Signage can convey information and improve the legibility of a town. However, too many signs can confuse and disorientate.

The first step in improving the quality of signage through the town is to rationalise the existing supply by stripping out surplus numbers and reducing the amount of ‘mounting poles’ by doubling up or utilising buildings and light columns.

The following chapter details principles to ensure signage is clear, concise and well ordered, thus creating a positive image of the town.

The intention will be to ensure that the proposed signage strategy conveys essential information to users, whilst eliminating visual confusion from an over supply of signs.

**General Design Principles**

- Signage should be kept to the absolute minimum and only used to convey essential information.
- Signage should be the minimum size, complying with traffic regulations.
- Signage design should comply with traffic regulations in terms of size, layout and type face.
- Non illuminated signs should be manufactured in class 1 material (high reflectivity)
- Combine signs with existing fixtures such as light columns, existing posts, or mounted to walls and buildings.
- Pedestrian signs, heritage and interpretation panels should have a consistent design style that is recognisable as the ‘Northampton Brand’.
- Signage should be unobtrusive and simple to blend with the immediate context. Signage should not be obtrusive on the street scene, particularly ensuring that views of significant historical buildings are not obstructed.
- Where possible signage should be mounted back to back. If this is not possible the back of signs should be painted the same colour as the pole or street furniture, the preference is black.
- Regular audits should be carried out to maintain only necessary signage on streets and ensure that temporary signage is removed.
- Promote products that have longevity and reduced maintenance liability.
- Ensure that a co-ordinated approach between local authorities and the highway agency prevents an over supply of signage.
Traffic signage and road markings should be kept to a minimum and only used when they are vital to convey information. An over supply of traffic signage contributes to street clutter and confuses drivers. Mounting poles also create obstacles for pedestrians.

Best practice promotes the removal of unnecessary signage within the town centre.

An approach should be taken to implement an audit of the existing signage and road markings within Northampton town centre to identify surplus signage and any areas that are unclear or unsafe.

Street clutter accumulates over time and therefore regular audits should be carried out to ensure that signs are necessary and not detracting from the surrounding environment.

In conservation areas in particular, exemptions from standard requirements and regulations should be pursued to ensure the minimum impact to the character of a street.

**Traffic signage principles**

- Only use signage and road markings when absolutely necessary.
- Promote cycle routes safely.
- Minimise carriageway markings to reduce impact on paving.
- Erect traffic signage on existing street furniture and lamp columns to minimise street clutter.
- Traffic signs should be located to prevent obstruction to footways but still be visible from the carriageway. Where footways are no more than 2m wide signs should be positioned at the back of pavements.
- Where safety issues will allow the heights of signage should be lowered. Lower heights are less visually obtrusive.
- Within Conservation Areas signage should be at an absolute minimum, with no road markings on the streets.
Road Signage

Any new scheme should be designed in general accordance with:

- Traffic Sign Regulations and General Direction 2002 (TSR&GD)
- Traffic Signs Manual
- Existing Traffic Regulation Orders
- Manual for Streets (DfT/ DCLG/ CABE)

For Conservation areas please also refer to English Heritage and the following best practise guidance:

- Traffic Advisory Leaflet 01/96: Traffic Management in Historic areas (D&T)
- Planning Policy Guidance Note 15: Planning and the Historic Environment (ODPM)

Much information in relation to standard styles and sizes can be found on the Department for Transport web site. Flexibility within these guidelines in reference to the size and style of signage can be used within historical areas, to minimise the impact of signage on the public realm. For example, the size of text will be dependant on the speed at which traffic is travelling, signs on roads with lower speeds can be reduced in size and therefore will be less visually obtrusive.

Where possible, signage should share locations with street furniture such as lighting columns, walls, buildings and overhead gantries to reduce visual clutter. Pole mounting should only be used in lieu of mounting to street furniture and buildings. The strategy throughout Northampton centre should be of a coordinated style and approach to make it safe and easy for vehicles and pedestrians to understand.

Design of new streets should begin by removing existing signage and information and adding to it when it is necessary to the safety of users. Where possible road markings should be kept to a minimum, particularly in the conservation areas where road markings should be dispensed with.

Best practice demonstrates that reducing the speed of traffic passing through Northampton town centre will create safer streets, allowing a significant reduction in signage and street markings.

Design layouts should clarify how streets will be used. A change in surface material can slow down road traffic more effectively than a conventional road sign. In most circumstances the absence of road markings and centre lines can encourage vehicles to reduce their speeds.
Street Signage

Street signs should be present at street junctions, and at the end of each road. Signs should be legible and preferably mounted on walls, buildings and other boundary treatments. They should be of high contrast, black lettering on white background to make them legible and the same base style must be used throughout Northampton. Where possible historical street signage should be retained.

Warning Signs

Warning signs are used to alert drivers to hazards on the road ahead. Within Northampton lower speeds will be introduced into the town centre of 20mph, this will allow drivers a longer time to anticipate hazards which should negate the need for signage. The Traffic Signs Manual will recommend when these signs are absolutely necessary and provide guidance on style, size, illumination and location. Where illumination is a statutory requirement the preference will be for reflective surface signs which are less visually intrusive. In instances where this is not possible signs can be internally lit.

Regulatory Signage

Regulatory signage requirements are controlled by the Department of Transport. Signage within Northampton should be the minimum size and number whilst complying with regulations. Alternative options such as markings on the carriageway should only be used when essential.

Controlled Parking Zone Signs

Where controlled parking zones are necessary the TSR&GD 2002 should be followed to provide guidance and inform the location of signage. Signage is required at the entry and exit point of these zones, additional signage is required for each parking bay. Guidelines need to be followed with the principles of minimal street clutter in mind, parts of the guidance are outlined below.

- The design layout of parking bays should take advantage of existing lamp columns and street furniture locations to mount signage and reduce the need for new posts.
- Permit holder and pay and display information should be attached to lamp columns were possible.
- Combine zone entry and ending zones with other signs where possible. Back to back signage should be neatly incorporated on one post.

Above : Examples of good practice signage installation
• Locate pay and display machines sensitively so as not to detract from street frontages.

• Where double yellow lines are present it will be no longer necessary to place ‘At any time’ parking signs.

Cycle Signage

Cycling routes require their own separate signage. For the design of cycle signage the Traffic Signs Regulation and General Directions 2002 should be referred to.

• A uniform signage style and destination strategy should be adopted.

• Signage should be compact to minimise damage and street clutter

• Signage should be marked into paving. Where possible, signage should be added to existing signposts or incorporated into street furniture.

Road Markings

Within conservation areas refer to Traffic Advisory Leaflet 01/96: Traffic Management in Historic areas (D&T). The preferred option is to exclude road markings completely, this should be followed whenever possible, ‘where waiting restrictions are uniform, and traffic conditions suitable, the designation of a restricted zone can obviate the need for yellow lines’. This process would require permission from the Department of Transport.

When it is absolutely necessary to use yellow markings they should be narrower lines of 50mm. The DfT ‘Traffic Signs Manual’ Chapter 5 advises of the statutory colours, prescribed as Lemon or Canary; but in environmentally sensitive areas primrose or deep cream may be a preferred alternative to the brighter colours conventionally used.

Centre-line markings should only be used at the approach to junctions or if road safety issues exist. Stone inlays could be used as an alternative to markings.

Temporary Signage

Temporary signage is discouraged. Signage should be approved by the council before it is erected. When signage has been approved it should conform to regulation and be of a minimum number and size. When signs are no longer required they should be instantly removed to maintain minimal street clutter.

Above left: An example of surface signage. Above right: Alternate treatment of signage using inlays in the carriageway

Above: A subtle alternative to road markings
Wayfinding

- The unique selling point of ‘Making Northampton the most walkable town in England’ will require a strong wayfinding strategy to ensure its success.

- Where possible public art and street furniture should integrate with wayfinding information to create interest within the public realm and reduce the need for additional signage thus reducing street clutter.

- Developing a wayfinding strategy will allow shoppers, visitors and residents to explore different routes and encounter new areas of Northampton that they may previously have been unaware of. Information at key nodal points will help users navigate the town. Particular routes within the town centre that should be highlighted include the ‘Cultural Mile’ (See Section 2: ‘Art Strategy’), key shopping streets such as Abington street, other key tourist and cultural trails and links to the parks and riverside.

- An integration of public art and information points will inform the public and direct users through the town centre. A unique wayfinding strategy for Northampton will help to create a distinctive feel for the town centre and highlight its best assets.

- The legibility of the town will be crucial in directing people to important destinations and delivering an identity for the town.

- The creation of new key landmarks and buildings can also improve visitors legibility of the town. Developing key nodes with easy to find features can be an instrument in revealing the history of the area and encouraging people to explore.

- A good strategy will make the town centre inviting and invigorate the pedestrian experience.
Pedestrian direction and information signs

Signposting destinations which generate economic activity are extremely important to the future economy of the town. The local authority should have an overarching control over the location signage. This will ensure that a consistent style of signage is carried through Northampton and an overall coordinated approach is achieved. While a wayfinding strategy is an important tool in informing the public, too much signage information will contribute to street clutter, to counteract this signposts must comply with criteria set out below:

Design Principles for Pedestrian Signage

- Standard plate design and type size.
- Combine destinations on one sign to reduce the number of signs erected.
- Keep signage to a minimum to reduce street clutter
- Where possible mount signage on lamp columns, street furniture or walls. It is also possible to integrate destination information into paving and public art works.
- Remove any confusing or unnecessary pedestrian signage.
- Signage should be located at important public transport interchanges and other major access points for the town.
- A bespoke signage strategy is encouraged, styles should comply with traffic regulations.

