AGENDA ITEM NO 8

REPORT NO 445/15

ANGUS COUNCIL

COMMUNITIES COMMITTEE - 17 NOVEMBER 2015

STREET LIGHTING POLICY

REPORT BY THE HEAD OF TECHNICAL AND PROPERTY SERVICES

ABSTRACT

There are just under 22,000 street lights in Angus managed through the Lighting Partnership with Tayside Contracts. The report sets out a formal policy to manage the stock and gives information on the carbon and energy reduction.

1 RECOMMENDATIONS

It is recommended that the Committee

i) agrees to the attached policy; and

ii) notes the carbon and energy reduction.

2. ALIGNMENT TO THE ANGUS COMMUNITY PLAN/SINGLE OUTCOME AGREEMENT/COPORATE PLAN

2.1 This report contributes to the following local outcomes contained within the Angus Community Plan and Single Outcome Agreement 2013-2016:

- Communities that are sustainable
- Our carbon footprint is reduced

3. CURRENT POSITION

3.1 With reference to previous reports to committee on Lighting Partnership (Report No. 99/15, approved by this Committee on 3 March 2015 – Article 10 refers) and also reducing energy consumption of street lighting (Report No. 291/11 approved by the Infrastructure Services Committee on 19 April 2011, Article 22 refers)), a street lighting policy document has been prepared and a copy of the street lighting policy is attached at **Appendix 1**. This policy records the processes that are in place which have led to the energy and carbon reduction.

3.2 The associated energy & carbon reduction updates are given in **Appendix 2**.

3.3 From 2011 the carbon footprint has been reduced by over 1000 tonnes of carbon, which will be saved each year, equivalent to a 20.7 reduction in 4 years, towards the 25% in 10 years target.

3.4 Similarly there is an annual saving of over 1,800,000 kW of electricity hours, some 19.7%, surpassing the 15% in 10 year target.

3.5 Despite a 22% increase in energy prices and a 4.1% increase in the lighting stock since 2010/11 the actual costs of the street lighting energy have only increased by 3% over this period.

3.6 The work will continue, in accordance with the policy, to further reduce both the energy and carbon impact of our lighting and provide resilience against future price rises.

4 FINANCIAL IMPLICATIONS

4.1 There are no financial implications of this report. The processes set out in the policy have provided savings over the period including a budget reduction of £314,000 in 2015/16. The policy will continue to deliver by monetary and carbon savings.

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NOTE: The background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973 (other than any containing confidential or exempt information) which were relied on to any material extent in preparing the above report are:

- Report No. 291/11
- Report No. 99/15

APPENDIX 1

ANGUS COUNCIL
STREET LIGHTING POLICY

1. Introduction

An effective street lighting service contributes significantly to the following Council priorities:

- Improving community safety including road traffic safety and safety for pedestrians especially the elderly reducing social inequality
- Improving local conditions for economic development
- Reduce pedestrian/traffic accidents with their associated social and economical costs
- Targeting support to vulnerable communities
- Making Angus a top performing Council

Particularly in relation to the growing importance of the carbon reduction agenda, in 2009, the council embarked on a review of street lighting policy. This involved the trial of lighting systems that could provide tools to reduce energy consumption and hence CO2 emissions.

2. Street Lighting Objectives

The provision of a street lighting service on the public roads and footpaths throughout Angus is generally taken for granted nowadays and is seen as a basic service that the local authority should provide to its citizens. Providing street lighting can support the Council's corporate objectives relating to community safety, social inclusion and quality of life including:

- To prevent night time personal injury accidents
- Reduce street crime
- Reduce the fear of crime
- Promote sustainable transport (public transport, cycling and walking)
- Facilitate social inclusion by providing freedom to use streets after dark
- Support the 24 hour economy, promoting economic development
- Provide safe access to educational facilities supporting life long learning
- Assist emergency services to identify locations and shorten response times

The aim of the Council's policies and standards is to provide an effective modern lighting service that takes into account the following key factors:

- rising energy costs
- nuisance potential from light pollution and balance 'dark skies' with road safety issues
- reduce detrimental environmental impact through the visual appearance of lighting, both during day and night, and the overall

impact to the environment through energy conservation and light pollution
- community safety and fear of crime
- provide cost-effective lighting systems which are energy efficient, incorporate whole-life costs, support sustainable development and recycling initiatives whilst promoting the purchase of “green” energy
- assist the council’s Carbon Reduction Commitment and its legislative requirement to reduce its CO2 emissions to set targets by 2020 and 2050 as detailed in Report 856/08

The key objective is to provide an effective street lighting service that minimises the street lighting carbon footprint but without negatively impacting on community safety considerations.

