Appendix 2

A Sustainable Lighting Strategy for Perth

December 2015

PERTH & KINROSS COUNCIL

CONTENTS:

The purpose of this report is to link in with the Perth City Plan and outline a cohesive approach to lighting in the City of Perth and wider city region. The report has been written in collaboration with the Street Lighting Partnership and takes into account the Scottish Cities Alliance SMART growth agenda. Funding towards the Lighting Plan has been secured from the Scottish Government.

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A SUSTAINABLE LIGHTING STRATEGY FOR PERTH

1 Introduction

1.1 Lighting[1] can transform the appearance and image of a place. This is especially true of Perth where the physical form of the city and the grandeur of its buildings can be dramatically revealed through the use of well-designed lighting. This becomes particularly significant in the dark winter months when lighting can have a powerful influence on the appearance and atmosphere of the city.

1.2 Lighting also accounts for about 50% of energy consumption in cities. This challenge also provides Perth and Kinross Council with an opportunity to achieve significant energy and carbon footprint reductions over the next 10 years, and remains the reason behind increasing investment in the deployment of LED lighting across UK cities.

1.3 The approach to lighting in the city can also significantly enhance the attractiveness of the city for tourism and the visitor economy. As cities compete for visitors - innovative lighting solutions can transform unattractive or run-down areas into livable, attractive, spaces, and facilitates for people to meet. Protecting darkness and dark skies is also important. The mission of the International Dark-Sky Association (IDA) is *to preserve and protect the night time environment and our heritage of dark skies through environmentally responsible outdoor lighting.* Global Initiatives like Earth Hour and the UN's International Year of Light (2015) bring awareness to the effects of light and energy consumption. Adopting a lighting strategy can assist in coordinating and helping to reduce the impact of lighting; protecting the contrasts created by the atmospheric character of the city.

1.4 The quality and type of lighting can also impact human health and comfort. Good ambient lighting can relax, soothe or provide excitement and enhance the local street scene. Lighting that can adapt automatically to meet the individual needs is technologically possible and offers potential benefits to people including the elderly and infirm.

1.5 The Perth City Plan sets out the strategic objectives to make Perth one of the finest small cities in Europe and therefore needs to be seen as one of the most innovative cities on lighting.

1.6 Lighting is a critical component in the design of high quality public realm and it has an important role in supporting place-making across the city. The Placemaking Guide for Perth and Kinross Council identifies the need to develop and implement high quality lighting schemes as part of the City's continued development.

[1] Street Lighting, lighting of buildings and public spaces

1.7 Perth and Kinross Council has a significant role to play in lighting the city. It is responsible for road and street lighting, events lighting and features within the City Centre, housing amenity lighting, park lighting and city dressing projects, including Christmas lighting and tree lighting. However, greater value can be achieved by developing a more strategic approach to lighting across the city.

1.8 Other cities[2] across the United Kingdom have developed lighting strategies to help promote their cities. They enhance safety, highlight landmarks, encourage light as an art form, add focus to regeneration projects and enhance amenity.

1.9 LED and Intelligent Street Lighting is currently being developed and aims to demonstrate how cities like Perth could use them to reduce carbon emissions and increase public safety. Across Europe LED lamps are now gradually being introduced in the market. Wide scale LED usage is helping to significantly reduce energy consumption, in accordance with the goals of the European Commission's *Digital Agenda for Europe* and the EU Green Paper *'Lighting the Future'*.

1.10 In the UK many local authorities[3] are planning or implementing the conversion of their existing streetlights to new LED lights bringing cost savings and environmental benefits. In Scotland, the Scottish Futures Trust is developing a programme to help local authorities implement LED lighting across their areas. This includes a web based toolkit with guides, proforma technical and financial models and exemplar business cases. Perth & Kinross Council is currently rolling out a LED capital replacement programme which will see the replacement of 17,000 streetlights. The replacement phase which covers the City Centre has already been completed.

1.11 The Lighting Strategy will be used to help deliver a coherent and coordinated lighting regime across the city and to identify where lighting can additionally be used to reinforce and highlight the special characteristics of the city.