Criteria for destinations:

- Destination need to attract a high visitor numbers on regular basis.
- Place of public importance, considered to be an amenity to the community.
- Destination in general need to be a public facility.
- If the facility attracts a large number of people from outside the local area.
- Transport Interchanges

Some examples of buildings that will require destination signage include museums, theatres, sports facilities, public transport interchanges, hospitals, markets, libraries, parks, tourist information centres and public toilets.

Examples of signage for pedestrian information, interpretation and direction
Northampton should not only rationalise the signage that is presently in situ within the town centre, but ensure that future signage throughout the town conveys information in a clear and effective manner to all street users.

When signs are installed to excess they become clutter on the street scene. Clutter as has been described is confusing and can develop into a hazard for street users.

Accumulation of signs has grown across Northampton town centre to serve individual functions or purpose. By this, regard to the overall appearance, consistency, and order has been lost resulting in a cluttered streetscape. It will be recommended that regular audits of the street signs are carried out to identify surplus signs and ensure minimum levels of signage.

Proposed highway signage associated with new development should be controlled by the highway authority. Bonds will ensure that additional signage created as a result of development is paid for by the developer and not the local authority.

**Reduction Methods**

- Remove redundant signs
- Rationalise signs into one unit
- Combine signage with existing street fixtures. For example, existing posts, columns and structures.
- Replace shorter posts with taller signs to combine signs
- Combine road signs, particularly at road entries
- Erected signs should be at least 2.1 meters above ground level on dark poles to recede into the streetscape. (Extended to 2.5 within cycleways)
- Signs should be neatly fixed to structures / buildings. Signs should be attached to posts using fixings that match the colour of the post.
- Remove the backplates to traffic lights and combine with lighting columns
- Low level signs should be mounted in hooped frames (1.0-1.5m)
- Illumination of signs should be kept to a minimum with greater use made of the reflective materials.
- Reduce yellow lines substituted where possible with small signs or area wide enforcement zones.
- At junctions along carriageways with widths less that 5m, certain listed signs are only required on one side of the road, subject to certain restrictions.

Top : A typical street scene with street clutter.
Bottom : The same street scene with the clutter removed.
Guidance

- Traffic Signs manual: This guidance covers topics such as regulatory signs, warning signs, road markings, the design of traffic signs and signs for temporary situations.
- Northampton Borough Council’s Street naming regulations
- The design and use of Directional Informative Signs (LTN 1/94) DTp 1994
Introduction

Trees in towns contribute enormously to physical and psychological well-being, yet the town is a hostile environment for trees. Their roots are likely to be cramped by buildings and street foundations, and constrained by underground cables and pipes. They face damage from vehicles and vandals, and contend with air and soil pollution. Surrounding pavements typically allow neither air nor water to reach the roots that extend below them.

Tree planting locations must consider light and shelter requirements and coordinate with underground services to promote successful establishment.

Trees should be protected and located off the main circulation route. Survival rates are also further enhanced by planting rows of trees in extended pits rather than in individual holes. If sufficient space cannot be found, it is better to forego trees altogether.

Tree grilles maintain the continuity of paving around trees, protect and aerate tree root systems and allow rainwater irrigation. Tree grilles are also an important visual design element. When trees are planted they should be high quality semi-mature specimens, placed in locations and conditions where they can flourish.

Undertaking planting in the town centre in a strategic and thoughtful manner will positively contribute to the delivery of a unique and high quality public realm. This can be enhanced through the inclusion of temporary arts and planting displays that are seasonal or related to particular festivals, if delivered with skill, sensitivity and style.

The following describe the aspirations for the inclusion of new trees and soft landscape.

- Trees should only be planted where appropriate, to give a positive contribution to the townscape
- Avoid using soft landscape as a cheaper alternative to hardscape,
- Avoid planting where a tree could obscure important facades, signals or visual linkages and desire lines
- Care should be taken when placing trees, for example understanding the location of underground services.
- Avoid using trees where they may impact upon natural surveillance
- Combine hanging baskets onto existing street fixtures or wall brackets rather than introducing new poles or stands.
- Where possible plant trees at ground level and avoid constructing permanent planters.
- Tree planting can be used as a way of reducing traffic speeds.
- Planting can be used to visually soften the appearance of the urban environment and frame important street corridors through avenue planting.
- The trees should be fit for purpose and be mature in size to deter vandalism.
‘Trees are seen as positive additions to towns and are seen to significantly reduce the stress of urban living’

Trees for Living

Opportunities for tree planting and soft landscaping will be introduced to new spaces and squares within Northampton. There are currently limited numbers of trees and soft landscape planting throughout the historic town of Northampton.

Although the compact nature of the townscape was not intended to accommodate tree planting along many of the streets, historic precedence shows a concentration of tree planting within the open squares and spaces.

Streets should be enhanced by pruning overgrown trees or the removal of inappropriate planting.

Cooperation between arboriculturalists, highway engineers, landscape architects and maintenance will improve the range and quality of street trees proposed for Northampton.

Design Principles

The ‘greening’ of Northampton’s environment should be carefully considered and executed to protect the visual quality of the architectural heritage as well as ensuring that the planting survives. The compact medieval townscape means that many streets are too narrow and therefore not conducive to tree planting whilst others such as Abington Street will greatly benefit.

Selection of tree species should remain flexible but thought should be taken to their suitability within the town. Specific consideration should be made to species that have successfully established and are already thriving within the existing urban environment of Northampton.

Existing trees and vegetation within the town should be preserved and maintained if they add value to the street scene.

The following principles should be considered when contemplating planting:

- Trees should provide for the functions of enhancement, focus and or intimacy. They should positively contribute to the quality of space that is being designed and should not be incorporated arbitrarily.

- Trees can be used to improve the scale and proportions of the very wide streets and spaces. (A)

- The overall aim should be for quality
rather than quantity, achieved through the creation of strategically located planting and the creation of ‘green oases’. Planting may be inappropriate in many locations. Where it is undertaken, it should have real impact, in terms of its scale, location and nature.

- Trees can be used to demarcate routes and highlight and strengthen key transport corridors with boulevards and avenues. (B).

- Reduce noise levels along road corridors, acting as a sound barrier within highly trafficked areas (C).

- Provide shelter from wind, rain and sunlight. (D).

- Demarcate the periphery of a space or the threshold between spaces to create an edge treatment.

- Improve the micro climate such as air quality and to help to neutralise carbon emissions.

- Improve the urban ecosystem by supporting a variety of wild life.

- Trees can help to screen poor or blank facades or frame good views (E).

- The sustained health of a tree should be considered when planting in an urban environment. A tree should be in a position where it can survive in its environment and flourish. Large specimen trees are less vulnerable to vandalism.

- Planting should not be located where it can obscure important features and facades or traffic sight line requirements. Planting should not interfere with pedestrian circulation or desire lines.

- Consideration to future tree growth and choice of species will ensure the correct tree in the correct location.

- Safety and security should be addressed in the placing of trees within the public realm, with particular relevance to CCTV and lighting.
Guidelines

- When specifying trees their appropriateness, rooting requirements, eventual size, form, location and habit should be considered.

- Consideration should include the amenity value, aesthetic appeal and seasonal diversity of a tree.

- The choice of species should be influenced by context.

- In areas where the street has strong geometry and formality the arrangement of the trees should echo this.

- Trees should be planted directly into the ground allowing a flush treatment across the floorscape, which prevents obstacles to movement.

- Street trees should be at least semi-mature with a girth no less than 30cm.

- Trees planted directly into the street must have a clear stem of 2.1 metres or a canopy reaching ground level.

- Ensure that there is an ongoing maintenance programme for trees within Northampton town centre.

Tree Pit Objectives

With the emphasis on high quality tree planting, the detailing of the tree pits will be fundamental to success. Tree pits should be as large as possible. Ideally trees should be planted in groups, with the tree pit forming a continuous trench or island of soil. It is also preferable that trees should be planted in uncontained, free draining tree pits. Other key elements include;

- Incorporate a drainage layer / soakaway to prevent water logging.

- Tree pits should contain a suitable growing medium such as Amsterdam urban tree soil by Heicom U.K. that can accept traffic loading.

- The tree grille should be supported so that the surface paving is not bearing down on the tree soil, leading to compaction and potential subsidence.

- Future maintenance should be considered when specifying tree grilles so that litter will not collect in the slats or interfere with wheelchair and push chair users (maximum gap 13mm).

- Watering of trees should be via an in situ inlet pipe for manual watering or and automatic system. This will improve the efficiency for watering large number of trees during maintenance operations.

- Care should be taken during the mobilisation and planting of trees to prevent damage to the canopy, root system and trunk.
Street Trees and Planting

- Public utilities can influence the location of trees within the public realm. Where finances allow, the grouping of services in ducts within a common trench should be considered.

- Root barriers should be used as an aid to restrict the spread of the root system into areas where they could damage buildings/services/public realm.

- Tree anchor system should be used to support the tree. Depending upon ground conditions various options are available such as Deadman anchors, concrete railway sleepers or kerbs used to stabilise trees in compacted urban situations. Platipus tree anchor systems or similar approved could be used within softer grounds.