3. Where We Light

The Road (Scotland) Act 1984 stipulates in section 35 “A local roads authority shall provide and maintain lighting for roads, or proposed roads, which are, or will be, maintainable by them and which in their opinion ought to be lit.”

As mentioned above, the Council as Roads Authority has to determine where it is necessary to provide and maintain lighting on public roads. Roads and footways are used by the public at large and perform a transportation function i.e. allows people to move safely from place to place. This lighting is considered to be **street lighting**.

The Council also has a duty of care in other public areas such as car parks, parks and garage areas therefore lighting may also be provided by the Council in many non-road areas and maintained by the Roads Business Unit as appropriate. Equally there are areas which have an extensive network of paths which do not normally fulfil a transportation function and are mainly for local access. This lighting and the lighting within council facilities is considered to be **amenity lighting**. Lighting all these paths is impractical therefore the aim is to provide one lit route at each location.

The standard of lighting for roads is defined in BS 5489 – 1:2013 Code of Practice for the Design of Road Lighting along with BS EN 13201: European Standard for the Design of Street Lighting on the Public Highway. This specification categorises the roads on the basis of usage and environmental factors.

3.1 - Traffic Routes & Subsidiary Roads & Footways

- **Traffic Routes** – (List of Public Roads)

Approach - Light only within speed controlled areas i.e. urban areas. De-restricted (speed) areas are not normally lit, however areas with special requirements e.g. accident sites will be considered on their own merits for a site-specific treatment.

- **Subsidiary Roads & Footways** – (List of Public Roads)

Approach - Generally any adopted road within an urban area will be lit within the limits of the available funding.

3.2 - Non Road Areas

- **Public Car Parks and other Transportation Related Areas**

Approach - Lighting provision in these areas will generally follow the precedent for road lighting i.e. if area served by a lit road, lighting may also be provided.

- **Property Related Parking, Garage Areas, Parks and other Council Areas**

Approach - Lighting provision will be site specific and dependent on the requirements of the responsible service. The responsible Council Service will be required to fund both installation and maintenance. This amenity lighting may not be to road lighting standards.

- **Private Roads/Areas/ Unadopted Roads**

These are roads/ areas with no Council ownership / responsibility.
Approach - No new lighting will be provided on roads/areas. Existing lighting, currently on the lighting inventory, will continue to receive basic maintenance i.e. inspections and minor repairs. Existing lighting requiring greater repairs will be referred to the owner. Any existing lighting removed on apparatus safety grounds will not normally be replaced.

3.3 - Environmental Factors

There are a number of critically important environmental factors that should be considered when maintaining existing and planning the installation of new exterior lighting schemes. Firstly, is there a need to install lighting? If there is, the following are paramount:

- Equipment must be energy efficient and LED (Light Emitting Diode) or Cosmopolis lanterns with dimming and control capacity will be specified to reduce energy use when appropriate.

- the visual impact of the equipment

- minimising light pollution

- As a general objective the Council will seek to minimise light pollution of the night sky, light trespass, and reduce to a minimum the production of greenhouse gases by the use of up to-date and technologically advanced lighting/electrical equipment.

- The lighting stock varies in age and quality and there are numerous types of equipment which can now be regarded as “old technology” and obsolete. The objective is to the managed the replacement and improvement of all lit assets, subject to the appropriate funding being secured. Introducing a uniformity of stock/parts will reduce overall maintenance costs and improve speed of repairs.

- White light. The strategy is based upon the conversion of the increasingly obsolete orange street lighting which is commonly used in most areas to white light sources.

The Council will utilise environmental zoning system defined in BS 5489 to define lighting levels:

Zone 1: Areas of Medium District Brightness (Urban Location) e.g.areas that have medium/high population densities and most roads should already be lit. Generally, within an urban location all highways will be lit in accordance with the relevant standard applicable to the type and category of the highway.

Zone 2: Areas of High Brightness (Urban centres with high usage during the hours of darkness) e.g. the Town Centre and areas that have high population densities. In urban centres with high vehicle or pedestrian use during hours of darkness, carefully designed lighting will not only provide adequate illumination for the motorist but where possible also provide an interesting and attractive ambience for people to enjoy.

4. Inventory and Management Systems

The definitive record of Angus street lighting asset data set is held in the HiLight 3 Maintenance Management system. The database holds extensive details of all the units including geographical references.
Future development proposals is to have this data available on the corporate GIS system to allow links to the Council's ACCESSLine allowing fault reports to be processed directly.
Records of underground lighting cables are held on a separate GIS system (Arc View) but the proposal is to include these within the Hilight 3 system.
The operational nature of this data means that it is checked and updated on an ongoing basis. This regular checking gives confidence in the reliability of the data. However a number of the assets installed prior to 1989 have an estimated installation date due to an absence of records from that era.