2 Aim

2.1 The overall aim of the strategy is to reinforce the attractiveness and ambience within the city, improving the balance between lighting and darkness, and provide a safe environment for its use and enjoyment by achieving coherent lighting schemes that are well conceived, designed and maintained.

2.2 The strategy will also achieve the aim of Perth becoming a sustainable, smart city and one of the best small cities in Europe, as outlined in the Perth City Plan, by linking in with the Smart Cities Scotland agenda and the emerging Smart Perth and Kinross Strategy.

[2] Glasgow, Hull, Derry, Gloucester and Edinburgh

[3] Leeds, Birmingham, London and Greater Manchester Region

3 Objectives

3.1 In order to achieve the aim, three key objectives have been identified:

1. To develop a *Lighting Action Plan* which outlines an innovative approach to design, so lighting becomes an attractive part of the street and place, promotes community safety and assists orientation for both pedestrians and road users.
2. To continue to prioritise lighting designs in line with the Street Lighting Policy which will reduce energy use, cost and minimise light pollution, and contribute to making Perth and Kinross a smarter and more sustainable place.
3. To develop and augment Perth's character, and help achieve the ambition of Perth becoming one of Europe's most attractive small cities.

3.2 The objectives have been developed to reflect the range of roles that lighting can play in the life of a city and apply to Perth at a local level to reflect local distinctiveness as well as on a strategic city wide basis.

4 Achieving the Objectives

4.1 The following section sets out how the Council will seek to achieve these objectives.

Objective 1: To develop a Lighting Action Plan which outlines an innovative approach to design, so lighting becomes an attractive part of the street and place, promotes community safety and assists orientation for both pedestrians and road users.

4.2 Lighting defines how parts of the city are experienced and is a particularly important aspect of the conservation areas. At its most simple level, street lighting must provide a safe and comfortable environment for pedestrian and road users. Road users must also have acceptable lighting levels that comply with national standards. In most parts, street lighting is the sole method of lighting our streets; however, in some cases this can be supplemented with other sources, such as building or special effect lighting which is becoming increasingly important in enhancing the attractiveness of the street environment.

4.3 Government policy, *Designing Streets,* outlines an approach to the way in which street design and layout should be addressed. The policy recognises that the general urban design and geometry of streets can be influenced by detailed design issues such as lighting.

4.4 The Perth and Kinross guide to placemaking sets the context for lighting in relation to street design and reflects the aspirations of government policy. This guidance provides additional context to street design, highlighting particular street patterns and relationships. In Perth, many streets have conservation area status and individual buildings are listed. This requires greater consideration of the effects of new features such as lighting.

4.5 Examples of best practice will be sought from the rest of the UK and Europe. For example, Ghent, in Belgium, has developed a reputation for its innovative lighting work in recent years, winning design awards for a policy of up-lighting historic buildings with warm-white light. It also hosts a free-to-visit winter festival which maps out 30 light installations along a walking trail around the city centre, illuminating historic and often-missed buildings.

4.6 In the UK, Lumière festivals like those held in Durham and Derry, provide an opportunity to completely transform a city's appearance over 3-4 days. The 'Enchanted Forest' held every year in Pitlochry and Aberdeen's Spectra Festival of Light, are examples of a lighting show which provides a significant boost to the local economy.

4.7 The Perth Lighting Action Plan will provide a cohesive framework for developing and implementing significantly enhanced feature and decorative lighting to grow the city's evening and night time economy.

4.8 The Perth Lighting Action Plan will outline a series of initiatives which combine both public and private sector investment. A number of key areas will include the marking of key gateways into Perth; key retail areas; architectural lighting of individual iconic public and private buildings; events lighting and natural features and public spaces.

Objective 2: To continue to prioritise lighting designs that will reduce energy use, cost and minimise light pollution, and contribute to making Perth and Kinross a smarter and more sustainable place.