- Detailed guidance that focuses on the management of trees within the town centre will be a future recommendation. This will cover pruning, maintenance regimes and cycles, audits for the life span of proposed and existing trees, and planting cycles for the replenishment of new stock to ensure that all stock is protected.

- A standard approach for the appearance and installation requirements for trees will be required for underground guying, irrigation, root ventilation, protective guards and grilles.

Tree Pit Details

A. Proposed Tree
B. Tree to be planted to nursery mark decomposed granite fill around
C. Watering inlet incorporated into tree grille.
D. Max. 12mm drainage slots
E. Tree Grille
F. Paving construction to engineers specification
G. Backfill with approved tree soil, laid and compacted in 300mm layers
H. Tree anchor system
  I. Permeable geo-textile layer
J. Clean pea gravel. Free draining base
K. 100mm diam perforated plastic land drain in geo-textile sleeve connected to surface water drainage system
L. Connection to surface water drainage system.
M. Base of pit to be broken up to remove clay smearing and improve root penetration/drainage.
N. Outlet connection
O. Root anchoring Matt
P. Root barrier as required
Tree Specification

Consider the space for which trees are going to be specified by referring to the following factors.

**Form:**

- Canopies should display a well kept appearance. The canopy and how it will impact on a street or space is an important factor when choosing a tree.

**Size and Scale:**

- Individual street trees should be specified as semi-mature specimens. A more robust tree will stand up to the impact vandalism.
- ‘Streets for All’ and DDA guidance recommends that the stem clearance should be a minimum of 2.1 metres. This will ensure clear views across desire lines and main routes, avoiding injury to the pedestrian.
- The future height and width of a tree should be considered to ensure compatibility with the scale of a space at full maturity.

**Canopy density and leaf size:**

- Larger trees should have lighter and more open canopies so that light can penetrate through to the street below. Smaller trees provide the opportunity for a denser canopy.
- Leaf Litter will be a maintenance and health and safety consideration. Larger leaves can become a slip hazard in wet conditions, whereas smaller leaves break down more easily.

**Maintenance and Training:**

- Maintenance regimes should incorporate a programme for the removal of seasonal leaf collection.
- Some tree varieties may require a more intensive maintenance regime, in relation to pruning and leaf collection requirements. This should be considered when specifying a tree.
- Some tree canopies may require more intensive maintenance to retain a specific shape or style. Pruning and pleaching maintenance implications should be provided for trees with specific needs.
**Street Tree Types**

**Acer Platanoides ‘Columnare’**  
Slender column-like tree of medium size, branches grow upwards, 16-20m high 4-5m wide. 15cm wide dark green leaves, reddish when shooting. Yellow attractive April flowers attract bees. Pollution resistant and convenient for restricted spaces i.e. narrow streets. (1)

**Carpinus betulus ‘Fastigiata’**  
A slender, conical, symmetrical tree 15 metres height 4-5m wide. Bright green leaves turning vivid yellow in autumn. Has excellent tolerance to pruning. A valuable middle sized street tree suitable for urban areas. (2)

**Corylus colurna, Hazel**  
Slow growing tree 18-20m high, 8-12m wide; symmetrical, broadly stocky-ovoid top. Leaves are dark green turning to yellow in autumn. This street tree is pollution resistant and winter hardy and so far free of diseases and pests. (3)

**Fraxinus excelsior, ash**  
Small - medium size tree, 7-9 m to 12 m tall, 4-5 m wide; slenderly conical, becoming looser later. Medium to slow growing. Impressive autumn colour in crimson red, orange and yellow hues, white flowers. (4)

**Gleditsia triacanthos**  
20-25m high and 7m wide. Regular pyramidal habit that slightly sag with age. Very bright yellow colour leaves develop in the autumn. This is a very resistant and hardy to drought and pollution and is adaptable to many soil types. An excellent park or street tree free of disease.

**Prunus Avium ‘Plena’**  
8-15 m tall and 4-6m wide with a round closed top. The snowy white blossom is especially decorative in April-May. Splendid autumn colour, yellow-orange-scarlet. Very good as an avenue or park tree. (5)

**Pyrus calleryana ‘Chanticleer’**  
Small - medium size tree, 7-9 m to 12 m tall, 4-5 m wide; slender conical, becoming looser later. Medium to slow growing. Impressive autumn colour in crimson red, orange and yellow hues, white flowers. (6)

**Quercus robur, English Oak**  
Large tree, 30 - 35m tall and 15 - 25 m wide, initially conical, then with asymmetrical loosely round crown; main stem usually short; branches diagonally rising. Autumn colours golden green or yellow-brown; a robust and not demanding tree. Ideal as a focal tree. (7)

**Sorbus Aria ‘Magnifica’, White beam**  
A slow growing cultivator, stiffly upright, 6-12m tall and 4-7 m wide. Large course leathery leaves, dark green on top and silvery white on the underside of the leaf. Canopy persists long into the autumn, undemanding tree that is tolerant to frost, wind and urban climates. (8)

**Tillia cordata ‘Greenspire’**  
A fast growing tree of medium size 15-20m and 10-12m wide with a symmetrical, broadly conical, dense top. Yellow autumn colour; adaptable to all soil types. A good street tree that is very resistant to heat drought and pests. Very resistant to urban climates. (8)
An alternative to tree planting should be considered for greening Northampton Town Centre.

Bedding displays

- They provide year round interest offering variety and colour, creating a focus to a space.
- Design options vary from traditional formal bedding treatment to a greater sustainable emphasis, introducing swathes of planting to the town.
- The location of this application should be focused on principal streets and spaces or in focal areas due to the expensive addition of replanting and maintenance costs. This will heighten impact rather than spreading the planting thinly across the town, becoming a maintenance burden.

Principles

- Raise beds slightly above natural ground level to prevent pedestrians cutting through or around the planting (maximum level of 500mm).
- Ensure that planting is of a significant impact and scale to be effective.
- Species chosen as bedding plants should allow for year round interest, with seasonal change and structural plants for fallow periods.
- Maintenance resources should be made available when a floral beds are proposed in areas of public realm.

Large Shrub Planting

- This type of planting will not be recommended in the context of Northampton town centre. This planting will be more suited to parks and gardens.

Issues that arise from using this kind of planting within this urban context include:

- blocking routes for pedestrians.
- Segregating spaces.
- Issues with safety and security.
- Attracting pests such as rodents and litter traps.

Grass areas

- Locate away from main pedestrian desire lines to avoid worn patches.
- Slightly raise grass areas where necessary to prevent turf erosion.
- Flush mowing strips should be added around trees and furniture to cut down on maintenance and allow for easy mowing.

Portable Planters

- Avoid using off the shelf portable planters in the public realm as these

Bold swatches of planting add colour and interest

Planters to delineate a route

Remembrance Park is an example of open green space within Northampton
Planting in Walthamstowe adds visual and sensory interest and variety.

Portable planters acting as a screen between the pedestrian traffic and the cafe’.

Street Trees elements often appear unsightly.
- Planters if used should be designed to be an integral part of the public realm.
- Planters can be designed to fulfil a range of functions such as demarcating a space or combined as seating elements.
- Small trees and planters are appropriate along transitional spaces where people gather along cafes, restaurants and bars as a means of shelter and screening along these fringe pavement activities.

**Hanging Baskets**

- Hanging baskets are evident across Northampton town centre. This treatment could be embraced to develop the concept of ‘Northampton in Bloom’ throughout the town centre.
- Baskets should be attached to existing street elements such as lighting columns, the design should support these fittings at the outset.

**Guidance**

- BS 5837:2005: *Trees in Relation to Construction including shrubs, hedges and hedgerows*
- BS 3998:1989: *Recommendations for Tree Work*
- Supplementary planning documents (SPD) for guidance on trees and development.
- Arboricultural Association advisory leaflets and publications
- National House Building Council document entitled ‘NHBC’ Standards Chapter 4.2 Building near Trees: October 1992
- NJUG (National Joint Utilities Group) Publication 10 (1995) : *Guidelines for the planning, installation and maintenance of utility services in proximity to trees, National Joint Utilities Group, April 1995*

Planting in Walthamstowe adds visual and sensory interest and variety.
Lighting

Introduction

The lighting of the highways and public realm areas within the town centre should not only provide the appropriate quantity of light onto the appropriate surfaces but should also provide a high quality night time environment. Design quality is crucial to the perception of a well lit environment, which also leads to the perception of a safe and inviting environment. This section sets a high but attainable design standard based on good design practices. Flexibility in the program of implementation will be required to maximise benefit from the available resources but this should not compromise design quality.

Lighting proposals for highways and public realm areas will be considered holistically in a coherent manner to provide a lighting experience highlighting opportunities for event lighting, architectural lighting, landscape lighting and general feature lighting enhancing the hours of darkness.

A Lighting Design Strategy has already be explored within Section 2 of the PRIF and considers pedestrian and vehicular movement throughout the town, so defining a street hierarchy and lighting classifications for traffic routes with recommended illumination levels based on statutory design guidelines.

In addition, focal points within the townscape that are existing, or that form part of a concurrent urban regeneration scheme have been identified, so highlighting key buildings, structures and features for illumination.

The objective of this section is to make general recommendations for a coherent and integrated nightscape within the town. It will provide a flexible brief to sit beside project specific briefs incorporating minimum performance requirements and basic material specifications. The document is not intended to be prescriptive and encourages creative design throughout the various areas from all project specific design team members.