5. Standards of Lighting

Lighting is designed to meet the standards recommended in BS5489 – 1:2013 Code of Practice for the Design of Road Lighting and BS EN 13201 – European Standard for the Design of Street Lighting on the Public Highway. The level of light can be varied over time to suit the usage of the area to be lit. The 'quality' of light provided also varies to suit the location.
The following key themes gathered from previous consultation questionnaires sent out to residents of completed schemes reported to committee in Report 194/10 have been used to influence the proposals on lighting policy:

- The residents of Angus feel safer with white light. The light source shall be either LED (Light Emitting Diodes) or Cosmopolis (Ceramic Discharge Metal Halide), both of which emit white light.
- The quality of lighting is important to pedestrians and residents
- Varying lighting levels to assist with meeting the Councils Carbon commitment is acceptable
- The lighting standards recommended in BS5489 are adequate for general security

All street lighting and electrical systems must comply with the general legislation and more specific street lighting industry
Standards:

- Health and Safety at Work etc Act 1974.
- Electricity-at-Work Regulations 1989.
- BS 7671: Regulations for Electrical Installations

- BS EN 60590: Specification for Clarification of Degrees of Protection provided by Enclosures.
- EN40: Lighting Columns.

6. Lighting Sources / Types

The type of light source has a significant effect on the night-time scene as a result of the different colour appearances produced.
Light sources will vary but, for the purposes of street lighting the LED or Cosmopolis lamp is considered to be the most efficient for a specific scheme.
In all cases, where electronic control gear is available, then it must be used in preference to standard or low loss gear to ensure the most efficient use of energy.
All new electronic control gear must be capable of dimming down to 66%.

- LED (Light Emitting Diode) produce white light in various intensities at very low wattage levels. The lamps have very long service intervals of up to 100,000 hours which equates to a minimum of 22 years between changes. This significantly reduces maintenance costs. LED are fast becoming the industry standard and are the Council's preferred option for street lighting.

- Cosmopolis (CDO-T) - ceramic discharge metal halide and medium running cost has white light providing excellent colour rendering. The CDO luminaire optic allows good control of the light in reducing light pollution. Lamps have a 6 year life which reduces maintenance costs.

7. Lighting Materials

All street lighting material shall comply with the requirements laid down in the current Scotland Excel Framework Agreement: Street Lighting Material Specifications.
All lighting equipment shall complement and enhance the appearance of the area. Conservation Area status does not establish a pre-requisite for period style lighting – good functional modern designs may be suitable. However, the particular character of an historic area may demand a non-standard approach or a blend of various lighting sources. Every opportunity should be taken to extend the range of acceptable equipment available through discussions with suppliers.

7.1 - Lanterns

If "period style" lanterns are used, care should be taken to match historical periods. However, it is also necessary to maintain a harmony of style, as far as possible, as different lantern types may produce a cluttered and unplanned effect.
Where a modern style of fitting is proposed this, together with its control gear, must be recessive in design and colour and is sited so as to be "invisible" as far as possible during the daytime. This is of particular importance in areas where buildings are of diverse historical and architectural character. Such fittings should be simple and of appropriate shape, colour and scale to the architectural setting.
There is a general presumption towards using, as far as possible, lanterns that minimise light pollution of the night sky.
All lanterns used for the purposes of street lighting shall have a housing in high-pressure, die-cast aluminium and contain an acceptable optical system to direct the light onto the highway within the limits set by BSEN 60598.
To ensure the minimum environmental pollution to the night sky, lanterns will be mounted on the top of the column unless dictated by the lighting design. LED lanterns incorporate advanced optics which directs light accurately with minimum

spill into properties and to the surrounding area but still retaining electrical and illumination efficiency.
All lanterns should be manufactured to a minimum of I.P. 65 to BSEN 60590 for the lamp containment area and should be manufactured from vandal-resistant material. Lanterns must be designed and tested to provide a minimum normal operating life of 25 years.
All new lamps used on the lighting column replacement project will be long life lamps at the minimum power consumption level.

