding should extend to the path edge.
- Where there are areas of foliage or tree cover, this should be regularly maintained to ensure that the cycleway/path remains well lit.

Combined Cycleways/footways

Where there are combined cycleways/footways next to a road with a grass verge between, it is recognised that there can be a significantly increased width for the lighting column to cover. Therefore, in these cases it is generally acceptable to have the lighting column in the verge.

In these situations, it is vital that the cycleway/footway is provided with an adequate level of lighting.

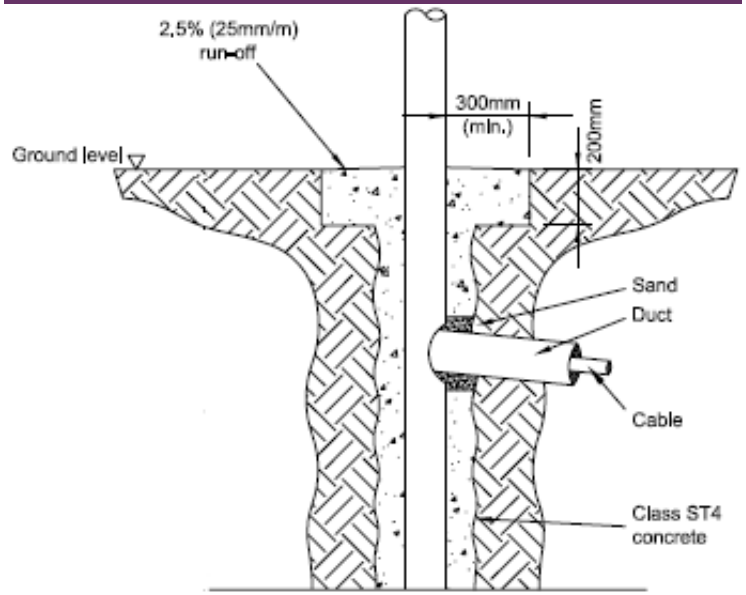
For further guidance refer to the Sustrans document: **Technical Information Note No. 29 - Lighting of Cycle Paths**. It should be noted that LED lighting is generally used for cycleways in Edinburgh, typically allowing a column spacing of 35m.

Hardstanding area for lighting column in soft ground. Note the hardstanding extends to the path edge.

Cycleway clear of obstructions Middle Meadow Walk, Edinburgh

Images: The City of Edinburgh Council

Hardstanding detail for lighting columns in soft ground



Relevant Factsheets:

Street Furniture Layout (F1) Off-street cycle paths (C8) Footpaths (P6)

Reducing Street Clutter

Lighting columns can assist to reduce street clutter as they may be used to support other items of street furniture, for example:

- Crossing controls
- CCTV cameras
- Wi-Fi communications
- Traffic signals

This should only be carried out with the permission of The City of Edinburgh Council Street Lighting Service. No signage is to be placed on heritage lighting columns.

It should be noted that although lighting columns can be used to reduce street clutter, this should not result in signs being overused on a single lighting column as shown adjacent. An excess of signs on a lighting column can increase loading on the column to a unacceptable level.

It is important to note that traffic signage must have a clearance of 2.25m from ground level to plate, and be located away from the carriageway edge to avoid clipping.

Overuse of signs on lighting column

Putting any sign on a lighting column requires permission although it is generally expected that columns can carry signage of total area up to 0.3m^2, larger signs will require further discussion. In all instances consider using the minimum permissible dimensions by the TSRGD 2016.

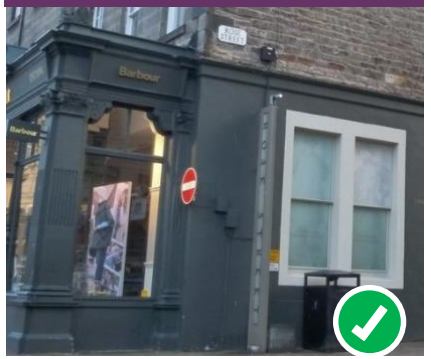
Illuminated Traffic Signs and Bollards

Reducing the number of illuminated sign and bollards on the road network can have a positive impact on street clutter.