This design guide is intended to be used by public and private sector organisations engaged in the design process, supply of equipment and installations within the Northampton Borough Council Highways and Public Realm areas.

The guide should be used in conjunction with other documentation detailed within in order to ensure that the lighting of exterior spaces is integrated within the highways and landscape areas to provide a creative, aesthetic, functional, sustainable and maintainable lighting installation. It is anticipated that, as a result of this document, proposals can be formulated to improve the night time environment and make a positive difference to the centre of Northampton in creating inviting spaces and places that people will want to visit and associate with.

The success of the integration described above and a higher quality night time environment should result in an increase in the use of the town centre at night attracting more of the residents and workers of Northampton as well as attracting visitors to the town. With the increase in people entering into the town centre at night this enhances the perception of safety and in turn attracts more night time visitors.
Performance Objectives

The performance objectives of the proposed lighting scheme can be summarised as:

- Design the lighting installations in line with the Northampton Borough Council’s briefing documentation.
- Control the artificial light within the areas in order to provide a high quality, visually stimulating, comfortable, low glare environment while minimising energy consumption.
- Provide general exterior lighting to the areas while being sympathetic and complementary to the form, function and construction of the landscape and architecture. The emphasis upon form and function will be dependent upon the nature and use of each space.
- Illuminate surfaces appropriate to the specific tasks (access/circulation etc.) taking place and supplying the users with a comfortable environment.
- Control the lighting to provide illuminance levels suitable for general ambience and circulation, including security and maintenance whilst also maximising lamp life, minimising energy consumption and maintenance.
- Provide a budget specific, sustainable and energy efficient system, in terms of initial capital costs and continuing operational use. Select lamp types for their efficacy, colour rendition and longevity to provide an efficient lighting solution with a predictable maintenance regime. The whole of the lighting system contributes to the total efficiency and efficacy of the lighting installation and it is not only the lamp but also the optic and reflector that are to be considered in association with their mounting height and location.
- Utilise lamp types appropriate for the character and function of each space while retaining a coherent, rationalised illumination system in terms of lit effect, lamp types and equipment installed.
- Select lamps and luminaires for their performance, material construction, design, fabrication and ingress protection. Identify luminaires from standard product ranges where available and site equipment in accessible locations.
- Safety is an inherent requirement. Equipment will be sited in accordance with the CDM regulations.

Design Parameters

The following mandatory, legislative and regulatory requirements, British Standards, Codes of Practice and Best Practice professional guidance publications will form the parameters of the lighting installations:

- BS EN 5489-1:2003 Code of Practice for the Design of Road Lighting – Part 1: Lighting of roads and public amenity areas
- BS EN 13201-2:2003 Road Lighting – Part 2: Performance Requirements
- BSI, 2003 BS EN 13201-2:2003 Road Lighting – Part 2: Performance Requirements
- BSI, 2003 BS EN 13201-2:2003 Road Lighting – Part 2: Performance Requirements
- BSI, 2004 BS EN 60598-1:2004 Luminaires – Part 1: General requirements and tests
- CIE 136 Guide to the lighting of urban areas (2000)
- CIE Royal Fine Arts Commission “Lighten our Darkness” (lighting in urban Environments) HMSO (1994)
- BS 8300:2001 Design of buildings and their approaches to meet the needs of disabled people - Code of practice (AMD 15617) (AMD Corrigendum 15982)
- BS 8300:2001 Design of buildings and their approaches to meet the needs of disabled people - Code of practice (AMD 15617) (AMD Corrigendum 15982)
- Lighting Guides 6 - The Outdoor Environment: CIBSE 1992
- Lighting Division Fact file No. 7 - Environmental Considerations for Exterior Lighting: CIBSE 2003
Lighting Classification

The design and calculation procedures identified in BS 5489-1:2003 Code of practice for the design of road lighting – Part 1: Lighting of Roads and public amenity areas and criteria options detailed in BS EN 13201-2:2003 Road lighting – Part 2: Performance requirements should be used to calculate illuminance or luminance of road surfaces in line with the target classifications for that area.

The lighting installations within the highways and public realm areas in the town centre should provide a high quality night time environment with the appropriate quantity of light onto the appropriate surfaces. The amount of light appropriate to the space or area will be determined by vehicular and pedestrian traffic flow, architectural and landscape surroundings, activities, specific location, specifics relating to public safety and the potential of crime.

BS 5489-1:2003 provides recommendations for the general principles of roadway lighting including the aesthetic and technical aspects of road lighting and advises on statutory provisions, operation and maintenance. BS EN 13201-2:2003 provides the luminance, illuminance and uniformity criteria to be met in the design of road lighting.

The recommendations include the lighting of busy vehicular routes through to the requirements of pedestrians and cyclists and the design of urban centres and public amenity areas.

The lighting classifications are broken down into three types: ME class (and MEW), CE class and S class. Additional classes A, ES and EV exist and are described below.

The ME classes are intended for drivers of motorised vehicles for use on traffic routes and some residential roads allowing medium to high traffic speeds. ME classes are based on road surface luminance. For straight roads the correct road surface reflection should be used within the calculation.

The CE classes are also intended for drivers of motorised vehicles, but for use on conflict areas such as shopping streets, road intersections of some complexity, roundabouts and queuing areas. Included within the applications are pedestrians and pedal cyclists. CE classes are based on the illumination of the road surface.

The S and A classes are intended to be used for pedestrian and pedal cyclists, residential roads, parking areas and schools. S & A classes are based on the illumination of the road surface.

ES classes are used in areas where public lighting is necessary for the identification of persons and objects in road areas with a higher than normal crime risk. ES classes are based on semi-cylindrical illuminance.

EV classes are used in situations where vertical surfaces need to be seen including toll stations and interchange areas. EV classes are based on vertical plane illuminance.

Lighting classifications are proposed for the areas concerned within a Lighting Design Guide, taking into account the speed and local traffic flows of vehicles and pedestrians, size of the road, its location relative to other roads and junctions; it’s setting in respect to the landscape and its situation in respect to the surrounding architecture. Lighting classifications shall be presented to the Client with justification of how the classifications have been determined.

In pedestrian and landscaped zones it may be applicable to relax the design criteria dictated by a chosen classification in order to provide the appropriate lit environment. In these areas more emphasis may be placed on architectural and landscape features. If any classification is to be relaxed the case for this must be presented to the Client’s representative for approval before design progresses.
The quality of light is the key to creating high quality night time environments. Colour Rendering Index (a measure of the ability of a light source to accurately render colours) and correlated colour temperature have a major influence on people’s perception of the night time environment. By using sources with good colour rendering properties and appropriate colour temperature in the core of the town, visitors and users of the spaces will perceive these areas as higher quality environments.

This approach ensures that the higher quality lighting solutions are implemented into areas where there is real tangible visual benefit in providing a higher quality night time environment. There will be a need for non-uniform schemes within the town centre area to create visual interest. Careful control of contrast ratios and uniformity ratios will be essential, such that interest and a balanced visual environment can be achieved without compromising on safety and security. This will significantly aid access for the visually impaired.

Due recognition should be paid to adjacent roads and areas to ensure illuminance step differences are visually acceptable and require no time dependency for visual adaptation.

If this is not recognised then people moving from one space to another will not be able to immediately appreciate the area until the eye has adapted to its new light or dark state.

The whole visual scene should be considered in relation to a coordinated and coherent lighting equipment aesthetic and resultant lit effect. Higher colour rendering index schemes should be considered in areas of importance including areas of civic, heritage, social, cultural and historical importance. In addition areas of high pedestrian activity should be considered to be illuminated with a higher quality of light. In areas of high criminal activity lamps with a colour rendering index of greater than 80 can be advantageous and should be considered.

Lamps and lighting control equipment should be specified with reference to their appropriateness, performance, light distribution, efficacy, colour appearance and colour rendering characteristics, survival, efficiency, build quality, robustness, styling and architectural integration.

Energy efficiency should be an inherent function of the lighting scheme. Illumination and control methods will be employed to minimise energy usage whilst in operation.

The lighting installation should be designed to utilise luminaires selected from manufacturers standard ranges. Special and variant luminaires should only be considered for use where illumination methods or architectural constraints demand.

Luminaires should be specified for their photometric performance, with suitable distributions, efficiency and appropriate glare control, for effective illumination of the individual spaces.

Materials, construction, build quality and cost effectiveness should also determine luminaire selection. Specified luminaires will comply with the current relevant European or British Standards, principally BS EN 60598.
It is everyone’s right to access public spaces whether they be visually impaired or people in wheel chairs or pushing prams and it should be ensured that the right light environment is provided and that equipment doesn’t hinder access or progress.

It should be ensured that the lighting installations are successful in reducing glare and obstacles, allowing easy access, minimising reflections and shadows and helping with contrast and the light quality should be appropriate for the space.