7.2 - Columns

The standard column shall be aluminium. This preferred option is the best value solution, with 50 year design life, are totally recyclable and also meets the criteria for initiatives to improve the green credentials. Therefore, aluminium columns will be used through our own lighting improvement works and be specified for new developments (third party developers).
Decorative columns specified for town centres, conservation areas or in architecturally sensitive areas will be subject to a separate specification, when required, but generally they will be of mild steel with galvanised protection. Columns will not be painted unless they form part of an existing decorative lighting scheme. All columns are to be manufactured to:

- EN40: Lighting Columns.
- BS 5649: Lighting Columns
- BS EN 40:Lighting columns1992

7.3 - Electronic Control Gear

Street lighting lanterns contain control gear to allow the lamps to operate correctly. Traditionally this was electromagnetic which has relatively high losses resulting in high energy cost. All new white light lanterns are specified with electronic control gear which reduces these losses and hence energy used and contributes to an extended life. The electronic control gear has a longer service interval with manufacturers stating a minimum 12 years' operating life.

7.4 - Photocells (Trimming)

At the moment the switching on and off times of the majority of lighting is generally controlled by photoelectric cells (PECS). They are programmed to switch the lights on when the level of daylight drops below a pre-set level and switch them off again the next day when the level of daylight increases.
Existing photocells installed in Angus are calibrated to switch on at 70 Lux and off at 35 Lux. New installations and replacement units are calibrated to switch on at 35 lux and off at 18 Lux reducing the burning hours by 20 minutes a day offering an energy saving against the existing switching regime.

7.5 - Variable Road Lighting Levels (Dimming)

Following extensive trials of variable lighting technology reported to committee in Report 291/11 and a consultation exercise reported to committee in Report 189/10 showing feedback to be very favourable to the introduction of new white lights with variable levels of lighting depending on the time of day and traffic / pedestrian movements.

The introduction of the variable lighting technology with lighting levels in accordance BS 5489 will provide a significant carbon / energy reductions.
Prior to the trial installations all the sites had “orange” lights. The new lights have white light offering improved colour rendering which appears brighter to the naked eye. The ability to see colours has particular relevance for community safety and has been shown to significantly reduce the fear of crime. The variable lighting system utilising pre-programmed ballast in each column is the preferred option for delivery through our own lighting improvement works and to be specified to new developers. This option allows changes to the lighting timings and levels of lighting by a physical connection to the equipment in each column rather than a central computer management system which relies on third parties for providing network connections to lighting nodes or the potential of long term IT licensing costs.

7.6 - Switching Times of Variable Lighting

The variable lighting regime now adopted is a maximum of a one step variation utilising the following standard switching times:

Dusk to 10.00pm running at full power
10.00pm to 6am running at reduced power to 66%
6.00am to Dawn running at full power

In August 2011 Report 568/11 reported to committee the changes in the measurement of electricity consumption for street lighting. The Council moved from unmetered supplies, which used nationally agreed “burning hours” to calculate consumption, to “passive half hourly” supply which calculates the consumption based on half hourly intervals using actual daily sunrise/sunset times. The savings on consumption by utilising the above variable lighting regime is equivalent to the “burning hours” of each lighting unit being reduced from 4130 to 2288 hours per annum giving substantial savings in energy and our carbon footprint.

7.7 General

All installations are to utilise high quality / long life materials where appropriate to extend network longevity and minimise whole life costs.

8. Lighting Levels

8.1 - Influencing Factors

- The results from previous consultation exercises have shown that the quality of lighting is much more significant than the quantity. Quality lighting is characterised by its uniformity and colour rendering ability.
- The principle employed is to provide a suitable base level in all lit areas and increase the levels in areas and at times when the usage dictates.
- The lighting levels stated in BS 5489 are used for guidance with each area being assessed on its own merits. There are three classes:
    - S Class – Subsidiary Roads
    - Me Class – Traffic Routes
    - Ce Class – High Amenity Areas
- No reduction in lighting levels or dimming within high amenity areas e.g. town centres

8.2 - Base Lighting Levels

Lighting Levels are recommended based on the nature and usage of an area. Angus is generally determined as an area of low crime with a few “hot spots”. This is a British Standard criteria which is incorporated into the design of new lighting installations in small villages and subsidiary roads and footways in residential areas. The lighting levels for each location will meet the requirements of BS5489.

9. Reactive Maintenance Services

The Council is responsible for providing and maintaining good quality street lighting across Angus that ensures, as far as possible and within the limits of available budgets their safe, economic, effective and reliable operation. Basic requirements are:

- The maintenance of an up-to-date electronic-based inventory of all units to ensure the satisfactory management of a maintenance process that meets legal obligations and provides information for the calculation of electrical energy.
- Carry out night scout inspections as appropriate.
- The Council shall provide and maintain a dedicated phone number 03452 777 778 and monitor the dedicated e mail inbox, accessline@angus.gov.uk to receive and deal with street lighting faults received from the public.
- Reactive repair procedures that ensure expeditious responses to identified defects and first-time repair.
- The Council has a 6 year electrical testing programme as well as a 3 year visual inspection programme.