4.6 A *Street Lighting Policy*[4] has been developed for Perth and Kinross. A range of different lighting standards and designs is proposed, depending on the type and location of the street and/or space. The Street Lighting Policy provides the technical requirements for lighting designs and sets out the level of information required by the council and planning authority for any new scheme.

4.7 Generally new lighting schemes will need to consider the following:

- Its location within the street hierarchy which will determine the type of equipment and level and tone of lighting;
- Historic research evidence produced to inform the lighting design solution
- The family of columns and lamps to be used;
- The need to retain or replace or replicate any historic or original street light fittings;
- The mounting height, column and lantern style;
- The potential and physical impact of any lighting attachments to listed and historic buildings within the conservation area.
- The source type and luminance of the lighting. In most cases a warm white light colour will be used within a given range of colour temperatures;
- Lighting levels, which should seek achieve the minimum light levels that will achieve safety for pedestrians and road users. Lighting should

[4] Developed by the Street Lighting Partnership and applies to street lighting throughout Perth and Kinross

generally be in accordance with BSEN *13201-2,* BSEN *13201-3,* and BSEN *13201-4.* Guidance on lighting design is given in BS *5489-1, Code of Practice for the Design of Road Lighting,* to comply with the requirements of BSEN *13201.* This is a guidance document only and local circumstances may require different approaches.

4.8 An organised and structured approach to lighting is essential if it is to have an effective role in the development and promotion of the city. New lighting schemes should be developed within a legible framework and the principles and hierarchy for lighting the city are set out in Appendix A and the Street Lighting Policy. Innovation will be encouraged within this context. An efficient delivery and management process is an important part of delivering coordinated lighting across the city.

Joint Working, Delivery and Management Process

4.9 The Street Lighting Partnership[5] provides in-house design and installation and maintenance services which ensures coherence across lighting renewal programmes. Planning permission and/or listed building consent may be required for new lighting schemes within a conservation area or where they affect the character of a listed building.

4.10 Lighting should be considered as an integral part of the design in any new proposal (from the pre- application/ planning in principle stages through to the detailed planning stage as well as at the road construction consent stage and listed building consents). The Council will therefore expect lighting to be considered through planning and road construction consent processes in parallel. Clear objectives and quality audit processes will be expected to be applied. Planning, transport and roads teams will consult with the lighting team from the initial planning stage.

4.11 The Council will adopt the government policy recommendation from Designing Streets to use Street Engineering Review and Quality Audits which should be used to draw various audit processes together and test them against objectives. The technical requirements will be delivered in the context of quality management systems the Council has in place.

4.12 The form and positioning of lighting will be a material consideration in the assessment of planning applications and conditions will be used to control the installation of lighting equipment. The Sustainable Lighting Strategy for Perth will be adopted as supplementary planning guidance. A lighting design statement will be sought for applications that are considered to affect key views or elevations in the city.

4.13 Good policy advice can help to avoid the detriment to amenity. The Street Lighting Policy will provide technical advice. Control of light pollution is provided by planning conditions e.g. to prevent light spillage, guided by environmental health advice and controls. Further controls are possible if light pollution constitutes a statutory nuisance through statutory powers in the Environmental Protection Act 2008.

[5] Incorporates representation from Perth and Kinross Council, Dundee City Council and Tayside Contracts

4.14 The Council will take the lead in coordinating the development and implementation of the overall approach to lighting in the city; relating to lighting of buildings for amenity purposes and for the lighting of streets, and public spaces. This will be in conjunction with key internal partners (including events, planning and lighting teams) and external stakeholders.

4.15 The Council spends significant resources on lighting and is also committed to developing a smart and sustainable city and district. Lighting accounts for about 50% of the electricity consumption in Perth and but there is the potential to save up to 40-60% of energy used in public lighting by the use of low energy LEDC lamps. Additionally, there is the potential to make further savings if Intelligent Street Lighting is installed to vary lighting levels at times of low pedestrian footfall.