As a check list it should be ensured that the lighting proposals include the following items. This check list is not exhaustive and all efforts are to be made to improve general access. Where the British Standards for lighting have increased illuminance then the higher value should be utilised:

1. Keep lighting equipment out of the boundaries of access routes.
2. Provide 100 lux at the top and bottom of ramps or each flight of a ramp and stairs.
3. Provide contrast between the tread and riser of stairs.
4. Signs should be located to avoid reflections.
5. Avoid glare, pools of ‘bright’ light and strong shadows.
6. Uplighters should not cause unnecessary discomfort at normal public viewing angles.
7. Illuminate faces for ease of lip reading.
8. High frequency control gear should be used to eliminate flicker and electromagnetic interference to hearing systems.
9. It is recommended that a 30 point light reflectance value be maintained between adjacent surfaces. 20 points may be acceptable.
Light intensity and distribution needs to be carefully considered to ensure that upward light spill is minimised, and light distribution cut-offs from luminaires do not result in severe lighting contrast on light receiving surfaces such as floors and walls. Luminaires, lamps, optics and equipment shall be specified and located to minimise any direct upward light component in order to reduce light pollution. In addition light trespass and light spill will be where possible prevented.

With reference to the design parameters and based upon previous practical experience the following values form the basis of the criteria which will be met by the lighting installation. These are taken for the Environmental Category E4 (high district brightness – town/city centres with high levels of night-time activity) as outlined in the ILE Guidance Notes for the Reduction of Light Pollution published 2000.

<table>
<thead>
<tr>
<th>Sky glow</th>
<th>UWLR = 15% max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Trespass EV</td>
<td>= 25 lux (before curfew)</td>
</tr>
<tr>
<td></td>
<td>= 5 lux (after curfew)</td>
</tr>
<tr>
<td>Glare I(kcd)</td>
<td>= 30 (before curfew)</td>
</tr>
<tr>
<td></td>
<td>= 2.5 (after curfew)</td>
</tr>
<tr>
<td>Building Luminance L(cd/m²)</td>
<td>=25 ave (before curfew)</td>
</tr>
</tbody>
</table>
Luminaires and their supporting structures and housings shall be located to be visually compatible with the architectural and landscape context assisting in the definition of access points to the buildings and pedestrian routes and circulation routes within and around the town centre.

The daytime appearance of the lighting equipment should be considered in respects to both its design and siting and its relationship to other items of street furniture. The aesthetic of lighting equipment should respond to the architectural setting and human scale. As described in Section 2 ‘Lighting Strategy’ the use of a palette of luminaires in the design process ensures consistency in styling throughout the public realm, and can be used successfully to define a hierarchy to different areas and provide a visually cohesive and non-uniform aesthetic to acknowledge the change in use or landscape design.

The scale and mounting heights of the lighting equipment should be in context to their surroundings and background, use of the space and type of traffic whether it is vehicular or pedestrian. Lighting for pedestrians should be designed to reflect the scale and speed of movement of the pedestrians. In the areas where more major vehicular traffic routes exist this may require much higher lighting columns and lanterns.

Positioning of lighting equipment within the public realm has both a conscious and sub conscious affect on the users of the space and, as such, lighting equipment should be located to minimise the intrusion and visible clutter. The location of a lighting column should not interfere with significant sight lines and scenic views, views of buildings or monuments of architectural significance.

After dark the lighting equipment can make a positive contribution to the overall night time experience creating an inviting and pleasant environment in which users can access the spaces and enjoy the areas civic importance. Luminaires and lighting equipment should be considered within the context of a lighting plan, with reference to performance, light distribution, efficacy, colour appearance and colour rendering characteristics, survival, efficiency, build quality, robustness, styling and architectural integration.
The final choice of fittings, outlined in Section 2 ‘Lighting Strategy’, which has been developed through discussions with the local authority’s design team and other consultative bodies will achieve a complete and coherent scheme for the entire area.

The choice of fittings should be read in conjunction with the plan of column heights and lighting quality characteristics for the identified area within the PRIF.

iGuzzini - Lavinia is one example of a column mounted fitting that will be used within Northampton Town Centre.

A consistent approach for columns, lanterns, with the colour and finishes to be applied should be considered. This should not to suppress the individuality of the architecture of lighting in the streets and public realm spaces, but that where different the surprise will be one of delight rather than displeasure. To this end concept schemes need to be discussed with the Client’s representatives and follow the PRIF recommendations.

- Public Realm Lighting
- Consistency with Northampton local authority standards
- Variety in the town’s distinctive areas
- White light where quality enhancement is required
- Bespoke or configured luminaire/Column combinations to meet architectural aspirations and individual styles
- Integration of other public realm elements
- Innovative solutions in Squares, Courts and Parks
- Unique solutions for different areas

Examples of iGuzzini - Lavinia
Decreasing the height of lanterns as visitors move from vehicular areas into the more pedestrian heart of the town will create a visual hierarchy aiding wayfinding throughout the centre. High columns will be used in vehicular areas which allow greater spacing between luminaires and focus the light on the horizontal surface of the road. Moving further into the centre, lantern heights should decrease to a more human scale.

In addition, emphasis should be given to vertical illumination of people and architecture. The need to achieve physical quantities is important but must be tempered to the subjective needs of ‘people’ rather than just the ‘meter’ needs.

Weight and windage impacts on luminaires within specific areas should be included within the design of any lighting column installation. Lighting column doors should be arranged on the column in order that if the door is open for maintenance the maintenance operative will be facing the oncoming traffic.

Columns should be offset from the carriageway at a distance relative to the speed restrictions identified on the particular stretch of road so as not to cause a hazard. The set back from the road edge to the column should be sufficient to allow safe access for all pedestrians and prams on the footpath.

Generally lighting columns should be designed to sit within their surroundings and be designed to blend into rather than be noticeable within their environment. It is proposed that simple column shapes and details be provided such as conical to minimise the visual impact of the equipment. Similarly, brackets and outreach arms should be simple so as not to make too much of a statement.

Outreach arms and brackets should be designed to avoid buildings and high sided vehicles. Brackets and outreach arms should be styled in line with the application and the surroundings.

On many streets it will be important to ensure a consistent line of columns with the same offset from the carriageway in order to provide a continuation of the kerb edge and prevent the lantern element having different offsets and resulting in a ‘snaking’ effect.

Many mounting options are available for general street lighting including opposite, staggered, single sided and wall mounted solutions where appropriate. Each mounting proposal should be based on the appropriateness of the installation specific to the area and usage. Where pavements are narrow it may be necessary to wall mount equipment so as not to block the paving areas and allow free access. Wider roads with a higher lighting classification may require an opposite lighting solution to provide the necessary lighting levels and uniformity whilst in landscape areas it may be more appropriate to provide lighting in context to the soft and hard landscaping and features.

If the Client has requested the inclusion of CCTV, banners, hanging baskets, festive decorations and traffic signage the impact of these items should be incorporated into the calculations for windage and deflection of the columns to ensure that they are strong enough to withstand the environment in that particular area.
Street Lighting - setting out

Double sided - Opposite

Plan - Double sided opposite arrangement
Perspective - Double sided opposite arrangement
Example of double sided opposite arrangement

Double sided - Staggered

Plan - Double sided staggered arrangement
Perspective - Double sided staggered arrangement
Example of double sided staggered arrangement
Street Lighting - setting out

**Single sided - Columns**

Plan - Single sided arrangement

Perspective - Single sided arrangement

Example of single sided column mounted arrangement

**Single sided - Wall mounted**

Plan - Wall mounted arrangement

Perspective - Wall mounted arrangement

Example of wall mounted arrangement
Wall mounted lighting equipment that will be designed to light public realm areas should be mounted with appropriate brackets and wall mounting fixings to account for the weight of the luminaire and windage and deflection. Care must be taken in the mounting of wall luminaires onto building facades to ensure that the installation process does not result in damage to the building materials.

Wall mounted equipment should only be mounted on suitable facades and not facades of historical or architectural significance. Access and agreement with a tenant or property owner to mount equipment onto a façade shall be undertaken by the Client.

Where areas are lit by wall mounted equipment any obstructions or canopies below the luminaire must be included within the design in order to provide the correct lighting classification chosen within the area. All wall mounted lighting installations shall allow for access by platforms for the purpose of maintenance.

Generally wall mounted luminaires used to light public roads and spaces should be mounted on an outreach arm to bring the luminaire head away from the façade of the building.

This should allow for a reduction in hard edged scalloping below the lighting unit on the building façade.

Wall mounted equipment designed to light building facades should be as discreet as possible minimising the physical and visual impact the equipment has on the building façade both during the hours of daylight and darkness.

Examples of wall mounted fixings. Suitable styles will need to be agreed with Northampton to ensure that they complement the ‘Northampton Brand’.
If lighting bollards are to be used within Northampton they should be designed to sit within their surroundings and blend into rather than be noticeable within the town.

They are available in numerous shapes, sizes, finishes as well as various light distributions and light sources, so care should be taken to ensure that the lighting bollards chosen compliment with the ‘Northampton Brand’ bollard.

Before using this type of lighting, due care should be taken to ensure that they are appropriate for their location. For example, easy access to the light source could make them prone to vandalism, therefore setting them in public spaces or parks could create maintenance difficulties.

Approaches to building entrances or thresholds, well overlooked spaces, or semi-private spaces where the developer or land owner has the capacity for private maintenance, are locations where these features would be best used.

Examples of lighting bollards. If used, the style of lighting bollard should compliment the ‘Northampton Brand’ bollard.
Equipment intended to be installed within hard or soft landscaping can be used to good effect to highlight features including walls, sculpture and trees. The use of LED lamps and luminaires can facilitate most applications with various colour temperatures, colour and distribution angles available.

Care should be taken that the light distributed from the luminaire actually meets the surface it is intended to light and is not just directed straight into the sky increasing light pollution and sky glow.