9.1 Service Standards

- Repairs above ground to street lighting, signs and bollards are to be completed within 5 working days (7 calendar days).
- Performance on repairs is measured and the target is set at 95% completed within 5 working days (7 calendar days) and is compared nationally through SCOTS/APSE performance networks.
- Repairs to underground cable faults, which are Angus Council responsibility to be completed within 28 days. Some of lighting stock is connected to the main electrical cable of the local Distribution Network Operator (DNO) which are within the Council area is Scottish & Southern Energy. A service level agreement is in place with agreed targets times for fault repairs.
- Provide an effective emergency response within 2 hours.

9.2 Night Inspections of Lights (Scouting)

Previously Night Inspections were carried out on a weekly basis from October through to March but due to the ongoing programme of replacing existing lanterns with modern units the amount of yearly faults has reduced by 18%.
It is proposed to reduce the inspections to once a month and encourage the public to report faults either by phone to the dedicated access phone number (03452 777 778) or on-line via www.Angus.gov.uk.

No night inspections are carried out during April through to August. During the month of September night inspections are carried out in each burgh to spread the initial numbers of repairs required after the summer months.

9.3 Emergencies

Emergencies are responded to within 2 hours and cover the following

- Making safe any Lighting column, control pillar, lit sign pole knocked down (from a road traffic collision etc)
- Loose lanterns brackets, signs likely to fall and endanger the public
- Damage to lighting cables
- Groups of lights out i.e. more than 6 lights
- Lighting column or control pillar door missing with wiring exposed

9.4 Out of Hours Emergencies

Angus Council provide a (365/24/7) out-of-hours service to deal with emergencies and requests, out-with normal office hours and at weekends.
All calls to the out-of-hours phone number 07702167879 will be assessed on the nature of the incident and a decision on the appropriate action will be taken. Any reports identified as requiring immediate action will be attended to by a two person team which includes an electrician who cover the whole of Angus. Any reports made to the emergency number not requiring immediate action will be dealt with as per the service standards stated above.
A comprehensive listing of all types of call and their respective priority rating is shown in Table 1. Responses are classified into 2 categories as follows:
PRIORITY 1 – EMERGENCY (matters that require immediate attention)
PRIORITY 2 – ROUTINE (matters that require to be notified to the Office at the start of the next working day)

Table 1

SERVICE REQUEST	PRIORITY	ACTION	COMMENTS
Lighting column, control pillar, lit sign pole knocked down.	1	Immediate	
Loose lanterns brackets, signs likely to fall and endanger public	1	Immediate	
Damage to lighting cables	1	Immediate	Isolate/Make Safe
Section of dark lights	1	Immediate	Dependent on location and time of night
Bollard shell missing	1	Immediate	Dependent on time of night
Door off/missing on any illuminated street furniture	1	Immediate	
Traffic light failure	1	Immediate	Check for supply only. Maintenance is the responsibility of a Third party contractor.
Individual dark lamps on any street furniture	2	Notify Office next working day	Added to weekly maintenance.
Equipment loose/bracket swung round but unlikely to fall or endanger the public.	2	Notify Office next working day	
Lighting continuously on	2	Notify Office next working day	

10 Preventative Maintenance Services

Routine or preventative maintenance is a range of cyclic activities designed to help the lighting stock operate in an efficient manner. This regime includes column/lantern inspection, cleaning, lamp changing and electrical testing.
These activities are combined to maintain the design standard of illumination and to ensure the equipment remains in a safe condition.

10.1 Visual Inspection

All street lights, illuminated bollards, control pillars and lit traffic signs are subject to a **3** yearly visual inspection as per The ILE Technical Report 22 – Managing a Vital Asset: Lighting Support. This identifies any deterioration in the lighting stock and any issues identified are either rectified immediately if public safety is involved or programmed for upgrading at a later date and includes:

- Timing mechanisms are checked
- Electrical components and wiring is checked
- Structural condition is checked
- Stability and alignment is checked

10.2 Cleaning:

During reactive lamp replacements all optical components of the lighting units should be cleaned both internally and externally to remove any build up of dirt on the optics which if left reduces the light output and consequently is wasteful of energy.

10.3 Electrical Testing

Routine testing to all installations is planned on a rolling programme for every **6** years as recommendation in the Electricity at Work Regulations and BS7676 IEE Wiring Regulations.
All new installations and alterations to the existing infrastructure are tested prior to commissioning.
The results arising from electrical testing are used as a driver for future programmed maintenance or appropriate replacement.
Any installations found during the testing process to be of electrical safety concern will be immediately made safe and disconnected if necessary.