4.16 The Council will consider the impact that lighting equipment and design has on energy consumption. Care will be taken to ensure efficient systems are used that minimise energy use and can be easily maintained. Modern equipment can focus light where it is required thereby minimising light pollution. Guidance is contained within *Controlling Light Pollution and Reducing Lighting Energy Consumption,* PAN *51: Planning, Environmental Protection and Regulation* and PAN *77: Designing Safer Places.*

4.17 Street lighting takes account of energy conservation and light spillage issues by using modern lanterns with good optical control. Trials are underway within Perth & Kinross Council for both adaptive lighting and the use of emerging technology with LED street lighting.

4.18 The larger roll-out of intelligent LED lighting systems in cities will be part of the creation of a sustainable smart city: These are cities where lighting innovation is interlinked to other smart city networks (communications, renewable energy, building or traffic management systems). Intelligent Lighting Systems allow individual lighting devices to be controlled and through the use of sensors, can provide direct communication between lighting devices and their local environment.

Objective 3: **To develop and augment Perth's character and help achieve the ambition of Perth becoming one of Europe's most attractive small cities.**

4.19 Perth is the nation's newest city. St. John's Kirk is an iconic structure that holds a symbolic position in the minds of the residents and visitors of the city. Lighting is used to reinforce this image of the Kirk and it can play a similar role in other areas, showcasing different parts of the city, reflecting local identity, supporting the place-making agenda and reinforcing Perth's status as an historical, cultural and knowledgeable city.

4.20 Lighting of buildings or providing feature lighting effects for special events, such as the Winter Festival, provides a mechanism for promoting the beauty of the city. This will help to reinforce the outstanding built heritage and natural qualities of Perth.

4.21 Lighting can be used to support development of an area. A refreshed lighting scheme can engender new found confidence and support other development mechanisms.

4.22 This objective will be progressed by using the following approaches:

Areas of Darkness

4.23 Lighting will be used to reinforce the atmospheric nature and character of the city's streets and spaces and to enhance the impact of lighting key views and vistas. Retaining darker and contrasting areas and spaces, such as St Johns Kirk against the brighter street and facades of the High Street will be important.

Lighting of Buildings and Monuments

4.24 The permanent lighting of key buildings and monuments help to highlight the cultural assets of the city. Working with owners, this needs to be carried out in a structured way so the overall impact is coherent. The focus will be on highlighting particular features and details on buildings and allowing facades to be read using lighting emitted from windows, for example. Permanent floodlighting will be avoided. The effects of light emitted from glass facades and shop fronts will be considered where they relate to a key view or vista.

City Dressing, Special Event Lighting and Lighting as an Art Form

4.25 City Dressing involves the temporary enhancement of the street and public realm to highlight particular places and events. Image projection, building illumination and Christmas lighting are identified as key lighting techniques within the City Dressing Strategy.

4.26 The Winter Festival celebrations such as the Christmas lights are annual events where the atmospheric impact of lighting is used. A limited number of key public buildings and monuments are lit in association with these events. The use of colored lighting can add a dynamic tone to these celebrations. Opportunities exist to highlight events such as the night time sky (equinox moon) as well as temporary lighting of certain routes and spaces in the city on certain nights. A calendar of lighting events could be developed to support this.

4.27 Public art installations often use colored lighting and imagery to enhance their features, presence and accessibility. Targeting key gateways into the City Centre, as well as public art, will form part of the remit of development projects in and around the centre of Perth. An example of how lighting can be used to promote the presence and accessibility of places and art is the Concert Hall on Mill Street.

4.28 Lighting in its simplest form, is regarded as a form of public art and key locations throughout the City Centre will be identified for future lighting shows.

Development Areas

4.29 New street lighting and feature lighting are an important part of development projects and the overall improvement of public realm. Lighting can be used as part of a toolkit for regeneration literally casting new light on an area and demonstrating a renewed confidence through investment. For example the development of Mill Street and the area around Perth City Hall presents opportunities to use lighting in a modern and innovative way.

Lighting Design Principles

4.30 It is important that lighting designs are developed to bring coherence and support place-making across the city. Functional road lighting enhanced by decorative lighting should be considered alongside all other aspects of new developments and help to establish local identity.