All lighting equipment located in the ground should be suitable for the application and offer appropriate resistance to vandalism and the ingress of dirt and moisture. Many products on offer allow for easy replacement and minimising installation difficulties for the Contractor or maintenance team. Where high intensity discharge lamps are used the surface temperature of the unit should be such that it does not burn to the touch and surface temperatures not greater than 70° should be used.

The availability of high output low energy lamps has resulted in increased use of LED lamps and luminaires to highlight sculpture, artwork and trees offering energy efficient lighting with good optical control in relatively small housings.

Luminaires should be protected to IP66, 67 and 68 to resist the ingress of water from high powered jet washing.

Installations intended to provide feature lighting only should be extinguished at a predetermined time to minimise energy usage and extend maintenance periods.

Luminaires are installed such that all bezels are flush with the surface of the soft or hard landscape in accordance with the Landscape Architects details and manufacturers instructions, in such a manner that they are fixed and located within the floor plane to inhibit movement during the life of the installation.

Electrical cables used should be in accordance with the engineers’ specification and the manufacturer’s instructions (in particular the use of round section cables when entering IP protected glands).

Fixing of cover plates and relamping are to be conducted in accordance with the manufacturer’s specification, and in particular:

- The requirements of sealing cover plates and gaskets with the lamp operational. (Lamping should be undertaken when dry, the luminaire should be run for one hour with the cover plate loosely attached before tightened to expel moisture, the gaskets should be clean before tightening.

- The replacement of gaskets at lamp change.

- The order and torque required for fixing bolts.
Facade Lighting

The Northampton scene can be expressed at night by applying lighting treatments to the architecture (interior and exterior) and to public realm focal points.

- **Applied lighting**
to selected building facades, features and fabric to create visual interest along the verticals of the street and enhance night time views of the architecture.

- **Illuminated interiors**
of buildings to create a lively ambience and attract the attention of visitors to the area. To extend the streetscape into building interiors bringing the ‘inside’ to the ‘outside’. Techniques particularly appropriate to retail, leisure and restaurant facilities.

- **Dynamic lighting**
to enhance journeys through the area and to particular building elements and public realm features. Such dynamic lighting should be of both permanent and imported temporary nature. Dynamic lighting to be ‘stand alone’ and also able to be integrated as part of a wider town event.

- **Lighting to existing listed buildings**
to enhance their appearance at night and to increase their visual significance as part of a lighting journey to attract. Extending the Northampton Town lighting initiatives into other areas, thus increasing the visitor attraction and interest.

- **The use of landscape and public realm artwork**
to assist in producing lighting thresholds and focal points to assist in the journeys about the town centre.

The Lighting Design Strategy has begun to determine key buildings for lighting accent, subject to a committed collaboration from the council and owner/occupiers. The aim will be to create visual interest through controlled contrast. To achieve this, we could refer to the theory of phototropic effect, which describes the way plants are attracted to light, and apply it analogously to design the electric lighting purposefully to arouse human reaction and movement to visual stimuli. The process involves identifying specific points of interest such as the end of long views, exemplary architecture and nodal points, and designing the lighting accordingly. The design of these key components is to be influential to the movement of people around the space, whether by encouraging the flow of pedestrian traffic towards an area of special interest or influencing the perception of connection between otherwise unrelated spaces.
Facade Lighting Examples

Uplighting - Close off set

Examples of close off set facade uplighting

Floodlighting

Examples of floodlit facades
Facade Lighting Examples

Uplit archways

Examples of uplit doorways and window reveals

Internally illuminated windows

Examples of internally illuminated windows
Facade Lighting Examples

Uplighting - Linear light sources

Examples of uplit facades with close off set linear light sources

Downlighting

Examples of downlit facades
Within Northampton opportunities may arise for image projection within the public realm areas in conjunction with events, festivals, major calendar dates and as ‘spectaculars’. Projections can be permanent or transitional being ‘imported in’ for specific occasions and events.

Projection lighting events can also form a separate part of ‘son et lumiere’ events.

Lighting techniques may include:

- Projection of light and imagery onto building surfaces
- Projection of light and imagery onto clouds
- Projection of light and imagery onto water sprays and fountains

Example of projection to water

Example of projection to building facade

Bookstore at daytime

Bookstore during the hours of darkness
Opportunities to integrate lighting equipment within the features of the landscape should be investigated as part of the overall lighting strategy for Northampton. Where lighting can be incorporated into benches, walls, coves and other hidden details this can highlight areas and provide a bleed or wash of light to acknowledge the feature.

These areas will generally be used by pedestrians but may be visible from vehicle routes and be enjoyed by all within the context of the overall lighting to a given area. In these areas colour, colour temperature and distribution of light can be used in a creative way to break up spaces and react with the landscape features.

All equipment should be suitable for the installation and application with respect to the resistance to vandalism and resistance to the ingress of dirt and moisture. Care and attention should be given during the design of installations to ensure that the equipment can be incorporated and hidden yet still allow ease of maintenance.

Lighting techniques may include:

- Under lighting to seats
- Use of back lit glass seats
- Silhouette lighting of seats against solid surfaces
- Use of light as an art form
- Lighting sculptures
- Projection of light
- Lighting to sculptures (close off set and long offset)
- Integration of lighting systems within sculpture
- Lighting of relief's

Feature lighting and uplighting to trees integrated into planters

Lighting feature integrated into landscape

Lighting integrated into benches
The use of artwork within the public realm of Northampton will provide focal points to a space. Artificial lighting can highlight artwork during the hours of darkness. The intent of a piece of artwork can be changed dramatically from its daytime appearance to its nighttime appearance with light and colour if applicable and appropriate.

Technological developments in lighting have resulted in an increased use of compact and efficient light sources to highlight artwork.

Light itself could also be used as a form of artwork. Light art pieces are getting more popular and common within the public realm and the emergence of ‘light artists’ who specialise in this form of art is increasing.

Lighting techniques may include:

- Use of silhouette lighting
- Lighting of reliefs
- Integrated lighting within the artwork
- Lighting to artwork; close offset and long offset

Examples of light artwork
Lighting of trees and foliage within the public realm areas will be a valuable method of ‘softening’ the lit visual environment at night. Care in the extent of such lighting should be such that it assists the public realm spaces and building lighting – not overpower them. Appropriate tree straps and fixings are required to allow for tree growth.

Lighting techniques may include:

- Uplighting to trees
- Silhouette of trees and foliage against illuminated walls
- Reflection of illuminated trees and shrubs in water
- Shadow movement of trees and foliage onto solid surfaces
- Dynamic lighting of trees and foliage
- Lighting within the tree highlighting the canopy
- Projection of imagery into tree canopies
- Lighting within trees, pushing light through leaves to create shadow breakup on ground

Tree lighting techniques should be developed in collaboration with Landscape Architects to ensure lighting techniques are suitable, and mounting details are considered.

Examples of tree lighting
Water Features

Where design of spaces within Northampton incorporate water features, many lighting techniques are available to optimise these landscape features at night.

Water features should also be able to support major event lighting and projection shows such as laser projection for single imported events.

Water feature lighting techniques may include the following:

- Formal fountain lighting
- Informal water feature lighting
- Reflections in water
- Refraction patterns from moving water
- Colour changing for effect
- Laser shows projected onto water mist
Large scale events that incorporate lighting will help to draw visitors into the town centre. Within Northampton locations should be such that they can be seen from major vantage points and nodes from the surrounding environs and routes into the town. Obvious locations may include Market Square or Abington Street.

Lighting events could include:

- Concerts
- Laser projection
- Pyrotechnics
- Son et Lumiere
- Searchlight projection onto cloud base and into mist, rain, dust
- Dynamic aerial projection

Such events can include festivals and celebratory calendar dates, promotional and concert initiatives and interfacing to other town-wide lighting initiatives, including the public art strategy for the town.

Events could be transient, being imported for a particular festival and then removed. Facilities for electrical infrastructure should be considered. Such infrastructure may include data transfer from luminaires to ‘off-site’ control desks and equipment (DMX512, Ethernet etc; protocol) and for power provision to luminaires.

Provision for large temporary electrical loads should include importation from temporary generators. Festive lighting provisions should be made along the routes into the town centre. This provision could include for connection of electrical loads and structural fixing of festive lighting and the facility to interconnect festive and event lighting via a data infrastructure system.
A high quality festive lights approach will be used to decorate key parts of the town, including certain buildings. This type of lighting can be used to highlight various celebratory calendar dates or special events in town.

Lighting effect can be either static or programmable and colours can be chosen to suit the theme of the festival or the location.

Festive lighting should not conflict with any adjacent traffic signalling system.

Lighting techniques could include:

- Lighting within trees
- Lighting artwork attached to lighting columns
- Lighting supported from buildings
- Lighting using catenary system either between the adjacent buildings or lighting columns/sacrificial columns
- Lighting attached to freestanding columns

Examples of festive lighting
All luminaires should conform to BS EN 60598-1:2004. The sealing of the luminaires and their resistance to ingress of dirt and water will be indicated by their International Protection Code (IP) number.

Luminaires with the higher end of the IP ratings should be used for exterior purposes to maximise the periods required for cleaning, reduce the degradation of components and minimise light output depreciation. The IP rating should be considered for both the optical compartment and control gear compartments.