10.4 Column Painting

Columns being replaced under the column replacement project are of aluminium construction and require no painting.
With the exception of existing decorative columns no painting is carryout as the painting of lighting columns was offered up as a budget saving in 2008

11 Prioritising Lighting Column Replacement

Consideration has been given to ensuring the best value use of available resources. Whilst there are sites on road verges, the vast majority of the
lighting network is built on existing footways and their disturbance and the form of reinstatement selected, either full footway repair or reinstated tracks is a major public

issue. In terms of best practice any lighting replacements project, a deliberate strategy of linking the footway maintenance
budget to the lighting replacement project is in place. This will achieve overall project cost reductions and maximise the use of joint resources.
Individual columns that are identified through routine inspections and structural surveys as presenting an imminent danger will be included in the programme at short notice. Current funding for lighting replacements is being targeted at safety issues. An assessment system is used for prioritising these works. The system uses a number of factors related to the existing columns and their environment to achieve a priority rating. The current factors give priority to columns either in poor condition or with known design faults. Extra emphasis is given to the taller columns as they present a greater risk for potential catastrophic collapse.
Lighting is prioritised for replacement using an assessment system which considers

- Age
- Underground Cable
- Structural condition
- Electrical condition

12 Lantern Conversion Programme

To achieve the carbon reduction commitment of 2.5% each year until 2020 along with the commitment to reduce energy usage by 1.5% each year over the same period a programme of lantern conversions was prepared.
Where the condition of both the existing columns and lanterns allow, the proposal is to replace the higher wattage lamps with new modern, more efficient long life white lamps. If the lanterns are in poor condition then they will be replaced with modern LED units. It is proposed to replace the lower wattage lamps with LED gear tray retrofit units.
It is acknowledged that changing the lanterns/lamps at their existing locations may result in a reduction to the light levels but BS 5489 allows for a one Class reduction in levels when “white lighting” is installed.

13 Environmental Issues

13.1 Carbon Reduction Commitment

Report 856/08 detailed the council’s Carbon Reduction Commitment and the legislative requirement for the council to reduce its CO2 emissions to set targets by 2020 and 2050. Report 186/09 set out a number of options available to reduce electricity consumption and there by the council’s carbon footprint. Further reports 194/10 and 291/11 were presented to update on the ongoing aim to reduce the energy consumption of street lighting both in terms of reducing the corporate carbon footprint and its energy cost. Appendix 1 provides an update on the reductions up to 31st March 2015.

13.2 Light Pollution

All artificial lighting, including Street Lighting causes ‘Light Pollution’.
Light pollution is wasteful and this waste in minimised by Angus Council as follows:

- Providing lighting only in places where considered necessary as detailed in the Roads Scotland Act Part IV Section 35 (i) and as detailed in section 1 (Where We Light) of this policy statement.
- Keeping lighting levels to the lowest acceptable standards as detailed in BS 5489.

- Specifying luminaries that direct all light below the horizontal. The need to provide some illumination to areas surrounding the road makes shallow bowl luminaries the most economic.
- Intrusion potential is considered at the design stage with where possible lights located on boundary lines of properties and away from windows.

Angus Council Roads Division have for many years followed the Guidance issued by the Institution of Lighting Engineers – "Guidance Notes for the Reduction of Obtrusive Light"

The Scottish Executive Guidance Note "Controlling Light Pollution and Reducing Lighting Energy Consumption" deals with wider issues of energy consumption and is also taken into account in the design of lighting schemes.

13.3 Recycling

The aim is to recycle or re-use 100% of street lighting equipment affected by maintenance or replacement programmes.
The Waste Electrical and Electronic Equipment Directive (WEEE Directive) was introduced in January 2007. The directive aims to reduce the amount of electrical and electronic equipment being produced and to encourage everyone to reuse, recycle and recover it.
As such the Council has a responsibility to ensure compliance with the directive with regard to disposal of electrical equipment. Tayside Contracts has in place arrangements with disposal and recycling companies who offer collection services. The cost of recycling is recovered by the companies through the WEEE levy imposed on electrical purchases.
In relation to lanterns and other materials arising from Column Replacement Projects - designers will assess the condition of lanterns being replaced under the project and if in good condition will arrange for re-use. The lanterns will be refurbished for use as maintenance replacements.