4.31 Currently lighting standards and quality varies. The range of street light fittings results in a variety of light colours and intensities. The fittings in place for lighting of buildings and monuments are not being consistently maintained resulting in varied lighting effects.

4.32 The Council has therefore set out a series of design principles developed from a review of the Street Lighting Policy of PKC and examples of best practice from around the UK and Europe. These principles should guide the lighting of new development, any special lighting proposals and also guide street lighting design across the city. The principles are set out in Appendix A.

4.33 New schemes for lighting will be required to respond to these principles. General principles set out requirements for the type and colour of lighting, the type of buildings or features that should be lit and the approach that should be taken to light them and also reinforces the role of city dressing and event lighting.

4.34 The principles identify particular approaches for different parts of the city, including: Conservation areas, listed buildings, parks and green spaces, landmarks and key routes into Perth.

4.35 Prominent cultural buildings and features that reinforce the structure of the city and key parts of the city skyline are identified. Detailed guidance in the form of a City Centre design plan will provide further information on design principles for the City Centre and key areas listed above. (4.16).

4.36 The principles will be used to establish a set of priorities for the city. These priorities will need to be coordinated through a steering group, the details for which are set out in section 5.0, Delivery and Next Steps.

5.0 Delivery and Next Steps

5.1 The strategy will be delivered through a number of partners, including property owners and developers. In addition to this, a key role in the delivery of street lighting improvements will be played by the Street Lighting Partnership which has responsibility for the provision of street lighting across the city. While it is expected that the more ambitious city dressing/ special event lighting schemes and artistic lighting will have to be funded as opportunities arise, the Council will consider how public investment could assist in realising an agreed programme.

5.2 Maintenance of lighting schemes is essential, with specific measures put in place to ensure that the scheme requirements and therefore impacts are not altered. The Street Lighting Partnership provides maintenance and manages the improvement programme for street lighting. A review mechanism will also be put in place to monitor building lighting schemes.

5.3 The role of the strategy is to provide greater coherence around lighting issues in the city. Addressing the objectives will achieve this. While some objectives will be addressed through the day-to-day operations of the Council working with its partners, there are key early actions arising from the strategy. The Council will take the following actions over the next 12 months to address the objectives.

Next Steps

Objective	Actions
1 To develop an innovative approach to design so lighting becomes an attractive part of the street and place, promotes community safety and assists orientation for both pedestrians and road users	*Promotion* • Appoint a lighting design consultant to identify, develop and produce a detailed lighting design plan, which audits existing architectural and decorative lighting schemes, identifies gaps in lighting provision and outlines opportunities for new lighting installations, based on a candidate list of buildings/locations provided by Perth and Kinross Council. • Identify funding requirements for lighting infrastructure and identify opportunities to secure resources internally (Development projects/capital bid's/SLP) and externally (Scottish Government/SSE/PKHT). • Integrate Lighting Plan with a calendar of lighting and night time events for the city. Programme to be developed in partnership with City Development, Cultural Services and other key partners.
2 To continue to prioritise lighting designs that will reduce energy use, cost and minimise light pollution, and contribute to making Perth and Kinross a smarter and more sustainable place.	*Street Lighting* • Promote reduced lighting levels within the parameters of the British Standards in new lighting schemes. Development proposals that may affect key views and vistas and major developments will be required to provide detailed lighting design proposals as part of planning application. • Further develop the Street Lighting Policy as a technical appendix to the strategy. • Work with applicants, particularly for major developments, to deliver lighting as part of the overall proposal. This will be managed by the planning and streetscape delivery processes. • Continue to work with partners to identify energy efficient and SMART lighting solution including Intelligent Street Lighting • Pilot Intelligent Street Lighting in locations