As well as checks for markings and construction, all tests and inspections should be undertaken prior to a luminaire being accepted:

1. Provision of external and internal wiring
2. Provision for earthing
3. Protection against electric shock
4. Resistance to dust, solid objects and moisture
5. Insulation resistance and electric strength
6. Creepage distances and clearances
7. Endurance and thermal tests
8. Resistance to heat fire and tracking
9. Screw terminals and screwless terminals and electrical connections
10. Terminals and connections for internal and external wiring

Luminaires should be tested for photometry and performance for the appropriate application.

All installed luminaires should be free from indentation or marks. Particular attention will be drawn to the absence of:

- Extrusion die marks
- Casting deformities
- Dowel marks
- Metalwork ‘ripples’, burrs and spinning lines
- Spot weld marks

A sample of each luminaire included within the luminaires/lamp schedule should be supplied by the contractor to the Client and subsequently used as control sample to ensure consistent quality of installation. These luminaires may form part of the completed installation.

Luminaires, lamps and associated components should be installed in accordance with manufacturers’ recommendations and installation instructions such that manufacturers’ guarantees and warranties are maintained. Where luminaires have been installed into unfinished areas, appropriate protection must be provided to prevent damage or soiling.

Lamp selection will be determined by their luminous output, efficacy, longevity, colour appearance and colour rendering.

Generally ceramic metal halide lamps, CDM-T, CDM-TC and CDM-TD; triphosphor linear fluorescent lamps, T5 (T16) and T8(T26); and compact fluorescent lamps, TC, TC-DE, TC-DD, and TC-TEL, TC-L will be installed with correlated colour temperatures of CCT 3000°K and CCT 4000°K. High frequency electronic control gear will be used to eliminate stroboscopic effects, improve lamp life and maximise energy efficiency.

LED, cold cathode and fibre optic technology shall be used where appropriate for the lit effect and where maintenance restraints apply.

- Correlated colour temperature
  - Warm <3300K
  - Intermediate 3300 – 5300K
  - Cool 5300K

- Lamp life

SON High Pressure Sodium
CCT  20000K
x:y 0.53;0.42
CRI ≥20

SON Comfort High Pressure Sodium
CCT  22000K
x:y 0.519;0.414
CRI ≥60

HPI Metal Halide
CCT  43000K
x:y 0.36;0.38
CRI ≥65

CDM Ceramic Metal Halide
CCT  30000K
x:y 0.43;0.4
CRI ≥80

T5 Fluorescent Lamp
CCT  40000K
x:y 0.38;0.38
CRI ≥80

PL-T Compact Fluorescent Lamp
CCT  40000K
x:y 0.38;0.38
CRI ≥80

- Correlated colour temperature
  - Warm <3300K
  - Intermediate 3300 – 5300K
  - Cool 5300K

- Lamp life

SON High Pressure Sodium
CCT  20000K
x:y 0.53;0.42
CRI ≥20

SON Comfort High Pressure Sodium
CCT  22000K
x:y 0.519;0.414
CRI ≥60
Should equivalent luminaires be offered on a contract, the Contractor is to submit to the Employer’s Representative for approval the following information and luminaire details in order to demonstrate fully that the proposed luminaire meets the performance objectives and design parameters outlined within the project specification, accompanying drawings and Schedule of Luminaires and Lamps.

1. Samples of equivalent luminaires (fully operational, lamped and wired).

2. Full technical luminaire specifications, including:
   - Calculations for all areas (including details of the assumed maintenance factors and lamp lumen outputs).
   - Luminaire photometric performance including Light Output Ratios and Polar curves.
   - Technical specification including materials and construction information.
   - Lamp types.
   - Luminaire weights and required mounting detail for operation and installation (including remote gear where applicable).
   - Luminaire dimensions including requirements and coordination details for all architectural and mounting details.
   - Availability of spare parts in the UK. Photographic illustration to demonstrate the proposed luminaires aesthetic coherence within surroundings.
   - Have coherent aesthetic properties, suitable for the nature and visual appearance of the surroundings and the Schedule of Luminaire and Lamps.

Should alternative lamps be offered the contractor is to submit to the Employer’s Representative for comment the following information and lamp details to fully demonstrate that the proposed lamps and luminaires meet the performance objective and design parameters outlined within the project specification, accompanying drawings and Schedule of Luminaires and Lamps.

- Full technical lamp specification
- Lumen outputs
- Lamp life
- Lamp survival curves
- Lamp lumen depreciation
- Colour rendering stability
- Spectral distribution
- Demonstration of full coordination and compatibility with specified luminaires (NB. different manufacturers lamps can vary in length)
- Written authorisation by the Employer’s Representative is required before proceeding with the use of alternative. The Contractor is completely responsible for the resulting lighting installation, lit effect and illuminance levels, should alternative lamps be installed without written authorisation.

The cost of any additional works, undertaken by the Lighting Designer, required as a result of Contractor proposed alternative fittings and related components, including but not exclusive of calculations, comments upon technical submissions and sample luminaire and lamp viewings, should be included as an additional item. This cost should be subtracted from the cost savings offered as a result of the use of alternative luminaires and related equipment.
Details of lamp life and luminous flux depreciation should be obtained from the manufacturers and used in order to provide accurate maintenance factors and regimes. The lamp, hours of operation, location, style, coating/finishes and dirt and moisture ingress protection all contribute to the overall maintenance factor for the system and installation. In order to offer the Northampton maintenance teams an accurate maintenance schedule the above factors should be taken account of and incorporated within design proposals.

The analysis of available daylight should be used to access the impact of operating lamps between dusk and dawn or curfew time for feature lighting.

All lighting classifications identified with the BS EN 13201-2 are maintained levels. The maintained level is the minimum level acceptable before cleaning and relamping is necessary. It is essential that the appropriate luminaire cleaning and lamp replacement routines are closely followed.

Each project within Northampton should be delivered with an agreed and predetermined maintenance routine. The routine should include lamp replacement intervals, luminaire cleaning intervals, renewal of failed parts, checking of gaskets and optical components and monitoring of operation.

Installations should be maintainable. If not, lamps will be unreplaceable and the installations will eventually fail. The CDM Regulations must be observed and included within any design proposals, including access availability.

Design Risk Assessments must be carried out and the resultant logged with the appointed Planning Supervisor for the individual projects. If design risk assessments result in the proposal to close certain roads or restrict access in certain areas then this must be clearly stated.

The design, construction and location of lighting equipment will permit ease of maintenance without major disruption to the operation of the areas.

Luminaire, reflector and glass/diffuser can be cleaned using proprietary methods and fluids as recommended by the manufacturers. Rogue lamp failures should be replaced individually as soon as is practical.

Tree straps should be checked and adjusted as the tree branches grow at periods.
Control & Curfew

Lighting systems employed to solely provide functional and safety lighting to vehicular and pedestrian traffic routes around the Northampton area should be illuminated between the hours of dusk till dawn via photocells integrated into the lighting equipment. This will allow safe access throughout the areas during the hours of darkness whilst minimising energy usage and maintaining lamp and control gear life.

If it is intended that individual luminaires are to be extinguished in order to reduce lighting levels to a lower class then it should be ensured that the parameters of that particular class are maintained.

It is proposed that systems employed to solely provide enhancement to the areas will be switched off at a predetermined time (curfew) to reduce energy usage and maximise lamp and control gear life.

Hours of Operation

Public realm lighting used to provide functional lighting in order to allow safe access for both pedestrians and vehicles should be operational dusk till dawn. The number of hours operational per night will differ dependent on the time of year with street lighting operational in the mid afternoon during winter months and late evening in the summer months. The charts show the times of operation for dusk to dawn and dusk to 01:00 for the year at latitude of 52°. As can be seen during the month of June the lighting is operational for approximately 200 hours switching on after 21:00 and off by 05:00. In comparison December shows a switch on time by 16:00 and a switch off time around 08:00. Total hours of operation for each month and for each hour can be seen resulting in dusk till dawn operation time of 4000 hours for street lighting.

For feature lighting on dusk till 01:00 operation this will result in around 2500 hours of operation annually. The responding time curfew for a midnight switch off results in just over 2100 hours of operation per year.

These charts are very useful for the design team to determine maintenance schedules for group lamp replacement and cleaning.

It is encouraged though that any rogue failures are replaced as soon as possible to maintain classifications of lighting schemes and coherent landscape and feature lighting.
‘The one public service we all use all the time is the streets where we live. And in too many places, streets and public spaces have become dirty, ugly and dangerous... We need to make it safer for children to walk or cycle to school in safety. We need local parks which are well looked after and easily reached with a pushchair. We need streets to be free of litter, dog mess and mindless vandalism’.

Tony Blair, (Prime Minister of the time) Croydon, 2000

In order for the public realm to maintain its quality a well funded maintenance strategy and programme should be put in place prior to the implementation of any major public realm scheme. Sufficient investment should be made towards maintenance schemes. This will be an ongoing cost that should be accounted for within initial project proposals.

Regular inspection, maintenance and cleaning regimes will be important in maximising the life of the materials and features proposed within Northampton.

However, quality materials fitted with detail workmanship to high standards, will help to reduce the likelihood for maintenance and ensure longevity of the products.

General Policies

At the time of writing a detailed working maintenance strategy for the ‘Western Arm of The Cross’ is being developed by the local authority in conjunction with the PRIF. A summary of the key aspects of this document are outlined within this chapter.

The intention is that this enhanced maintenance document will be read alongside the PRIF and applied to the rest of Northampton, when schemes come on line.