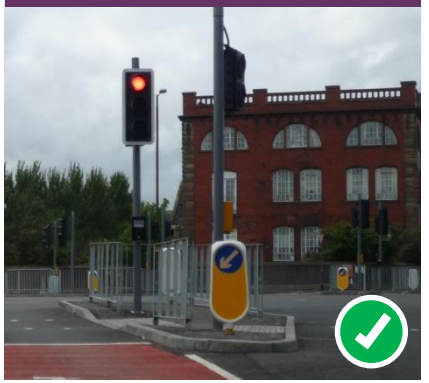
See DfT Circular 01/2016, The Traffic Signs Regulations and General Directions 2016 p.17 for a list of signs that must remain illuminated during the hours of darkness.

Illumination requirements to be assessed on a case by case basis with a presumption in favour of removing lighting and reflectorising signs/bollards.

Low profile LED signage used due to sensitive location, avoiding the need for a sign column, Rose St



Non-lit bollard



Good example of use of a lighting column for signage, Dean Terrace

All images: The City of Edinburgh Council

Relevant Factsheets:

Road Construction Consent (G11) Street Furniture Layout (F1) Minimising Street Clutter (P8)
Signage (F3)

Image References

Street Lighting
All Images: City of Edinburgh Council

New Lighting Schemes
All Images: The City of Edinburgh Council

Locating Street Lighting
All Images: The City of Edinburgh Council

Options
All Images: The City of Edinburgh Council

Options Continued
Jeffrey Street: The City of Edinburgh Council
Calton Road: The City of Edinburgh Council

In the Vicinity of Trees
All Images: The City of Edinburgh Council

Utilities
All Images: The City of Edinburgh Council

World Heritage Sites
Palace Frontage: Google Maps (2017) [ONLINE]. Available at: https://goo.gl/pCXno2 [Accessed 21 March 2018]
Reproduction Lantern: The City of Edinburgh Council
Railing Mounted Lamp: The City of Edinburgh Council
Column/Railing Mounted Lamp: The City of Edinburgh Council

Conservation Areas
All Images: The City of Edinburgh Council

Cycleways and Paths
All Images: The City of Edinburgh Council

Reducing Street Clutter
All Images: The City of Edinburgh Council

Index

Subject	Page
A History of Street Lighting in the Old and New Towns of Edinburgh World Heritage Site (2012)	F6.9
A Sustainable Lighting Strategy for Edinburgh, 2012	F6.1, F6.2, F6.9
BS 5489-1: 2003 - Code of Practice for the Design of Road Lighting	F6.2
BS 5837: 2012 - Trees in relation to design, demolition and construction – Recommendations	F6.7
Combined Cycleways/Footways	F6.11
Conservation Areas	F6.10
Cycleways	F6.11
DfT Circular 01/2016, The Traffic Signs Regulations and General Directions 2016	F6.12
Electric Vehicle Charging Points	F6.3
Energy Efficient Lighting	F6.1
Historic Lighting Columns	F6.10
HSG47 'Avoiding danger from underground services‘	F6.8
HSG185 'Safety in excavations'	F6.8
Illuminated Traffic Signs and Bollards	F6.12
Locating Street Lighting	
At Crossings	F6.5
Back of Footway	F6.6
General Principles	F6.3-F6.4
Front of Footway	F6.6
Supply Pillars	F6.5
Wall Mounted	F6.5
New Lighting Schemes	
Maintenance	F6.2
Operating System	F6.2
NJUG Guidance	F6.7, F6.8
PAN 51: Planning, Environmental Protection	F6.2
PAN 77: Designing Safer Places	F6.2
Paths	F6.11
Reducing Street Clutter	F6.12
Street Trees	F6.7
Technical Information Note No. 29 - Lighting of Cycle Paths	F6.11
Utilities	F6.8
World Heritage Sites	F6.9