13.4 Removal of Lighting and Lit Signs

The document that governs the type, detail and use of all road signs namely, the Traffic Signs Regulations and General Directions (TSRGD) has been updated.
Due to improvements in road sign manufacturing processes and the reflectivity of sign facing materials there has been a change within the last version of the TSRGD greatly reducing the occasions where traffic signs need to be lit.
Some of the most common changes are as follows:
• warning signs (when not on a trunk or principal road)
• regulatory signs (when not on a trunk or principal road)
• driver information signs (all roads)
Whilst a Roads Authority could still elect to light such road signs on the basis of road safety / improved driver information, it is proposed to take a stricter approach with the TSRDG and only light such signs in exceptional cases. In addition it is also proposed to implement a programme of removing the inherited lighting apparatus from existing road signs where it is no longer required by the TSRGD. The lamps associated with these road signs are generally small (2 x 8 watt fluorescent) so the combined electricity savings will not be significant. However, it will help to reduce the long term maintenance costs for lit signs and will contribute towards the council's objective of improved energy management.
In addition to the unnecessary lighting of some inherited road signs, consideration also needs to be given to the occasions where lighting is no longer needed or does

not perform the function it once carried out. Such situations could include, bypassed roads, sections of rural roads out with settlements, roads where housing or industrial units have been demolished or where a public facility is no longer in use.

14 Other Transportation Related Illuminated Apparatus

14.1 Traffic Signals / VMS Signs etc

Whilst the detailed maintenance policies and standards are outwit the scope of this Lighting Policy, the fundamental principles of carbon / energy reduction will apply to these items of illuminated apparatus:

- All new traffic signals installations will utilise ELV (Extra Low Voltage) signal controllers and will be fitted with LED lights.
- Wherever possible, environmentally friendly choices will be made regarding the use of Variable Message Signs (VMS) – as such solar/wind power options will be the preference.
- All new signs install as part of the safe route to schools project shall be fitted with LED lights.

15 Energy Provider Performance

15.1 Supply Connections / Disconnections

To reduce our reliance on our local Distribution Network Operator (DNO) Scottish & Southern Energy we install our own cable networks where appropriate. While this reduces our reliance it does not completely eliminate DNO involvement.
Procedures are in place for both new connections/disconnections and for maintenance/ repair of existing connections.
For new connections we work with the DNO to programme the works.

15.2 Fault Repairs

The DNO is responsible for maintaining their network and the connections they provide for street lighting.
These activities have been covered by a national service level agreement from October 2010. The agreed time scales are:-

- Emergency Fault (Live cable exposed) – 2 hours
- High Priority Fault (Loss of Supply to Traffic Lights or Control Pillar) – 2 days
- Multiple Unit Fault (Small section of lights dark) – 20 days
- Single Unit Fault (An individual light dark) – 25 days

16. Further Information / Contacts

Further information on Street Lighting issues can be obtained
from Roads Business Unit contacts as detailed below:-

- External calls – dial 01307 461460 and request the extension number.
- Internal calls – dial the extension number **Ext. 3932**
- Email – ROADS@angus.gov.uk

APPENDIX 2

Energy & Carbon Reduction Update

In accordance with the CRC Energy Efficiency Scheme Order 2010 the footprint year, baseline, to be used for reduction performance measurement was 2010/11.

- Street Lighting Units – 21042
- Energy Usage – 9134836 kWh
- Carbon Footprint – 4908 tonnes
- Average Energy Consumption per Lamp – 434kWh

In 2011 Committee Report 611/11 noted the Corporate Energy Consumption and Carbon Dioxide Emissions Reduction Targets of 1.5% for Energy and 2.5% for CO2 over the following 10 years.

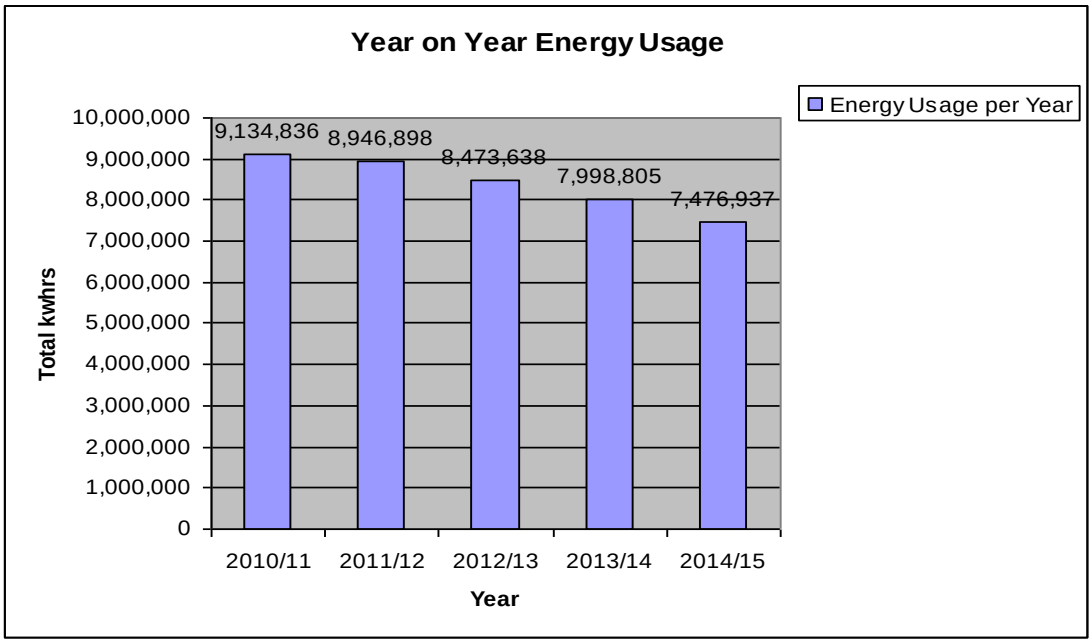
The proposals put forward to meet future reductions were:

- Initially replace highest wattage lamps (250w) with modern lower wattage white light units
- maintain the required light levels for the classification of road
- Dimming units where suitable and trimming the on/off switching times
- Develop a 10 year programme of lantern conversions to meet the targets.

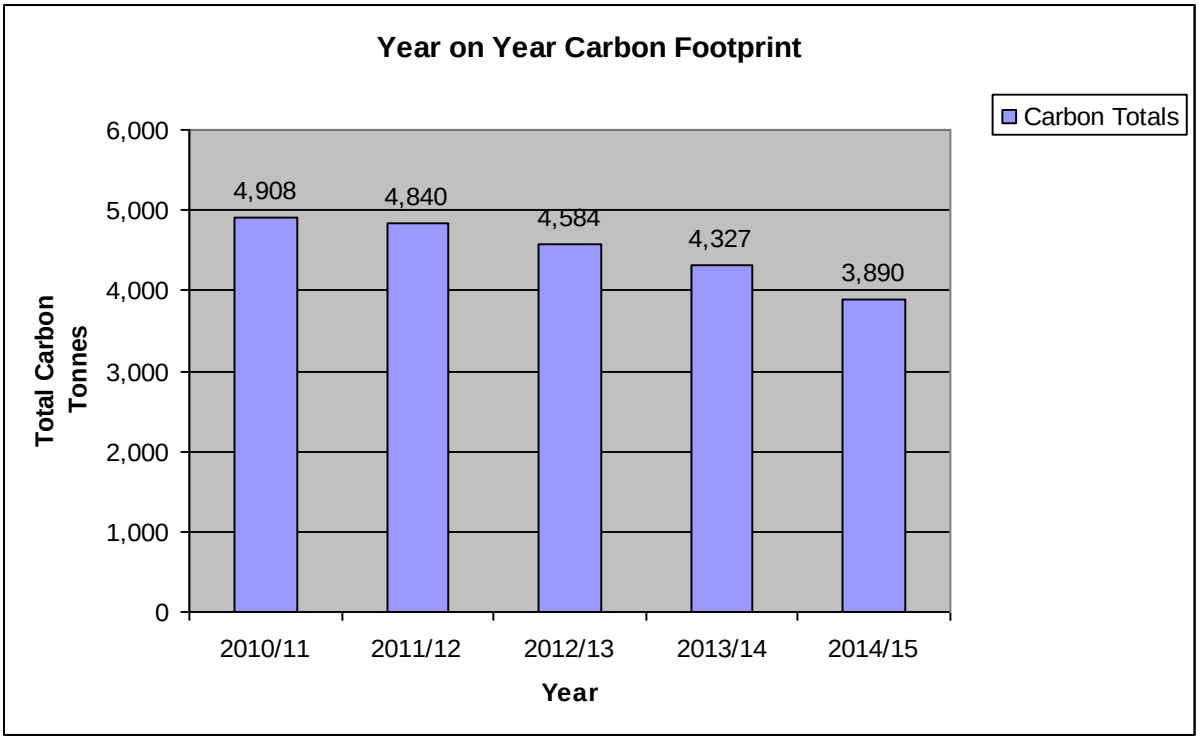
As at 31 March 2015 the reductions as a result of the above after 4 years is shown below.

- Street Lighting Units – 21918
- Energy Usage – 7332234 kWh
- Carbon Footprint – 3890 tonnes
- Average Energy Consumption per Lamp – 334kWh

Reduction in Energy Usage



Reduction in Carbon Emissions



Energy Costs Per Year