The general policies that should be considered for Northampton are listed below:

- Ensure that a Maintenance Guide and Maintenance Strategy document are put in place by the local authority.
- The rich historic features of the town should be protected and maintained.
- The high standard of maintenance should match the high level of design implemented.
- Re-evaluate the current maintenance regimes to enable future high quality schemes to be maintained to an equal level.
- Maintenance regimes should reflect the function and intensity of use of the street.
- Regular maintenance regimes should ensure that cleaning and repair maintains visually high quality streets and spaces as well as ensuring a safe environment.
- Ensure that annual maintenance budgets reflect the high standards invested in the public realm.
Reinstatement works should maintain the original quality. Many towns including Northampton suffer from poor reinstatement of materials following public utility and public authority work. In many cases original high quality materials are replaced with poorer quality materials and not to the standard of the original finish.

The New Roads and Streetworks Act 1991 (NRASWA) through the “Specification for Reinstatement of Openings in Highways” has set out a specification for excavation and reinstatement that should be adhered to. Finished surfaces should be reinstated with the same material. However, Statutory Undertakers are only required to ‘use their best endeavours’ to match materials, and where this is not feasible they can use the closest match. Therefore the local authority should maintain a stockpile of material for future reinstatement to prevent patching in the street. This act will be a starting point in prescribing standard materials and a standard level of workmanship for maintenance.

The NRASWA “Code of Practice for Inspections” sets out procedures for rectifying defective re-instatements including time scales. If public safety is a concern, immediate repair should ensue to ensure public safety and maintain a high quality environment.

**Principles**

- Assess the impact that a proposed development will have on the maintenance cleaning and inspection regime.
- Carry out a regular regime of maintenance, cleaning and inspection of the streetscape, working closely to the specific requirements of each material and feature.
- A more streamlined programme of permanent replacement should substitute temporary solutions. Temporary solutions are inappropriate, last longer than planned and can be a waste of resources.
- Damaged material should be replaced like for like.
- Workmanship should reflect the use of material and attention to detail as originally planned.
- Maintenance of specialist materials should ensure that trained craftsmen carry out repairs to the appropriate standards.

Approved methods of workmanship

A poor example of current maintenance provision within Northampton
When specifying products and materials, the liability for maintaining these should be assessed to ensure that future replacement and maintenance is cost effective and feasible.

Private developers are obligated under Section 106 agreements to maintain adjoining streets to high quality standards established by the local authority.

**Maintenance Guide**

To ensure repairs are carried out to the same standard and specification, a maintenance guide should be prepared from the outset. This will incorporate procedures for maintenance work, as built drawings, a specification of materials used.

It will also incorporate the names and contact information for all suppliers, identify where stockpiles are held and outline procedures for reinstatement works by Public Utilities companies.

The recently amended CDM regulations which came into force early 2007 ensures that construction projects should provide a health and safety file which will include as built drawings, specifications, and supplier information, to be held by the client. The Maintenance guide can help to develop this information and ensure consistency of approach across new developments within Northampton.

To establish a high standard of replacement works there should be a good supply of stored materials. A stockpile of materials will allow replacements to be made efficiently and quickly. Where paving materials are not easily available there should be a stockpile put aside of up to 10% of the total quantity of the scheme.

**Maintenance Document**

A maintenance strategy document for the town centre will help to formalise the maintenance strategy. It will identify the roles and responsibilities of individuals within the maintenance departments of the local authority. It will help to define a programme and specification for maintenance and street cleaning, within the framework hierarchy of the PRIF, which will then help to breakdown costs for each street and space.

The document will also contribute to calculating total costs of annual maintenance and street cleansing expenditures and inform future forecasting based around proposed development opportunities and future aspiration.

**Historic Features**

Where possible historical features need to be repaired and retained. In situations where stone is lifted and not reused in its existing situation it should be stored to create a stockpile of material. This provides the opportunity for stone to be reused in case of repair or for new schemes.
elsewhere in the town.

**Highway maintenance**

The maintenance of the public highway will be the responsibility of the Highways Authority ‘Northampton County Council’ under Section 41 of the Highways Act 1980. An annual maintenance programme should cover any carriageway, verge or footway. A programme of inspection will identify and prioritise when maintenance should be undertaken. This will then be programmed accordingly within the same or subsequent financial years. Allocation for unplanned maintenance and/or emergency works should be considered.

A programme of inspection should be carried out by the local authority every month for principal roads and heavily used footways, and every six months for minor roads and footways. Major Projects like Abington Street will require a specific maintenance programme applied to details for special surfaces, equipment, furniture, art and equipment.

**Temporary Reinstatement**

A self levelling compound with a rapid cure time and a straightforward installation procedure should be specified as the temporary surface filling material. The colour of the material should be bright red. A stamp or disc containing a date for replacement should be inset to ensure that the material is recognisable as a temporary solution with an auditable expiry date. The timescale for temporary replacement should be no longer than a 4 week period to ensure high quality streets are maintained.

**Trees and Landscape**

**Trees**

The eventual size of trees may restrict vehicle access, therefore pruning to keep the shape of the tree will be considered as maintenance.

Trees should be watered regularly during the growing season especially when the weather is dry. Other elements of maintenance identified in the chapter ‘Street Trees and Planting’ include tree pit maintenance.

**Grass Cutting**

Grass cutting should be in accordance to the growing season. The summer months should have the highest frequency of cutting occurring weekly, this will tail off later in the season gradually decreasing to a monthly occurrence in November recommencing in March.

There should be a maximum height of grass that should not exceed, typically this should be a level of 30mm. The cutting programme should be synchronized with the maintenance department and the landscape contractor to coordinate a well structured cutting schedule with additional maintenance requirements such as preparation, feeding and removal of arisings considered.

**Replacement and management of bedding plants and hanging baskets**

The following considerations should be taken when maintaining bedding plants:

- Bedding plants should be planted in accordance to their growing requirements.
- Container grown plants can be planted any time if the ground and weather conditions are favourable.
- Dried bulbs, corms and tubers should be planted in September/October.
- Removal of plants will depend on the growing season.
- Planting beds should maintain a weed free area around the plants by cultivation and use of approved herbicides.
- Remove dead flowering heads and stems from bulbs and herbaceous plants.
- Beds should be forked over to keep soil loose.
- Ensure that sufficient watering is applied to maintain healthy growth, allow for approx. 30 waterings per year.
- Ensure all beds are free of litter and rubbish.
- Prune plants at appropriate times to remove dead, dying and disease wood to promote healthy growth.

A maintenance sheet should be completed after each site visit to itemise work done and future work that should follow.
Street Cleansing

Utility Companies

Highways Authority have procedures already in place to enforce utility companies to reinstate materials with like for like, when servicing/maintaining apparatus.

Recent practice is for local authorities to charge a penalty for failure to comply with this policy.

Street Cleansing

General cleansing of the public realm should be carried out quickly and frequently to maintain high standards of cleanliness.

The design of streets and the siting of street furniture should be carefully considered to enable easy cleaning of the public realm.

All streets within the street hierarchy will be graded on a class system depending on use and specific cleaning requirements.

For example, with ‘Grade A’ streets, cleanliness should be restored to a grade A level within one hour of any litter and refuse being observed. Consequently these streets will need 24 hour cleaning. All these streets will require gum removed followed by street washing.

Sweeping Regime

Existing regimes include Monday to Friday, streets are mechanically swept early in the morning with a mini mechanical sweeper. Sweeping is then carried out during the rest of the day with smaller “Applied sweepers”.

Sweeping on a Saturday, during the day, consists of early morning sweeps, followed by 4 members of staff continuously sweeping the Town Centre throughout the day.

Sweeping on a Sunday consists of one early morning sweep.

The Market Square and the Town Centre will have additional sweeps during the evening from Tuesday to Saturday, in response to an active market.

The maintenance strategy and guide should identify increases in sweeping based upon the phased regeneration of Northampton.

Paving cleansing

The type of surfaces will impact upon cleaning programmes. Sub–bases, jointing and bedding mixes will also affect the cleaning regime. Paving systems should be designed to cope with various types of street cleansing machinery used by the local authority.

Materials should be laid to ensure that surfaces meet flush and do not create litter traps and areas that are difficult to access.

A dedicated vehicle for washing the pavements in Northampton is currently used between Monday to Friday, washing footpaths on a weekly cycle. As is a dedicated gum removal machine. A Town Centre Ranger has been identified by the local authority.

Trees and Landscape

When considering trees and soft landscape it will be important to be aware of the seasonal impact that trees have on street cleaning. When deciduous trees are used allow for a coordinated street cleaning regime so that leaf litter does not make the street look untidy and uncared for.

The cleaning process will be operated by blowers and sprays to remove fallen leaves.

Refuse Collection

The local authority’s policy on refuse collection is the removal of trade and domestic waste from the town centre. Trade waste is collected if requested but at a charge.

The councils specification on refuse collection is:

- Waste should only be left on the highway for a limited time to allow for collection

- Domestic properties, if on a bag collection, are required to place the bag out on the kerbside on the day of collection between the hours of 0730 - 1600.

- Trade waste on wheelie bins can be collected as often as the customer requests. If a trade customer uses green sacks, then the waste will be collected on a Monday or Thursday or both if requested. The collection times for the sacks is between the hours of 1700 - 1900.

Legislation

- The Environmental Protection Act 1990
- The Clean Neighbourhoods and Environment Act
- Code of Practice on Litter and Refuse - sets out the guidelines for the standards to be maintained and response times for remediation.