	within the City Centre to realise opportunities to integrate SMART technology within new lighting schemes and thereby helping to achieve Perth's vision of being Scotland's first low carbon city. • Work with the Street Lighting Partnership and low carbon investors to identify a business case for converting all existing street lights in Perth and Kinross to LED lights
Objective	**Actions**
3 To develop and augment Perth's character and help achieve the ambition of Perth becoming one of Europe's most attractive small cities.	*Dark skies/ energy reduction* • Take forward the Perth Lighting plan and prioritise infrastructure required to implement decorative lighting schemes within the City Centre and Tay riverside areas, along with key gateways and landmarks. • Work with third parties to maximise funding opportunities to deliver innovative lighting schemes in and around Perth City Centre, in order to deliver and sustain a vibrant evening and night time economy. • Continue to address energy reduction measures through city wide programme of maintenance and replacements and address light spillage and pollution through the design of light fittings.

Appendix A: Lighting Principles

General

- All lighting should conform to specific technical requirements set out by the Council. The Street Lighting Policy will set out these requirements.
- The general approach to lighting the City Centre should focus on providing a safe level of lighting for pedestrians augmented, as necessary, for vehicular circulation.
- Priority will be focused on lighting the lower portions of the street to establish a natural effect that will reveal the skyline of the city against the dark sky
- Where possible, greater functionality of street lighting using new technology should be pursued to achieve low carbon and smart city objectives
- Lighting of buildings, monuments, etc. and street lighting should be white, unless there is a robust business case to use additional colours. Coloured lighting will only be considered for art installations, special celebrations and events.
- An emphasis will be placed on lighting cultural buildings and monuments not individual buildings and terraces. Formally sited statues and monuments could be lit to emphasise their strategic locations.
- Building lighting should be used to bring out architectural form, carved masonry structure and avoid general floodlighting.
- Shop front and retail lighting should be considered in the context of its effect on the overall lighting theme for the street.
- City dressing and special event lighting should be carefully programmed and, by its very nature, should be temporary.
- Coherent lighting of key spaces, Tay Street, for example, should highlight focal points and entrances to the city centre.
- Creative opportunities to highlight other features in public spaces, such as archaeology, trees and public information will be considered.

City Centre

A city centre design plan will be prepared to set out the context and principles for the City Centre in greater detail.

Conservation Areas

- The effects of lighting outside the built up areas should generally be minimised.
- Lighting of urban and conservation areas will be directed at safety for the pedestrian augmented as necessary for vehicular circulation.
- Where appropriate, heritage/character should be reinforced through lighting key/public buildings, highlighting of external and internal architectural detail and retention of historic lighting columns if they form part of the heritage asset.

Residential areas

- Street lighting will be the main light source and should ensure pedestrian safety as well as vehicular circulation.

River corridors

- Rural or non-urbanised sections of the river should not normally be lit with the exception of well-used sections that may be of benefit to both the community and character of the area. Lighting should normally be restricted to sections where the urban areas interface with the water space.
- Opportunities exist for using lighting as an art form in key locations.

Parks and green space

- Lighting should be kept to a minimum and priority given to pedestrian level lighting.
- Lighting design should take account of wildlife (particularly bats) and reduce light spill, siting of equipment and minimise siting particularly close to water and along woodlands and tree lines.

Key public and cultural buildings

- Lighting should be used to highlight the identity of these buildings within the city structure. Such buildings would include museums, galleries, theatres, libraries and churches.

Highlighting approaches and views to Perth

- Lighting can be used to highlight cultural buildings, bridges and landscaping, for example at key gateways and entry points on the approaches to Perth.
- The prominent public/ cultural buildings/ spires within the views of Perth as seen from the principal approaches should be revealed with light.

Skyline, prominent buildings and landmarks

- The groups of towers, domes and spires on the city skyline should be lit for their distant views to create a dramatic night-time sky line. Key buildings also have a role in views at a local level.
- The towers, domes spires and roofs that could be lit include the following (of which many are already lit to varying degrees):
    - *St Johns Kirk*
    - *St Matthew's Church*
    - *St Ninian's Church*
    - *St Leonard's Church*
    - *Sheriff Court*
    - *Kinnoull Hill Tower*